CATALOG NO. 26

2017-2019

STREM

High Quality Chemicals for Research Since 1964

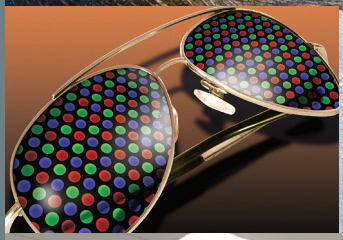
"METAL CATALYSTS FOR ORGANIC SYNTHESIS" WITH UPDATED REFERENCES AVAILABLE AT STREM.COM

High Quality Specialty Chemicals

Strem Chemicals, Inc., established in 1964, is an employee-owned business, manufacturing and marketing specialty chemicals of high purity. Strem serves the academic community as well as research and development laboratories and commercial scale businesses which supply pharmaceutical, microelectronic, chemical and petrochemical products.

Strem Chemicals also provides custom synthesis and cGMP manufacturing services. Strem is an ISO 9001 certified company.

Strem Chemicals' corporate headquarters is located in Newburyport 38 miles (60km) north of Boston. This facility occupies 48,000 sq. ft. (4,460 m^2). Its cGMP facility is FDA inspected. The European headquarters and warehouse are located in Bischheim, France.



STREM

"We thank our customers for their business and look forward to contributing to their future successes"
– Mike Strem, founder and President of Strem Chemicals, Inc.

ChemStewards®
THE ROAD TO CONTINUOUS IMPROVEMENT

Strem Chemicals, Inc. is a member of SOCMA (Society of Chemical Manufacturers and Affiliates) and is committed to the ChemStewards® program.

Corporate Headquarters,
Newburyport, MA, U.S.A.

Expertise and Experience in Manufacturing

Strem Chemicals' mission is to provide specialty chemicals of high purity in a timely fashion. Quality is the most critical component of all products and services. We offer lot-to-lot traceability and a certificate of analysis for each lot.

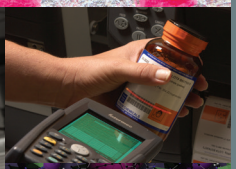
Due to our focus on quality, most of our products are of high purity, typically 99%, with some at 99.9999% metals purity.

Our experience in handling allows for the safe packaging and shipping of hazardous materials as well as ones sensitive to air and moisture. We use a range of packaging containers including vials, bottles, ampoules, cylinders, bubblers and totes to name a few.

Packaging product in customer-supplied containers, such as CVD bubblers and ALD cylinders, is also possible. Strem is an ISO 9001 certified company.

We offer a variety of fine chemicals with a special emphasis on metals, inorganics, organometallics and nanomaterials.

We continue to make investments to improve our quality control capabilities.



Strem produces a technical publication, The Strem Chemiker, periodically which features technical articles from industry and academic scientists.

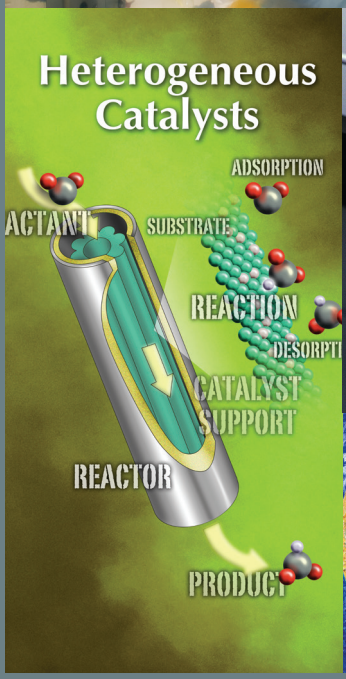
Custom Synthesis and cGMP

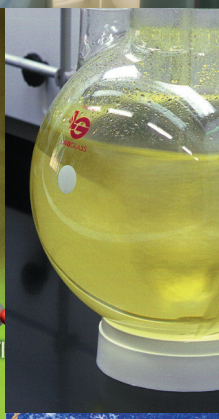
Our Catalog of Chemicals for Research provides access to a wide span of technical expertise which we utilize on custom synthesis projects.

Custom synthesis services and process development are conducted under the strictest confidence and often under secrecy agreements. Our customers include multi-billion dollar corporations, start-up businesses and university professors.

For pharmaceutical applications, manufacturing is conducted under current Good Manufacturing Practices (cGMP) in kilo-lab suites. Complete documentation is available, including validation and stability studies. Active Drug Master Files (DMF's) are also maintained.

Strem's cGMP facilities are FDA inspected.





The Newburyport facility contains four kilo-lab suites (including class 10,000) and are used to manufacture active pharmaceutical ingredients (API's) and intermediates.

cGMP manufacturing services have been available since 1988.

Reaction capabilities include:

- Alkylation
- Amination
- Ammonolysis
- Asymmetric synthesis
- Carbonylation
- Catalytic Reduction
- Chiral chemistry
- Dehydrogenation
- Formylation
- Hydroformylation
- Hydrogenation
- Liquid ammonia reactions
- Quaternization

Rapid Customer Service

Our large inventory helps us get products to you quickly. Most orders can be shipped the same day they are received. If same day shipment is not possible, we will provide expected shipping dates and keep you informed of the status of your order.

We pledge to provide technical service in a speedy and enthusiastic fashion to insure you have the products and information necessary for your project.

Our distribution partners worldwide share our goal of providing our high quality products with great service.

STREM

Our friendly employees are dedicated to providing great customer service. We also offer stock availability, product Safety Data Sheets and technical notes on our website, as well as a searchable catalog.

New product information is also available at www.strem.com.

DOT and UN approved bubbler configurations are available as well as precursor filling, refilling and cleaning services.

Product kits are available for customers performing screening experiments.

Innovative Products

We collaborate with academic and industrial innovators to make new technologies available to the research community around the world. This facilitates their commercial development and helps our customers achieve their goals.

We have used our expertise in organo-metallics and metal carbonyls to develop new metal-based nanomaterials. We have added quantum dots, surfactants for nano-synthesis and carbon-based products, such as graphene.

Our catalyst line has been expanded for metathesis, C-X coupling, C-C coupling, asymmetric hydrogenation, photocatalysis as well as other reactions. We have also added a range of biocatalysts, materials for battery applications and Metal Organic Framework products.

Our high purity precursor product line, including those for CVD and ALD applications, has also grown and new bubblers and cylinders have been added. DOT and UN approved configurations are now available as well as filling, refilling and cleaning services.

Many new products are introduced as a result of customer inquiries and suggestions.

If you don't find a product you need in our catalog, please ask us!

We sponsor the American Chemical Society Award for Distinguished Service in the Advancement of Inorganic Chemistry. Recent winners include: 2017 William B. Tolman, 2016 Vincent L. Pecoraro, 2015 Kim R. Dunbar.

We also sponsor the Canadian Society for Chemistry Award for Pure or Applied Inorganic Chemistry. Recent winners include: 2017 Dwight Seferos, 2016 Curtis P. Berlinguette, 2015 Muralee Murugesu.

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Products in this catalog are sorted according to their Key Element. We have also included individual sections to highlight certain product categories, such as Biocatalysts, Metal Organic Frameworks and Nanomaterials.

We are proud to be providing high quality specialty chemicals for research and development since 1964. Quality is paramount for all products and services that we offer. As part of our ongoing commitment to quality, we have achieved ISO 9001 certification for the Quality Management System (QMS) at our corporate headquarters.

***

Our booklets, which focus on applications and product classes, are available in print per request and also on our website. Below is a list of current booklet titles that are available. Please also check our Product Resources section online to find additional literature offerings, such as the Strem Chemiker, our technical publication, and product literature sheets.

- Buchwald Ligands and Precatalysts
- Gold Elements & Compounds
- Heterogeneous Catalysts
- Kits
- Materials for Energy Applications
- Metal Catalysts for Organic Synthesis
- MOCVD, CVD & ALD Precursors
- Nanomaterials
- New Products
- Other Ligands
- Phosphorous Ligands and Compounds
- PURATREM: High Purity Inorganics

ISO 9001 CERTIFIED

Glossary of Terms

$[\alpha]_D$	.....	Specific rotation
AAS	.....	Atomic Absorption Standard
ACS	.....	Conforms to American Chemical Society specifications
air sensitive	.....	Product may chemically react with atmospheric oxygen or carbon dioxide at ambient conditions. Handle and store under an inert atmosphere of nitrogen or argon.
amp	.....	Ampouled
b.p.	.....	Boiling point in °C at 760mm, unless otherwise noted
d.	.....	Density
dec.	.....	Decomposes
elec. gr.	.....	Electronic Grade, suitable for electronic applications
f.p.	.....	Flash point in °F
gran.	.....	Granular
heat sensitive	.....	Product may chemically degrade if stored for prolonged periods of time at ambient temperatures or higher. Store at 5°C or lower.
hydrate	.....	Unspecified water content which may vary slightly from lot to lot
hygroscopic	.....	Product may absorb water if exposed to the atmosphere for prolonged periods of time (dependent on humidity and temperature). Handle and store under an inert atmosphere of nitrogen or argon.
light sensitive	.....	Product may chemically degrade if exposed to light
liq.	.....	Liquid
m.p.	.....	Melting point in °C
moisture sensitive	.....	Product may chemically react with water. Handle and store under an inert atmosphere of nitrogen or argon.
NMR grade		Suitable as a Nuclear Magnetic Resonance reference standard
optical grade	.....	For optical applications
pwdr.	.....	Powder
primary standard	.....	Used to prepare reference standards and standardize volumetric solutions
PURATREM	.....	Product has a minimum purity of 99.99% (metals basis)
purified	.....	A grade higher than technical, often used where there are no official standards
P. Vol.	.....	Pore volume
pyrophoric	.....	Product may spontaneously ignite if exposed to air at ambient conditions
reagent	.....	High purity material, generally used in the laboratory for detecting, measuring, examining or analyzing other substances
REO	.....	Rare Earth Oxides. Purity of a specific rare-earth metal expressed as a percentage of total rare-earths oxides.
SA	.....	Surface area
store cold	.....	Product should be stored at -18°C or 4°C, unless otherwise noted (see product details)
subl.	.....	Sublimes
superconductor grade	.....	A high purity, analyzed grade, suitable for preparing superconductors
tech. gr.	.....	Technical grade for general industrial use
TLC	.....	Suitable for Thin Layer Chromotography
v.p.	.....	Vapor pressure mm of Hg
xtl.	.....	Crystalline

About Purity

Chemical purity	.....	is reported after the chemical name, e.g. Ruthenium carbonyl, 99%
Metals purity	.....	is reported in parentheses with the respective element, e.g. Gallium (III) bromide, anhydrous, granular (99.999%-Ga) PURATREM where 100% minus the metal purity is equal to the maximum allowable percentage of trace metal impurity

Ordering - USA

We continue to do all that we can to make ordering easy.
Our friendly, knowledgable staff is always ready to help.

PLACING YOUR ORDER

Call our Toll-Free Number available within the U.S.A. and Canada. Our Customer Service Specialists are on duty to take your orders between 8:00 a.m. & 5:00 p.m. Eastern Time.

If placing an order after 5:00 p.m. Eastern Time, you may leave a message on our voicemail system. Your order will be processed and shipped the next day if the material is in stock. We will contact you to confirm price and delivery time.

PHONE:	**1-978-499-1600** **Toll-Free # within the U.S.A. and Canada:** **1-800-64-STREM** (1-800-647-8736)
FAX:	**1-978-465-3104** **Toll-Free # within the U.S.A. and Canada:** **1-800-51-STREM** (1-800-517-8736)
MAIL TO:	**Strem Chemicals, Inc.** **Dexter Industrial Park** **7 Mulliken Way** **Newburyport, MA 01950-4098**
EMAIL:	**order@strem.com** (product orders) **technical@strem.com** (technical questions) **quotation@strem.com** (special quote requests) **catalog@strem.com** (catalog requests) **info@strem.com** (all other inquiries)
WEBSITE:	**www.strem.com**

QUOTATIONS: Submit requests by phone, email or via the searchable catalog on our website.

U.S.A. ORDERS: Domestic orders are handled through our headquarters in Newburyport, Massachusetts. Our telephone, fax and email contact information are listed above. There is no minimum order. All orders are welcome regardless of size or value.

FOREIGN ORDERS: In some geographical areas, we have foreign sales representatives. In those areas, it is more convenient to place orders directly through them. Please contact us for the names of both our stocking and non-stocking representatives in other countries. They are well qualified to handle your inquiries and process your orders.

PLEASE INCLUDE THE FOLLOWING WHEN PLACING YOUR ORDER:

- 6-digit Customer Account #
- Catalog Number
- Chemical Name/Product Description
- Quanitity
- Unit size (metric units)
- Preferred Shipping Method
- Shipping Address

Ordering - USA

SAME DAY SHIPPING: All U.S.A. orders placed between 8:00 a.m. and 2:30 p.m. Eastern Time will be shipped the same day, except for those items that are not in stock.

We will ship them in the fastest, most economical way. All shipments are insured for your protection against loss or damage in transit unless you specify otherwise. When complete shipments cannot be sent, partial shipments will be made at our discretion, unless specifically directed otherwise at the time the order is placed.

METHODS OF SHIPPING: Below is a list of the shipping services available in the U.S.A., Canada, and to foreign destinations. Please inform us if you have a preferred means of shipping.

U.S.A. & Canada	*Foreign Destinations*
FedEx Ground	**Air Freight**
FedEx Express	**DHL**
Freight Truck*	**FedEx Express**
United Parcel Service (UPS)	**International Express Mail**
U.S. Mail (USPS)	**Ocean Freight***

**Some items sold are particularly hazardous (extremely toxic or pyrophoric) and cannot be shipped via FedEx Ground, Air, UPS or Parcel Post. These items must ship via freight truck which may cause shipping charges to be higher than usual. Customers will be notified if an item requires shipment via truck and has the right to request an estimate of the shipping costs.*

***For foreign orders, hazardous items described above will require shipment via ocean freight as they cannot be shipped by air. Travel via ocean freight may have extended transit times as well as higher shipping costs. Customers will be notified if an item requires shipment via ocean freight and has the right to request an estimate of the shipping costs.*

SHIPPING RESTRICTIONS: Chemicals covered by 49 CFR, IATA and IMO shipping restrictions will be shipped accordingly. Any shipping restrictions that apply to a particular chemical are listed below the catalog number. An explanation of each is as follows:

HAZ This material is hazardous and cannot be shipped via mail or DHL.

For U.S.A. and Canada, this material must be shipped via freight truck.

For International Shipments, this material must be shipped via ocean freight.

PACKAGING: Air-sensitive materials are packaged under argon in wax-sealed bottles, in ampoules or in cylinders. We suggest that these materials be opened, used and stored under an inert atmosphere to maintain their integrity and ensure maximum shelf life. Products packaged in ampoules will be designated by the letters “amp” appearing below the catalog number.

SPECIAL PACKAGING: Special packaging may be required for the shipment of poisons (Division 6.1), or water-reactives (Division 4.3). We add a surcharge of $14.00 per package for such shipments. We also apply a $12.00 surcharge for materials requiring five-gallon shipping pails. We reserve the right to increase these charges as our cost for these special packaging materials increase. Other special packaging materials may also incur a surcharge.

PRICES: We reserve the right to make price changes at any time. In the event the price increase is more than ten percent (10%), we will contact the customer before shipment.

Quantities intermediate to the listed standard packages will be priced at the smaller standard package rate. Ampouled materials will be sold only in the listed standard sizes.

We accept the following credit cards:

VISA MasterCard AMERICAN EXPRESS

In the event the larger catalog units are temporarily out of stock, our order policy is to ship multiple smaller units at the reduced larger unit price. Ampouled materials are exempted from this policy and will be sold only at the listed catalog prices, but are eligible for multiple unit discounts.

Ordering - USA

DISCOUNTS: Any product ordered in multiple lots, whether in standard, smaller-than-standard, or intermediate quantities is eligible for the following discounts:

5-9 units	**Less 5% from catalog price**
10-19 units	**Less 10% from catalog price**
20 or more units	**Inquire**

BULK QUANTITIES: Many of our products are available in bulk at substantially lower prices. Please contact our Sales Department for these special prices.

CUSTOM MANUFACTURING: Strem may be able to supply materials not listed in this catalog on a custom basis and would be pleased to evaluate your requirements.

cGMP MANUFACTURING: Current Good Manufacturing Practices (cGMP) kilo-lab facilities are available for pharmaceutical manufacturing. Complete documentation can be provided. Active Drug Master Files (DMFs) are maintained.

NOMENCLATURE: Strem Chemicals has adopted the systematic names recommended by IUPAC with Stock's designation (Roman numerals in parentheses) of oxidation states for most of our compounds. However, in some cases where a traditional name of commerce has become widely used and recognized, we have opted to use the common name. We have also retained the classical names for most organometallics.

The water of hydration of an inorganic product is expressed in the assigned product name using the terms mono-, di-, tri-hydrate, etc. Products having indefinite waters of hydration which may vary from lot to lot have been called "hydrate."

RETURN POLICY: If you wish to return an unopened product, we will do our best to accommodate your request. Please contact us first for a return material authorization number and specific shipping instructions.

There may be a 20% restocking charge, subject to a $20.00 minimum, assessed on any unopened returned items. Of course, this charge will not apply to items returned due to a shipping error on our part.

TERMS: Our usual terms are net 30 days, FCA Newburyport, Massachusetts. Strem Chemicals also accepts VISA, Master Card and American Express for payment of orders.

GENERAL TERMS AND CONDITIONS: All sales are subject to our Standard Terms and Conditions available at www.strem.com.

Notice To Our Customers

All of the chemicals in this catalog are research chemicals as defined under the Toxic Substances Control Act. As such, they should be used or handled only by or under the direct supervision of "technically qualified individuals," as defined in 40CFR 710.3.

The chemical, physical and toxicological properties have not been fully investigated since these research chemicals are for investigational use only. Strem Chemicals, therefore, makes no guarantee of results and assumes no liability for injuries, damages or penalties resulting from their use, since the conditions of handling and use are beyond our control. Suggestions and recommendations for their use are not to be taken as a license to operate under or to infringe any patent.

Commande - Europe (Français)

Nous faisons notre possible pour faciliter vos commandes.
Notre aimable personnel se tient à votre disposition pour vous aider.

Tel.: (33) 03.88.62.52.60
Fax: (33) 03.88.62.26.81
Email: info.europe@strem.com
Website: www.strem.com

Strem Chemicals, Inc.
15, rue de l'Atome Z.I.
67800 BICHHEIM (France)

CONDITIONS DE VENTE
Toutes nos conditions de vente sont disponibles sur le site www.strem.com.

COMMENT PASSER VOS COMMANDES
Pour éviter toute erreur dans l'exécution de votre commande, veuillez mentionner le N° de référence indiqué sur le côté gauche du catalogue, le nom chimique du produit ainsi que la quantité désirée.

LES PRIX
Nous réservons le droit de modifier les prix à n'importe quel moment, si besoin est. Dans le cas où l'augmentation de prix serait supérieure à 10%, nous contacterons nos clients pour accord, avant livraison.

Pour les commandes de plusieurs unités d'un même produit, et quel qu'en soit le conditionnement, nous accordons les remises suivantes:

5 à 9 unités	**remise de 5% sur le prix catalogue**
10 à 19 unités	**remise de 10% sur le prix catalogue**
20 unités, et plus	**veuillez nous interroger**

BULK
La plupart de nos produits peuvent être fournis en grandes quantités à des prix avantageux. Veuillez consulter notre Service Commercial pour cotation. Ces demandes peuvent être transmises par fax, email ou par le biais de notre site internet www.strem.com.

VEUILLEZ PRÉCISER:
- le N° de référence du produit
- le nom chimique du produit
- la quantité
- l'unité
- votre code client si vous le connaissez
- votre N° de TVA (VAT)

SYNTHÈSE SUR MESURE
Nous avons également la possibilité de vous fournir certains produits ne figurant pas dans notre catalogue. Nous serons heureux de vous communiquer nos conditions.

Notre laboratoire GMP nous donne la possibilité de faire des synthèses pharmaceutiques sur mesure.

Les installations permettant la mise en oeuvre des techniques usuelles de fabrication de produits (cGMP) en laboratoire à l'échelle du kilogramme sont disponibles pour les fabrications pharmaceutiques. Une documentation complète peut être fournie sur demande. Les fichiers permanents actualisés de produits pharmaceutiques (DMF) sont maintenus.

DÉNOMINATION
Nous avons adopté les noms usuels, tels qu'ils sont recommandés par l'IUPAC, avec mention de consignes de stockage pour la plupart de nos produits. Cependant, dans le cas où un nom commun pour un produit serait entré en usage d'une manière très large, nous avons opté pour la dénomination du produit par son nom commun.

Commande - Europe (Français)

Nous avons également retenu les désignations classiques pour la plupart de nos composés organo-métalliques. L'eau d'hydration d'un composé inorganique est désignée par : mono-, di-, tri-hydrate, etc., en regard du produit concerné.

Les produits incluant des eaux d'hydration imparfaitement définies et susceptibles de variations d'un lot à l'autre, seront simplement désignés par "Hydrates".

EMBALLAGE

Les matériaux sensibles à l'air sont conditionnés sous Argon dans des bouteilles ou ampoules scellées à la cire.

Les produits conditionnés en ampoules seront suivis de l'abréviation "AMP" en dessous de notre N° de référence catalogue.

Nous suggérons que ces produits soient ouverts, utilisés et stockés en atmosphère inerte, afin de leur maintenir leurs propriétés et leur assurer la plus longue conservation possible.

LIVRAISONS

Les commandes sont traitées à réception et expédiées au plus vite.

Les commandes de produits n'étant pas disponibles en totalité, feront l'objet d'une expédition partielle sur demande.

MODE DE TRANSPORT:

HAZ Ces produits ne sont pas acceptés par la poste

Livraison par transporteur spécial

FRAIS DE TRANSPORT
LIVRAISON EN FRANCE:

Les livraisons ne nécessitant pas de transport spécial et dont le montant est supérieur à 150€ net HT seront gratuites.

Pour toute commande inférieure à ce montant, une participation de 10€ sera demandée. Les livraisons nécessitant un transport spécial seront à la charge de l'acheteur aprés information et accord.

A la réception, veillez à comparer le contenu du colis avec le bulletin de livraison et nous signaler toute différence le plus tôt possible.

RETOUR DE MARCHANDISES

Veuillez-nous contacter pour accord et instructions concernant le renvoi. Les produits devront nous être retournés dans leur emballage d'origine et non ouverts.

PAIEMENT:

Lors de vos paiements veuillez préciser le numéro de facture.
Nos conditions de paiement sont : 30 jours net.
Les marchandises restent notre propriété jusqu'au paiement intégral de la facture.

LIEU DE JURIDICTION: STRASBOURG

Note Importante

Tous les produits figurant dans ce catalogue sont destinés à la recherche, selon la définition figurant dans le TSCM.

Ils ne pourront être utilisés ou manipulés que par des personnes dûment habilitées, ou sous le contrôle strict d'un technicien qualifié.

Les effets chimiques, physiques et toxiques, n'ont encore pu être déterminées clairement puisqu'il s'agit de produits destinés à la recherche. Leurs propriétés ne pourront être constatées qu'ultérieurement.
De ce fait, STREM CHEMICALS ne peut offrir aucune garantie quant aux résultats, et ne peut en aucun cas être tenu pour responsable pour d'éventuels dommages, blessures, détériorations, etc., qui pourraient résulter de la manipulation des produits étant donné qu'elle s'effectue sous votre responsabilité.

Les suggestions et recommandations que nous fournissons quant à leur usage ne sont données qu'à titre purement indicatif, et ne devront en aucun cas servir à enfreindre la réglementation, dans le cas d'un produit protégé par un dépôt de brevet.

Bestellung - Europa (Deutsch)

Wir bemühen uns, Ihnen das Bestellen so einfach wie möglich zu machen.
Sollten Sie Fragen haben, steht Ihnen unser freundliches Personal gerne jederzeit zur Verfügung.

Tel.:	**07851/75879**	**Strem Chemicals, Inc.**		**Strem Chemicals,Inc.**
Fax:	**00 33 3.88.62.26.81 Fr.**	**15, rue de l'Atome Z.I.**	*oder*	**Postfach 1215**
Email:	**info.europe@strem.com**	**67800 BICHHEIM**		**77672 KEHL**
Website:	**www.strem.com**	**(Frankreich)**		**(Deutschland)**

VERKAUFSBEDINGUNGEN
Die geltenden Verkaufsbedingungen finden Sie auf www.strem.com.

PREISE UND ZAHLUNG
Die Preise verstehen sich in Euro inklusive Innen und Außenverpackung.

Bei Zahlungen bitte geben Sie die Rechnungsnummer an.

Aufgrund der sich ständig ändernden Marksituation insbesondere hinsichtlich der Preise von Lieferanten aus anderen Währungsgebieten, die bei Kursschwankungen entsprechend angepaßt werden, sind die Preise freibleibend.

Rechnungen werden nur durch uns gestellt und sind ausschließlich an uns zu bezahlen.

Unsere Rechnungen werden sofort nach Rechnungseingang fällig und können innerhalb von 30 Tagen nach Lieferung bezahlt werden.

Die nicht rechtzeitige Zahlung einer Lieferung oder begründete Zweifel an der Zahlungs-fähigkeit oder Kreditwürdigkeit des Bestellers können wir zum Anlaß nehmen, sämtliche Forderungen gegen den Besteller sofort fällig zu stellen und weitere Lieferungen nur gegen Vorkasse zu erbringen.

Der Besteller ist nicht berechtigt, gegenüber unseren fälligen Zahlungsansprüchen ein Zurückbehaltungsrecht geltend zu machen; er kann gegenüber unseren Forderungen nur mit unbestrittenen oder rechtskräftig festgestellten Forderungen aufrechnen.

MENGENRABATTE
Für fünf bis neun Packungen des gleichen Produktes gewähren wir 5% Rabatt, für zehn bis neunzehn Packungen 10% Rabatt auf den derzeit gültigen Katalogpreis. Bei größeren Mengen bitten wir um Ihre Anfrage.

BULKMENGEN
Viele unserer Produkte können wir auch in Großpackungen zu niedrigeren Preisen anbieten. Bitte erkundigen Sie sich bei uns nach diesen Sonderpreisen. Wir bitten um Ihre Anfrage per fax, email oder über unserer Webseite www.strem.com.

UM FEHLER ZU VERMEIDEN BESTELLEN SIE BITTE UNTER ANGABE:

- der Artikelnummer
- des Chemikaliennamens
- der Menge
- der Einheit
- der Kunden Nr. wenn bekannt
- der Ust. Id. Nr

KUNDENSYNTHESE
Viele nicht in diesem Katalog aufgeführten Verbindungen können wir als Kundensynthese herstellen. Unser Schwerpunkt liegt im Bereich der metallorganischen Synthese. Bitte fragen Sie bei Bedarf nach unseren Möglichkeiten. Für die Herstellung pharmazeutischer Produkte im kg-Masstab haben wir ein cGMP-Labor (Current Good Manufacturing Practices) verfügbar.

Bestellung - Europa (Deutsch)

NOMENKLATUR

Für die meisten unserer Produkte haben wir die systematischen Namen übernommen, wie sie von der IUPAC empfohlen werden. Wenn jedoch Trivialnamen üblich und gebräuchlich sind, haben wir diese verwendet. Für die meisten metallorganischen Verbindungen haben wir ebenfalls die in der Fachliteratur üblichen Bezeichnungen übernommen. Der Kristallwassergehalt bei anorganischen Salzen wird durch den Zusatz “mono-, di-, trihydrate” usw. ausgedrückt. Produkte mit unbestimmten oder wechselnden Kristallwassergehalt werden nur als “Hydrate” bezeichnet.

VERPACKUNG

Luftempfindliche Produkte sind unter Argon oder Stickstoff in verwachsten oder in Ampullen verpackt. Diejenigen unserer Produkte, die in Ampullen verpackt sind, werden im vorliegenden Katalog mit den Buchstaben “Amp.” unterhalb der Katalog-nummer bezeichnet. Wir emfehlen, diese Produkte nur unter innert Gasatmosphäre zu öffnen und zu benützen, um eine Zersetzung oder gefährliche Reaktionen zu vermeiden. Ansonsten sind unsere Produkte handelsüblich verpackt.

LIEFERUNG

Bei Bestellungen von Chemikalien, die nicht vollständig verfügbar sind, können wir auf Anfrage Teillieferungen durchführen.

Gefahrguthinweise:

HAZ Gefahrgut - kein Versand per Post möglich

Spezialtransport

Lieferung innerhalb von Deutschland:

Die Lieferungen, die keinen besonderen Transport benötigen und einen Betrag von 150€ netto übersteigen, werden frei Haus geliefert. Bei Bestellungen unter diesem Betrag, wird eine Gebühr in Höhe von 10€ erhoben.

Die Gebühren für die Lieferungen, die einen besonderen Transport benötigen, werden dem Einkäufer nach Informationen und Zustimmung weiterberechnet.

Lieferung in anderen Ländern:

Der Besteller wird mit den entsprechenden Frachtkosten belastet ausgenommen es besteht eine besondere Vereinbarung.

VERSAND

Besondere Versandwünsche des Bestellers berücksichtigen wir, soweit dies im Rahmen der gesetzlichen Vorschriften gestattet ist. Mehrkosten für Eillieferungen gehen zulasten des Bestellers.

Die Gefahr des zufälligen Untergangs und der zufälligen Verschlechterung der Ware geht mit der Absendung der Ware oder ihrer Auslieferung an den Versandbeauftragten, spätestens aber mit Verlassen des Werkes oder des Lagers auf den Besteller über. Ist für den Versand eine besondere Weisung des Bestellers abzuwarten, geht die Gefahr auf diesen mit der Anzeige der Versandbereitschaft über.

Beim Wareneingang, bitten wir Sie den Inhalt des Pakets mit dem Lieferschein zu vergleichen und einen Unterschied so schnell wie möglich zu melden.

WARENRÜCKSENDUNG

Bitte kontaktieren Sie uns für die Genehmigung und Anweisungen auf die Rückkehr. Die Produkte müssen in ihrer Originalverpackung und ungeöffnet zurückgeschickt werden.

Bestellung - Europa (Deutsch)

AUSSCHLUß VON SCHADENERSATZANSPRÜCHEN

Die chemischen, physikalischen und toxikologischen Eigenschaften vieler unserer Produkte sind noch nicht vollständig erforscht, da diese Forschungschemikalien ausschließlich für wissenschaftliche Zwecke bestimmt sind. Die Prüfung, ob ein bestimmtes Produkt für die Verwendung des Bestellers geeignet ist, obliegt alleine diesem. Die Verantwortung für die Anwendung im medizinischen Bereich, im Haushalt, als Futtermittel oder Lebensmittelzusatz liegt allein beim Besteller. Für Verletzungen oder Unfälle, die durch die Lagerung oder Handhabung unserer Produkte entstehen, übernehmen wir keine Haftung, da sie außerhalb unserer Kontrolle liegen. Technische Informationen geben wir gerne weiter. Doch können wir keine Verantwortung für die Ergebnisse des Kunden übernehmen.

Sämtliche Schadenersatzansprüche des Bestellers (einschließlich aller Ansprüche auf Ersatz von Aufwendungen, Kosten etc.), insbesondere wegen Leistungsverzugs, Unvermögens oder Unmöglichkeit, wegen des Fehlens zugesicherter Eigenschaften, positiver Forderungsverletzungen, Verschuldens bie Vertragsabschluß, wegen jeglicher Erklärungen oder unterlassener Erklärungen unsererseits oder wegen unerlaubter Handlung (einschließlich etwaiger Produzentenhaftung), insbesondere auch Ansprüche auf Ersatz von Schäden, Kosten und Aufwendungen, die nicht an den Produkten selbst entstanden sind (Folgeschäden), sind ausgeschlossen, es sei denn sie beruhen auf Vorsatz oder grober Fahrlässigkeit. Soweit von uns Schadenersatz verlangt werden kann, sind wir nur verpflichtet, den bei Vertragsabschluß vorhersehbaren Schaden zu ersetzen.

EIGENTUMSVORBEHALT

Die Ware bleibt bis zur vollen Bezahlung sämtlicher Forderungen einschließlich Nebenforderungen, künftig entstehende Forderungen und Einlösungen von Scheck und Wechseln unser Eigentum.

RECHT UND GERICHTSSTAND

Straßburg - Frankreich

Wichtiger Hinweis

Alle Produkte in diesem Katalog sind für die Forschung bestimmt, gemäß der Definition in der TSCM.

Sie dürfen nicht von dazu ermächtigten Personen oder unter der strengen Aufsicht eines qualifizierten Techniker verwendet oder verarbeitet werden.

Die chemischen, physikalischen und toxisch, doch konnte nicht eindeutig bestimmt werden, da sie für die Forschung bestimmt ist. Ihre Eigenschaften können erst später erkannt werden.
Daher kann Strem Chemicals keinerlei Garantie bezüglich der Ergebnisse bieten, und kann in keiner Weise für Schäden verantwortlich gemacht werden, Verletzungen, Schäden, etc., die vom Umgang mit Produkten führen kann, da es wird unter Ihrer Verantwortung.

Die Vorschläge und Empfehlungen, die wir für die Nutzung zur Verfügung stellen werden nur zur Information angegeben und wird durch ein Patent geschützt, die Vorschriften im Falle eines Produkts zu verletzen auf keinen Fall verwendet werden.

Ordering - UK

We continue to do all that we can to make ordering easy.
Our friendly, knowledgeable staff is always ready to help.

All UK orders should be directed to:

Tel.:	**+44 1 223 873028**	**Strem Chemicals UK Ltd.**
Fax:	**+44 1 223 870207**	**Newton Hall**
Email:	**enquiries@strem.co.uk**	**Town Street**
Website:	**www.strem.co.uk**	**Newton, Cambridge**
		CB22 7ZE

QUOTATIONS: Submit requests by email, fax or via our website.

MINIMUM ORDER: No minimum order is required. All orders are welcomed regardless of size or value. Low value orders may incur a small packing and delivery charge.

HOW TO ORDER: Please order by both chemical name and catalogue number to ensure receipt of the product you want. Also please specify the quantity and the size in metric units. Orders received in non-metric lots will be processed to the nearest listed metric lot.

DELIVERY: Typically, we can deliver items next day, if in stock in the UK. We receive two shipments per week for stock available at Strem USA. This offers a lead time of 3-5 working days for delivery depending on the day that an order is placed. Drop shipment is available at an additional cost if a faster service is required. Contact us for estimates. Please check the website for estimated delivery times. (Lead times listed on the website does not apply for chemicals which need to be shipped via ocean freight. Please contact us for more details on these items.)

SHIPPING RESTRICTIONS:

HAZ This material is hazardous and cannot be shipped by mail.

In the UK this material must be shipped by freight truck.

For international shipments, this material must be shipped by ocean freight.

PLEASE INCLUDE THE FOLLOWING WHEN PLACING YOUR ORDER:

- Customer Account #
- Catalogue Number
- Chemical Name/Product Description
- Quanitity
- Unit size (metric units)
- Preferred Shipping Method
- Shipping Address

PACKAGING: Air sensitive materials are packaged under argon in a wax-sealed bottle, ampoule or in cylinders. Those products packaged in an ampoule will be designated by the letters “amp” appearing below the catalogue number. We suggest that these materials be opened, used and stored in an inert atmosphere to maintain their integrity and ensure maximum shelf life.

SPECIAL PACKAGING: Certain chemicals, such as poisons and highly flammable materials require special packaging. We reserve the right to charge for these costs dependent on the order value.

PRICES: We reserve the right to make price changes at any time. Prices will be reviewed in the event that there is a significant change in exchange rate or base costs. Please check website for up-to-date pricing. We will always contact the customer prior to shipment in the event of a difference in price between the customer’s order and the website.

Ordering - UK

Quantities intermediate to the listed standard packages will be priced at the smaller standard package rate. Ampouled materials will only be sold in the standard packages.

In the event the larger catalogue units are temporarily out of stock, our order policy is to ship multiple smaller units at the reduced larger price. However ampouled materials are exempted from this policy and will be sold only at the listed catalogue prices, but are subject to multiple unit discounts.

We accept the following credit cards:

DISCOUNTS: Any product ordered in multiple lots, whether in standard, smaller-than-standard or intermediate quantities is eligible for the following discounts:

5-9 units	**Less 5% from catalogue price**
10-19 units	**Less 10% from catalogue price**
20 or more units	**Inquire**

BULK QUANTITIES: Many of our products are available at substantially lower prices.
Please contact us for these special prices.

CUSTOM MANUFACTURING: Strem Chemicals may be able to supply materials not listed in this catalogue on a custom basis and would be pleased to evaluate your requirements.

cGMP MANUFACTURING: Current Good Manufacturing Practices (cGMP) kilo-lab facilities are available for pharmaceutical manufacturing. Complete documentation can be provided. Active Drug Master Files (DMFs) are maintained.

NOMENCLATURE: Strem Chemicals has adopted the systematic names adopted by IUPAC with Stock's designation (Roman numeral in parentheses) of oxidation states for most of our compounds. However, in some cases where a traditional name of commerce has become widely used and recognized, we have opted to use the common name. We have also retained the classical name for most organometallics.

The water of hydration of an inorganic product is expressed in the assigned product names using the terms mono-, di-, tri-hydrate etc. Products having indefinite waters of hydration which may vary from lot to lot have been called simply "hydrate".

RETURN SHIPMENTS: If you wish to return a product we will do our best to accommodate you. Please contact us first for return permission and shipping instructions. Unless we are aware that you are returning an item and expect your shipment, it could be misdirected and lost.

There may be a 20% restocking charge, subject to a £20 minimum, assessed on any unopened items. Of course this charge will not apply to items returned due to a shipping error on our part.

TERMS: Our usual terms are net 30 days, F.O.B. Cambridge. We also accept Visa and Mastercard for payment of orders.

Notice To Our Customers

All of the chemicals in this catalogue are research chemicals as defined under the United States Toxic Substances Control Act, and hazard identified via GHS/CLP regulations. As such, they should be used or handled only by or under the direct supervision of "technically qualified individuals," in accordance with national regulations such as COSHH, 40CFR 710.3 etc.

The chemical, physical and toxicological properties have not been fully investigated since these research chemicals are for investigational use only. Strem Chemicals, therefore, makes no guarantee of results and assumes no liability for injuries, damages or penalties resulting from their use, since the conditions of handling and use are beyond our control. Suggestions and recommendations for their use are not to be taken as a license to operate under or to infringe any patent.

Message from Management

We are here to support you as you solve your technical challenges.

STREM ACHIEVES ISO 9001 CERTIFICATION

Strem's corporate headquarters, located in Newburyport, Massachusetts, has achieved ISO 9001 certification for Quality Management System (QMS) standard.

NEW NANOMATERIALS

Strem launched nanomaterials manufacturing activities in 2004. Since then we have continued to expand our range and have added many new metal-nanoparticles and graphene quantum dots.

As an employee-owned company we wish to thank our customers for their loyalty which has contributed to our continued success.

CATALYSTS AND LIGANDS AVAILABLE AT MULTI-KILO SCALE

We have added new ligands and metal catalysts for organic synthesis, C-C, C-X bond formation, asymmetric and transfer hydrogenation, metathesis and other transformations. Through licensing agreemeents we are able to offer patented products, many at kilo- scale.

BIOCATALYSTS COMPLEMENT OUR METAL CATALST OFFERING

We have partnered with industry leaders to offer propietary biocatalysts for research and development.

CUSTOM SYNTHESIS AND cGMP MANUFACTURING SERVICES

Companies from Fortune 500 to small start-ups have engaged Strem's custom synthesis and cGMP services. For GMP products, Strem maintains regulatory filings in over twenty countries and hosted an FDA inspection in 2016. Customer audits are always welcome. We are also capable of handling high-potency materials. In addition, we have expanded our kilo-lab capacity as well as the range of our analytical test capabilites

COMMITMENT TO HIGHER EHS&S STANDARDS AND COMMUNITY.

Strem adheres to the Society of Chemical Manufacturers and Affiliates (SOCMA) ChemStewards® program. We received their Performance Improvement Award for outstanding commitment to continuous improvement of Environmental, Health, Safety & Security practices for the past five years. In addition, Strem has qualified for the ChemStewards® Excellence Tier, which is the program's highest ranking for successful efforts to go above and beyond the minimum for federal environmental, health, safety and security (EHS&S) compliance, build customer confidence and community trust, and strengthen product stewardship.

CVD & ALD EQUIPMENT AND PRECURSOR LINE CONTINUES TO GROW

Additional precursors for CVD/ALD have been added to our product line. In addition, more bubbler configurations for chemical vapor deposition and cylinders for atomic layer deposition are now available. The range of services offered has been expanded to include cleaning and filling of precursors. Some precursors have been exclusively licensed by Strem for commercial applications and have been implemented by our customers.

OTHER NEW PRODUCTS?

We welcome your suggestions for new products.

Ephraim S. Honig, Ph.D., M.B.A.
Chief Executive Officer

ALUMINUM (Elemental Forms)

13-0025	**Aluminum foil (99.5%)** *(7429-90-5)* Al; FW: 26.98; 0.0254 mm thick, 30 cm x 30 cm; m.p. 660°; b.p. 2056°; d. 2.702	5pcs 25pcs
93-1379	**Aluminum foil (99.9%)** *(7429-90-5)* Al; FW: 26.98; 0.5 mm thick x 50 mm wide; m.p. 660°; b.p. 2056°; d. 2.702	100 x 50mm 500 x 50mm
93-1313	**Aluminum foil (99.997%)** *(7429-90-5)* Al; FW: 26.98; 0.25 mm thick; m.p. 660°; b.p. 2056°; d. 2.702	50 x 50mm 100 x 100mm
93-1372	**Aluminum foil (99.9995%)** *(7429-90-5)* Al; FW: 26.98; 0.127 mm thick x 100 mm wide; m.p. 660°; b.p. 2056°; d. 2.702	50 x 100mm 250 x 100mm
13-0026	**Aluminum ingot (99.999%)** *(7429-90-5)* Al; FW: 26.98; metal ingot; m.p. 660°; b.p. 2056°; d. 2.702	100g 500g
93-1316 HAZ	**Aluminum powder (99+%)** *(7429-90-5)* Al; FW: 26.98; 20-40 mesh gran.; m.p. 660°; b.p. 2056°; d. 2.702	500g 2kg
93-1344 HAZ	**Aluminum powder (99.7%)** *(7429-90-5)* Al; FW: 26.98; -325 mesh; m.p. 660°; b.p. 2056°; d. 2.702	500g 2kg
13-0036	**Aluminum rod (99+%)** *(7429-90-5)* Al; FW: 26.98; 12.7mm dia. x 30cm long (~102.5g/30cm); m.p. 660°; b.p. 2056°; d. 2.702	2 x 30cm 10 x 30cm
13-0038	**Aluminum rod (99.9995%)** *(7429-90-5)* Al; FW: 26.98; 6.4mm dia. (~4.34g/5cm); m.p. 660°; b.p. 2056°; d. 2.702	5cm 25cm
13-0044	**Aluminum shot (99.999%)** *(7429-90-5)* Al; FW: 26.98; 6.35 x 6.35 mm cylinders; m.p. 660°; b.p. 2056°; d. 2.702	25g 100g
13-0048	**Aluminum wire annealed (99.999%)** *(7429-90-5)* Al; FW: 26.98; 0.5mm dia. (~0.53g/m); m.p. 660°; b.p. 2056°; d. 2.702	10m 50m

ALUMINUM (Compounds)

13-0750	**α-Alumina, 99.5+%** *(1344-28-1)* Al_2O_3; FW: 101.96; 28-48 mesh gran.; SA: 0.04 m^2/g; P.Vol. 0.015 cc/g	500g 2kg
13-1000	**α-Alumina trihydrate, 65% Al_2O_3, 34.8% H_2O, 0.15% Na_2O** *(1344-28-1)* $Al_2O_3 \cdot 3H_2O$ or $Al(OH)_3$; FW: 156.01; white pwdr.	500g 2kg
13-2525	**gamma-Alumina, min. 97%** *(1344-28-1)* Al_2O_3; FW: 101.96; white pwdr.; SA: ~185m^2/g; P.Vol. 0.43cc/g	500g 2kg
13-2610	**gamma-Alumina, low soda** *(1344-28-1)* Al_2O_3; FW: 101.96; 1/4" x 1/4" white pellets; SA: 145m^2/g	500g 2kg
13-2528	**gamma-Alumina, 1/16" spheres** *(1344-28-1)* Al_2O_3; FW: 101.96; white spheres	500g 2kg
93-1301	**Aluminum acetate, basic (boric acid adduct)** *(7360-44-3)* $Al(OH)_2(OOCCH_3) \cdot XH_3BO_3$; FW: 120.04; white pwdr. (contains ~2% Na) *moisture sensitive*	100g 500g
93-1302	**Aluminum acetylacetonate, 99%** *(13963-57-0)* $Al(CH_3COCHCOCH_3)_3$; FW: 324.31; white pwdr.; m.p. 192-193°; b.p. dec. 320° (subl. 150°/1mm)	100g 500g
93-1385 HAZ	**Aluminum bromide, 99%** *(7727-15-3)* $AlBr_3$; FW: 266.71; white to off-white lumps; m.p. 97.5°; b.p. 268°; d. 2.64 *moisture sensitive*	50g 250g
93-1308 HAZ	**Aluminum s-butoxide, 98%** *(2269-22-9)* $Al(OC_4H_9)_3$; FW: 246.33; colorless liq.; b.p. 200-206°/30 mm; f.p. 82°F; d. 0.9671 *moisture sensitive*	100g 450g
93-1386 HAZ	**Aluminum carbide, 98%** *(1299-86-1)* Al_4C_3; FW: 143.96; -325 mesh brown pwdr.; m.p. 2100°; d. 2.36 *moisture sensitive*	25g 100g
13-0050 HAZ	**Aluminum chloride, anhydrous (99.99+%-Al) PURATREM** *(7446-70-0)* $AlCl_3$; FW: 133.34; -20 mesh white to yellow pwdr.; m.p. 190°; b.p. 180° subl.; d. 2.44 *moisture sensitive*	50g 250g
93-1387 HAZ	**Aluminum chloride, anhydrous, reagent, 99%** *(7446-70-0)* $AlCl_3$; FW: 133.34; white to yellow pwdr.; m.p. 190°; b.p. 180° subl.; d. 2.44 *moisture sensitive*	250g 1kg

ALUMINUM (Compounds)

93-1309 HAZ	**Aluminum chloride hexahydrate, reagent, 99%** *(7784-13-6)* $AlCl_3 \cdot 6H_2O$; FW: 133.34 (241.43); white xtl.; m.p. 100° dec.; d. 2.398 *hygroscopic*	250g 1kg
13-1309 HAZ	**Aluminum chloride hexahydrate (99.999%-Al) PURATREM** *(7784-13-6)* $AlCl_3 \cdot 6H_2O$; FW: 133.34 (241.43); white xtl.; m.p. 100° dec.; d. 2.398 *hygroscopic*	25g 100g
13-1310 HAZ	**Aluminum chloride hexahydrate (99.9995%-Al) PURATREM** *(7784-13-6)* $AlCl_3 \cdot 6H_2O$; FW: 133.34 (241.43); white xtl.; m.p. 100° dec.; d. 2.398 *hygroscopic*	25g 100g
93-1370 HAZ	**Aluminum ethoxide, 99%** *(555-75-9)* $Al(OC_2H_5)_3$; FW: 162.17; white chunks; m.p. 130°; b.p. 210°/10 mm *moisture sensitive*	25g 100g
93-1326	**Aluminum 2-ethylhexanoate, basic, min. 96%** *(30745-55-2)* $AlOH[OOCCH(C_2H_5)C_4H_9]_2$; FW: 330.41; white pwdr.; f.p. >350°F	100g 500g
93-1312	**Aluminum fluoride, anhydrous, 98.5%** *(7784-18-1)* AlF_3; FW: 83.98; white pwdr.; m.p. 1291° subl. *moisture sensitive*	10g 50g
13-0075	**Aluminum fluoride, anhydrous, 99+%** *(7784-18-1)* AlF_3; FW: 83.98; white pwdr.; m.p. 1291° subl. *moisture sensitive*	10g 50g
13-0200	**Aluminum hexafluoroacetylacetonate, min. 98%** *(15306-18-0)* $Al(CF_3COCHCOCF_3)_3$; FW: 648.169; white to off-white xtl.; m.p. 70-73°; b.p. dec. 170° (subl. 50°/0.1mm) *moisture sensitive*	5g 25g
93-1317	**Aluminum hydroxide, dried gel, 99%** *(21645-51-2)* $Al(OH)_3$; FW: 78.00; white pwdr.; d. 2.42	500g 2kg
93-1389 HAZ	**Aluminum iodide, 95%** *(7784-23-8)* AlI_3; FW: 407.69; tan to red-brown pwdr.; m.p. 191°; b.p. 360°; d. 3.98 *moisture sensitive*	10g 50g
93-1319	**Aluminum lactate, min. 95%** *(18917-91-4)* $Al(C_3H_5O_3)_3$; FW: 294.20; white pwdr.	100g 500g
93-1325 HAZ	**Aluminum nitrate nonahydrate, 98+% (ACS)** *(7784-27-2)* $Al(NO_3)_3 \cdot 9H_2O$; FW: 212.99 (375.14); white xtl.; m.p. 73.5° *hygroscopic*	100g 500g 2kg
13-1377	**Aluminum nitride, agglomerated powder** *(24304-00-5)* AlN; FW: 40.99; avg. 2.5-4.0 micron gray pwdr. (99% < 50 microns) *moisture sensitive*	100g 500g
93-1377	**Aluminum nitride, agglomerated powder, high purity** *(24304-00-5)* AlN; FW: 40.99; avg. 2.5-4.0 micron gray pwdr. (99% <50 microns); d. 3.26 *moisture sensitive*	100g 500g
13-1378	**Aluminum nitride, deglomerated powder, high purity** *(24304-00-5)* AlN; FW: 40.99; 1.0-15.0 micron gray pwdr. *moisture sensitive*	100g 500g
13-1300	**Aluminum oxide (99.999%-Al) PURATREM** *(1344-28-1)* Al_2O_3; FW: 101.96; white pwdr.; b.p. 2980°; d. 3.97	10g 50g
93-1329	**Aluminum oxide, activated, acidic, gamma, 96%** *(1344-28-1)* Al_2O_3; FW: 101.96; -60 mesh white pwdr.; SA: 150m²/g; m.p. 2045°; b.p. 2980°; d. 3.97	500g 2kg
93-1334	**Aluminum oxide, activated, basic, gamma, 96%** *(1344-28-1)* Al_2O_3; FW: 101.96; -60 mesh white pwdr.; SA: 150m²/g; m.p. 2045°; b.p. 2980°; d. 3.97	500g 2kg
93-1338	**Aluminum oxide, activated, neutral, gamma, 96%** *(1344-28-1)* Al_2O_3; FW: 101.96; -60 mesh white pwdr.; SA: 150m²/g; m.p. 2045°; b.p. 2980°; d. 3.97	500g 2kg
13-1400	**Aluminum oxide nanopowder** *(1344-28-1)* *See* page 138	
93-1339	**Aluminum oxide, 1-5 micron powder, 99+%** *(1344-28-1)* Al_2O_3; FW: 101.96; white pwdr.; m.p. 2045°; b.p. 2980°; d. 3.97	250g 1kg

ALUMINUM (Compounds)

13-1315 NEW
Aluminum oxide powder, surface area 6 m²/g, 99% (Grade APS 1 micron) *(1344-28-1)*
Al_2O_3; FW: 101.96; white solid
250g 1kg

93-1340 HAZ
Aluminum perchlorate nonahydrate, reagent *(81029-06-3)*
$Al(ClO_4)_3 \cdot 9H_2O$; FW: 325.33 (487.47); white xtl.; d. 2.0
hygroscopic
50g 250g

93-1345 HAZ
Aluminum i-propoxide, 98+% *(555-31-7)*
$Al[OCH(CH_3)_2]_3$; FW: 204.25; white pwdr.; m.p. 118.5°; b.p. 140.5°/8 mm; d. 1.0346
moisture sensitive
250g 1kg

97-0139 HAZ
Aluminum i-propoxide (99.99+%-Al) PURATREM *(555-31-7)*
$Al[(OCH(CH_3)_2]_3$; FW: 204.25; white pwdr.; m.p. 118.5°; b.p. 140.5°/8 mm; d. 1.0346
moisture sensitive
25g 100g

13-1346
Aluminum selenide, min. 95% (99.5%-Al) *(1302-82-5)*
Al_2Se_3; FW: 290.84; red to black pieces, 6.5mm and down; d. 3.437
moisture sensitive
1g 5g 25g

93-1348
Aluminum silicate dihydrate, 98% *(1332-58-7)*
$Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$; FW: 222.13 (258.16); white pwdr.
500g 2kg

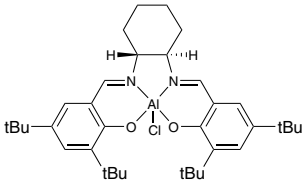
93-1349
Aluminum stearate *(637-12-7)*
$Al(C_{18}H_{35}O_2)_3$; FW: 877.42; white pwdr.; m.p. 103°; d. 1.010
1kg 5kg

93-1350
Aluminum sulfate octadecahydrate, 98+% (ACS) *(7784-31-8)*
$Al_2(SO_4)_3 \cdot 18H_2O$; FW: 342.15 (666.41); colorless xtl.; m.p. 86.5° dec.; d. 1.69
moisture sensitive
500g 2kg

93-1353 HAZ
Aluminum sulfide (99+%-Al) (1/4" and down pieces) *(1302-81-4)*
Al_2S_3; FW: 150.16; gray pieces; m.p. 1100°; d. 2.02
moisture sensitive
5g 25g

13-1500
Aluminum trifluoromethanesulfonate, 99% (Aluminum triflate) *(74974-61-1)*
$Al(CF_3SO_3)_3$; FW: 474.18; white pwdr.; m.p. dec.
hygroscopic
10g 50g

13-5800
(1R,2R)-(-)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]aluminum(III) chloride, 98% *(250611-13-3)*
$[C_{36}H_{52}N_2O_2]AlCl$; FW: 607.26; yellow pwdr.; m.p. 250-255°
For detailed technical note visit strem.com.
1g 5g



13-5801
(1S,2S)-(+)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)] aluminum(III) chloride, 98% *(307926-51-8)*
$[C_{36}H_{52}N_2O_2]AlCl$; FW: 607.26; yellow pwdr.; m.p. >350°
1g 5g

Technical Note:
1. See 13-5800 (page 3)

93-1397 HAZ
Di-i-butylaluminum chloride, 97% *(1779-25-5)*
$(C_4H_9)_2AlCl$; FW: 176.67; colorless liq.; d. 0.905
moisture sensitive, pyrophoric
100g 500g

93-1355 HAZ
Di-i-butylaluminum hydride (20% in hexanes) *(1191-15-7)*
$(C_4H_9)_2AlH$; FW: 142.22; colorless liq.; f.p. -9°F (hexane); d. 0.70
moisture sensitive, pyrophoric
Note: Free rubber septum included.
100g 500g

93-1356 HAZ
Diethylaluminum chloride, 97% *(96-10-6)*
$(C_2H_5)_2AlCl$; FW: 120.56; colorless liq.; m.p. -85°; f.p. -1°F; d. 0.961
moisture sensitive, pyrophoric
100g 225g

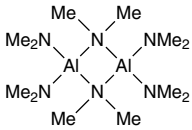
13-1600 HAZ
Dimethylaluminum i-propoxide, 98% (99.99+%-Al) PURATREM *(6063-89-4)*
$(CH_3)_2Al(OC_3H_7)$; FW: 116.14; colorless liq.; d. 0.824
air sensitive, moisture sensitive
1g 5g

Technical Note:
1. Useful starting material for the atomic layer deposition of Al_2O_3 films.

References:
1. *J. Vac. Sci. Tech. A.*, **2003**, *21*, 1366

ALUMINUM (Compounds)

13-4500
Hexakis(dimethylamino)dialuminum 98% (99.9%-Al) TDMAA *(32093-39-3)*
$C_{12}H_{36}Al_2N_6$; FW: 318.42; white to yellow pwdr.; m.p. 82-84°; d. 0.865
air sensitive, moisture sensitive



1g
5g
25g

93-1358
HAZ
Tri-i-butylaluminum, min. 95% *(100-99-2)*
$(C_4H_9)_3Al$; FW: 198.33; colorless liq.; m.p. 4°; b.p. 73°/5 mm; d. 0.781
moisture sensitive, pyrophoric

100g
225g

13-1850
HAZ
Triethylaluminum, min. 93% *(97-93-8)*
$(C_2H_5)_3Al$; FW: 114.17; colorless liq.; m.p. -52.5°; b.p. 186°; f.p. -1°F; d. 0.835
moisture sensitive, pyrophoric

25g
100g
500g

98-1855
HAZ
Triethylaluminum, elec. gr. (99.999+%-Al) PURATREM *(97-93-8)*
$(C_2H_5)_3Al$; FW: 114.17; colorless liq.; m.p. -52.5°; b.p. 186°; f.p. -1°F; d. 0.835
moisture sensitive, pyrophoric

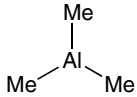
100g

13-1900
HAZ
Triethyl(tri-sec-butoxy)dialuminum (contains diethyl(tetra-sec-butoxy)dialuminum and tetraethyl(di-sec-butoxy)dialuminum)
$(C_2H_5)_3Al_2(OC_4H_9)_3$; colorless liq.; b.p. 183-186°/40mm
air sensitive, moisture sensitive

25g
100g

Technical Note:
1. Non-pyrophoric precursor for the chemical vapor deposition of aluminum oxide.

93-1360
HAZ
Trimethylaluminum, min. 98% *(75-24-1)*
$(CH_3)_3Al$; FW: 72.09; colorless liq.; m.p. 15.4°; b.p. 20°/8 mm; f.p. 1.4°F; d. 0.752 (20°)
moisture sensitive, pyrophoric
Note: Available prepacked in ALD cylinder- see 98-4003, 98-4004.



100g
225g

98-4003
HAZ
Trimethylaluminum, min. 98%, 93-1360, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(75-24-1)*
$(CH_3)_3Al$; FW: 72.09; colorless liq.; m.p. 15.4°; b.p. 20°/8 mm; f.p. 1.4°F; d. 0.752 (20°)
moisture sensitive, pyrophoric
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4004.

10g
25g

98-4004
HAZ
Trimethylaluminum, min. 98%, 93-1360, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD *(75-24-1)*
$(CH_3)_3Al$; FW: 72.09; colorless liq.; m.p. 15.4°; b.p. 20°/8 mm; f.p. -1°F; d. 0.752 (20°)
moisture sensitive, pyrophoric

25g

98-1955
HAZ
Trimethylaluminum, elec. gr. (99.999+%-Al) PURATREM *(75-24-1)*
$(CH_3)_3Al$; FW: 72.09; colorless liq.; m.p. 15.4°; b.p. 20°/8 mm; f.p. 1.4°F; d. 0.752 (20°)
moisture sensitive, pyrophoric
Note: Available prepacked in ALD cylinder- see 98-4007, 98-4008.

25g
100g
200g

98-4008
HAZ
Trimethylaluminum, elec. gr. (99.999+%-Al) PURATREM, 98-1955, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(75-24-1)*
$(CH_3)_3Al$; FW: 72.09; colorless liq.; m.p. 15.4°; b.p. 20°/8 mm; f.p. 1.4°F; d. 0.752 (20°)
moisture sensitive, pyrophoric

25g

98-4007
HAZ
Trimethylaluminum, elec. gr. (99.999+%-Al) PURATREM, 98-1955, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD *(75-24-1)*
$(CH_3)_3Al$; FW: 72.09; colorless liq.; m.p. 15.4°; b.p. 20°/8mm; f.p. 1.4°F; d. 0.752 (20°)
moisture sensitive, pyrophoric

25g

ALUMINUM (Compounds)

13-5000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)aluminum, 99% (99.9%-Al) [Al(TM-HD)$_3$]** *(14319-08-5)* $Al(C_{11}H_{19}O_2)_3$; FW: 576.80; white xtl.; m.p. 255-258°; b.p. dec. >400° (subl. 150°/0.01mm)	1g 5g 25g

AMMONIUM (Compounds)

93-0201	**Ammonium acetate, anhydrous, 97+% (ACS)** *(631-61-8)* NH_4OOCCH_3; FW: 77.08; white xtl.; m.p. 114°; d. 1.17 *moisture sensitive*	500g 2kg
02-0570 NEW	**Ammonium 2-aminoethane-1,1-disulfonic acid hydrate, min. 95%** *(1235825-84-9)* $C_2H_{10}N_2O_6S_2$; FW: 222.24; white pwdr.; m.p. 57-60° **For detailed technical note visit strem.com.**	1g 5g
93-5803 HAZ	**Ammonium cerium(IV) nitrate, 98.5+% (ACS)** *(16774-21-3)* $(NH_4)_2Ce(NO_3)_6$; FW: 548.23; orange xtl.	100g 500g
93-0208	**Ammonium chloride, 99.5+% (ACS)** *(12125-02-9)* NH_4Cl; FW: 53.49; white gran.; m.p. 340° subl.; b.p. 520°; d. 1.527	500g 2kg
93-0242	**Ammonium chloride (99.999%) PURATREM** *(12125-02-9)* NH_4Cl; FW: 53.49; white xtl.; m.p. 340° subl.; b.p. 520°; d. 1.527	25g 100g
93-2902	**Ammonium copper(II) chloride dihydrate** *(10060-13-6)* $CuCl_2{\cdot}2NH_4Cl{\cdot}2H_2O$; FW: 241.43 (277.46); blue xtl.; m.p. 110°; d. 1.993	100g 500g
93-0221	**Ammonium dihydrogen phosphate, 98+% (ACS)** *(7722-76-1)* $NH_4H_2PO_4$; FW: 115.03; white pwdr.; m.p. 190°; d. 1.803	250g 1kg
02-0500	**Ammonium dihydrogen phosphate (99.998%) PURATREM** *(7722-76-1)* $NH_4H_2PO_4$; FW: 115.03; white xtl.; m.p. 190°; d. 1.803	10g 50g
93-4201	**Ammonium dimolybdate, 99%** *(27546-07-2)* $(NH_4)_2Mo_2O_7$; FW: 339.95; white pwdr.	100g 500g
93-0212 HAZ	**Ammonium fluoride, 98+% (ACS)** *(12125-01-8)* NH_4F; FW: 37.04; white xtl.; m.p. subl.; d. 1.009 *moisture sensitive*	100g 500g
76-0080	**Ammonium hexabromoosmate(IV), 99%** *(24598-62-7)* $(NH_4)_2OsBr_6$; FW: 705.70; black pwdr.	1g 5g
77-0019	**Ammonium hexachloroiridate(III) hydrate (~39% Ir)** *(15752-05-3)* $(NH_4)_3IrCl_6{\cdot}XH_2O$; FW: 459.06; olive green pwdr.	1g 5g
77-0020	**Ammonium hexachloroiridate(IV), 99%** *(16940-92-4)* $(NH_4)_2IrCl_6$; FW: 441.00; black xtl.; m.p. dec.; d. 2.856 *hygroscopic*	1g 5g
93-4601	**Ammonium hexachloropalladate(IV), 99+%** *(19168-23-1)* $(NH_4)_2PdCl_6$; FW: 355.20; red xtl.; m.p. dec.; d. 2.418 *hygroscopic*	1g 5g
93-7801 HAZ	**Ammonium hexachloroplatinate(IV), 99%** *(16919-58-7)* $(NH_4)_2PtCl_6$; FW: 443.89; yellow pwdr.; m.p. dec.; d. 3.065 *hygroscopic*	1g 5g
45-0035	**Ammonium hexachlororhodate(III) hydrate** *(15336-18-2)* $(NH_4)_3RhCl_6{\cdot}XH_2O$; FW: 369.74; dark red xtl. *hygroscopic*	250mg 1g
02-0590	**Ammonium hexachlororhodate(III) monohydrate (99.995%-Rh) PURATREM** *(15336-18-2)* $(NH_4)_3RhCl_6{\cdot}H_2O$; FW: 369.74 (387.76); red xtl. *hygroscopic*	1g 5g
44-0020	**Ammonium hexachlororuthenate(IV), 99%** *(18746-63-9)* $(NH_4)_2RuCl_6$; FW: 349.87; red to brown xtl. *hygroscopic*	1g 5g
93-2655	**Ammonium hexacyanoferrate(II) hydrate** *(14481-29-9)* $(NH_4)_4Fe(CN)_6{\cdot}XH_2O$; FW: 284.11; yellow to green pwdr.	25g 100g
93-1395	**Ammonium hexafluoroaluminate, min. 98%** *(7784-19-2)* $(NH_4)_3AlF_6$; FW: 195.09; white pwdr.	10g 50g

AMMONIUM (Compounds)

93-3201	**Ammonium hexafluorogermanate, 99%** *(16962-47-3)* $(NH_4)_2GeF_6$; FW: 222.66; white pwdr.; d. 2.564	5g 25g
93-1502 HAZ	**Ammonium hexafluorophosphate, 99%** *(16941-11-0)* NH_4PF_6; FW: 163.00; white xtl.; m.p. dec.; d. 2.180 *hygroscopic*	25g 100g
93-1476 HAZ	**Ammonium hexafluorosilicate, min. 98%** *(16919-19-0)* $(NH_4)_2SiF_6$; FW: 178.14; white pwdr.; m.p. dec.	500g 2kg
93-2202	**Ammonium hexafluorotitanate(IV), min. 98%** *(16962-40-6)* $(NH_4)_2TiF_6$; FW: 197.97; white xtl.	25g 100g
93-0205 HAZ	**Ammonium hydrogen fluoride, min. 96% (contains 3-4% NH_4F)** *(1341-49-7)* $NH_4F{\cdot}HF$; FW: 57.04; white flake; m.p. 125.6°; d. 1.50 *hygroscopic*	500g 2kg
93-0220	**Ammonium hydrogen phosphate, 98+% (ACS)** *(7783-28-0)* $(NH_4)_2HPO_4$; FW: 132.06; white pwdr.	250g 1kg
93-0214	**Ammonium iodide (99.999%) PURATREM** *(12027-06-4)* NH_4I; FW: 144.94; white xtl.; m.p. 551° subl.; d. 2.514	5g 25g
93-2650	**Ammonium iron(II) sulfate hexahydrate, 98.5+% (ACS)** *(7783-85-9)* $Fe(NH_4)_2(SO_4)_2{\cdot}6H_2O$; FW: 284.05 (392.16); light green pwdr.; m.p. 100-110° dec.; d. 1.864	500g 2kg
93-7420	**Ammonium metatungstate hydrate (99.9+%-W)** *(12028-48-7)* $(NH_4)_6H_2W_{12}O_{40}{\cdot}XH_2O$; FW: 2956.45; white pwdr.	25g 100g
93-2301 HAZ	**Ammonium metavanadate, 99%** *(7803-55-6)* NH_4VO_3; FW: 116.98; off-white pwdr.; m.p. 200° dec.; d. 2.33	100g 500g
02-0700 HAZ	**Ammonium metavanadate (99.995%-V) PURATREM** *(7803-55-6)* NH_4VO_3; FW: 116.98; white pwdr.; m.p. 200° dec.; d. 2.33	5g
02-0745	**Ammonium molybdate tetrahydrate (99.98%-Mo)** *(12027-67-7)* $(NH_4)_6Mo_7O_{24}{\cdot}4H_2O$; FW: 1163.80 (1235.86); white pwdr.; d. 2.498	100g 500g 2kg
02-0750	**Ammonium molybdate tetrahydrate (99.999%-Mo) PURATREM** *(12027-67-7)* $(NH_4)_6Mo_7O_{24}{\cdot}4H_2O$; FW: 1163.80 (1235.86); white xtl.; d. 2.498	5g 25g
93-0245	**Ammonium molybdate tetrahydrate (ACS)** *(12027-67-7)* $(NH_4)_6Mo_7O_{24}{\cdot}4H_2O$; FW: 1163.80 (1235.86); white pwdr.; d. 2.498	100g 500g
93-0216 HAZ	**Ammonium nitrate, 99.5%** *(6484-52-2)* NH_4NO_3; FW: 80.04; white xtl.; m.p. 169.6°; d. 1.725	500g 2kg
93-0249 HAZ	**Ammonium perrhenate, 99+%** *(13598-65-7)* NH_4ReO_4; FW: 268.24; white pwdr.; m.p. dec.; d. 3.97	1g 5g 25g
02-0900 HAZ	**Ammonium perrhenate (99.999%-Re) PURATREM** *(13598-65-7)* NH_4ReO_4; FW: 268.24; white pwdr.; m.p. dec.; d. 3.97	1g 5g
93-0248	**Ammonium phosphomolybdate hydrate, reagent** *(54723-94-3)* $(NH_4)_3PO_4{\cdot}12MoO_3{\cdot}XH_2O$; FW: 1876.35; yellow pwdr.; m.p. dec.	50g 250g
93-0225	**Ammonium sulfate, 99+% (ACS)** *(7783-20-2)* $(NH_4)_2SO_4$; FW: 132.14; white xtl.; m.p. 235° dec.; d. 1.769	500g 2kg
93-0227 HAZ	**Ammonium sulfide, 20% aqueous solution** *(12135-76-1)* $(NH_4)_2S$; FW: 68.14; yellow to dark orange liq.; d. 0.997 *STENCH*	100g 500g
02-0950 HAZ	**Ammonium sulfide, 40-44% aqueous solution** *(12135-76-1)* $(NH_4)_2S$; FW: 68.14; yellow to dark orange liq. *STENCH*	100g 500g
93-0203	**Ammonium tetraborate tetrahydrate, 99%** *(12228-87-4)* $(NH_4)_2B_4O_7{\cdot}4H_2O$; FW: 263.38; colorless xtl.	500g
02-1000	**Ammonium tetrachloroaurate(III) hydrate (99.9985%-Au) PURATREM** *(13874-04-9)* $NH_4AuCl_4{\cdot}XH_2O$; FW: 356.82; yellow xtl.	1g 5g
93-4602	**Ammonium tetrachloropalladate(II), 99%** *(13820-40-1)* $(NH_4)_2PdCl_4$; FW: 284.29; reddish-brown pwdr.; m.p. dec.; d. 2.17	1g 5g
02-1275	**Ammonium tetrachloropalladate(II) (99.998%-Pd) PURATREM** *(13820-40-1)* $(NH_4)_2PdCl_4$; FW: 284.29; red to brown pwdr.; m.p. dec.; d. 2.17	1g 5g

AMMONIUM (Compounds)

93-7802	**Ammonium tetrachloroplatinate(II), 99%** *(13820-41-2)* $(NH_4)_2PtCl_4$; FW: 372.98; red pwdr.; m.p. 140-150° dec.; d. 2.936 *moisture sensitive*	1g 5g
93-0501 HAZ	**Ammonium tetrafluoroborate, 99%** *(13826-83-0)* NH_4BF_4; FW: 104.84; white pwdr.; m.p. subl.; d. 1.871	250g 1kg
42-1000	**Ammonium tetrathiomolybdate(VI), 99% (99.99%-Mo) PURATREM** *(15060-55-6)* $(NH_4)_2MoS_4$; FW: 260.27; red-green xtl. *air sensitive, (store cold)*	5g 25g
74-1000	**Ammonium tetrathiotungstate(VI), 99% (99.9+%-W)** *(13862-78-7)* $(NH_4)_2WS_4$; FW: 348.18; yellow to orange xtl.	5g 25g
93-0250	**Ammonium tungstate pentahydrate (99.996%-W) PURATREM** *(1311-93-9)* $(NH_4)_{10}W_{12}O_{41}\cdot 5H_2O$; FW: 3042.56 (3132.63); white xtl.	10g 50g
02-5043	**3-(Decyldimethylammonio)propanesulfonate (Sulfobetaine 10)** *(15163-36-7)* *See* page 167	
02-5055	**N-Dodecyl-N,N-dimethyl-3-ammonio-1-propanesulfonate (Sulfobetaine 12)** *(14933-08-5)* *See* page 167	
02-5045	**Hexadecyltrimethylammonium bromide, 99+% CTAB** *(57-09-0)* *See* page 168	
02-5056	**N-Octyldecyl-N,N-dimethyl-3-ammonio-1-propanesulfonate (Sulfobetaine 18)** *(13177-41-8)* *See* page 168	
02-5000 HAZ	**Tetrabutylammonium borohydride, 97%** *(33725-74-5)* $(C_4H_9)_4NBH_4$; FW: 257.29; white pwdr.; m.p. 124-128° *moisture sensitive*	10g 50g
02-5005	**Tetrabutylammonium bromide, 99%** *(1643-19-2)* $(C_4H_9)_4NBr$; FW: 322.37; white xtl.; m.p. 103-104°	25g 100g 500g
02-5012 HAZ	**Tetrabutylammonium fluoride, 1M in THF** *(429-41-4)* $(C_4H_9)_4NF$; FW: 261.46; colorless to pale-yellow liq.; f.p. 1°F (THF)	0.05mole 0.25mole
02-5015	**Tetrabutylammonium fluoride hydrate, 98% TBAF** *(22206-57-1)* $(C_4H_9)_4NF\cdot XH_2O$; FW: 261.47; white xtl. *hygroscopic*	5g 25g
09-6634 HAZ	**Tetrabutylammonium hexafluorophosphate, 98%** *(3109-63-5)* $(C_4H_9)_4NPF_6$; FW: 387.44; white xtl.; m.p. 244-246°	5g 25g
07-1967 HAZ	**Tetrabutylammonium hydroxide, 40% in water** *(2052-49-5)* $(C_4H_9)_4NOH$; FW: 259.47; colorless liq.; d. 1.000	25g 100g
07-1969 HAZ	**Tetrabutylammonium perchlorate, min. 98%** *(1923-70-2)* $(C_4H_9)_4NClO_4$; FW: 341.92; white xtl. *hygroscopic*	25g 100g
44-7760 HAZ	**Tetrabutylammonium perruthenate, min. 97% TBAP** *(96317-72-5)* $(C_4H_9)_4N^+RuO_4^-$; FW: 407.41; green xtl.; m.p. 157° (dec.) *(store cold)*	500mg 2g

Technical Note:

1. A mild oxidant for the selective transformation of primary alcohols to aldehydes and secondary alcohols to ketones.

09-6635	**Tetrabutylammonium tetrafluoroborate, 99%** *(429-42-5)* $(C_4H_9)_4NBF_4$; FW: 329.28; white pwdr.; m.p. 160-162°	5g 25g
75-1000	**Tetrabutylammonium tetrathiorhenate(VII), 99%** *(16829-47-3)* $(C_4H_9)_4NReS_4$; FW: 556.94; black xtl.	1g 5g
93-0573 HAZ	**Tetraethylammonium borohydride** *(17083-85-1)* $(C_2H_5)_4NBH_4$; FW: 145.10; white pwdr.; m.p. 225° dec.; d. 0.926 *moisture sensitive*	2g 10g
93-0536 HAZ	**Tetramethylammonium borohydride, 95%** *(16883-45-7)* $(CH_3)_4NBH_4$; FW: 88.99; white xtl.; m.p. 150° dec.; d. 0.813 *moisture sensitive*	10g 50g
26-3765	**Tetramethylammonium ferricyanide, 98%** *(14591-44-7)* *See* page 111	

AMMONIUM (Compounds)

02-5065	**Tetramethylammonium hydroxide pentahydrate, min. 95%** *(10424-65-4)* *See* page 169	
09-6938	**Tetramethylammonium tetrafluoroborate, 97%** *(661-36-9)* $(CH_3)_4NBF_4$; FW: 160.95; white xtl.; m.p. >330° *hygroscopic*	10g 50g
02-5040	**Tetraoctylammonium chloride, min. 97%** *(3125-07-3)* *See* page 169	
44-7850 HAZ	**Tetrapropylammonium perruthenate, min. 97% TPAP** *(114615-82-6)* $(C_3H_7)_4N^+RuO_4^-$; FW: 351.43; green xtl.; m.p. 165° (dec.) *(store cold)*	500mg 2g

Technical Note:

1. A mild oxidant for the selective transformation of primary alcohols to aldehydes and secondary alcohols to ketones.

ANTIMONY (Elemental Forms)

51-0050	**Antimony bar (99.999+%)** *(7440-36-0)* Sb; FW: 121.76; (~434g/bar) 2.54 x 2.54 x 10.2cm; m.p. 630°; b.p. 1380°; d. 6.684	1pc
93-5142 HAZ	**Antimony powder (99.5%)** *(7440-36-0)* Sb; FW: 121.76; -100 mesh; m.p. 630°; b.p. 1380°; d. 6.684	250g 1kg
93-5134 HAZ	**Antimony powder (99.5%)** *(7440-36-0)* Sb; FW: 121.76; -325 mesh; m.p. 630°; b.p. 1380°; d. 6.684	100g 500g 2kg
93-5133 HAZ	**Antimony powder (99.999%)** *(7440-36-0)* Sb; FW: 121.76; -100 mesh; m.p. 630°; b.p. 1380°; d. 6.684	5g 25g
51-0085	**Antimony rod (99.8%)** *(7440-36-0)* Sb; FW: 121.76; 12.5mm dia. x 100mm long(~81g/100mm); m.p. 630°; b.p. 1380°; d. 6.684	1rod 5rods
51-0090	**Antimony shot (99.999%)** *(7440-36-0)* Sb; FW: 121.76; 5mm and down; m.p. 630°; b.p. 1380°; d. 6.684	10g 50g 250g
93-5145	**Antimony shot (99.9999%)** *(7440-36-0)* Sb; FW: 121.76; 1 mm dia.; m.p. 630°; b.p. 1380°; d. 6.684	5g 25g

ANTIMONY (Compounds)

93-5111 HAZ	**Antimony(III) acetate, 97%** *(6923-52-0)* $Sb(OOCCH_3)_3$; FW: 298.88; off-white pwdr. *moisture sensitive*	50g 250g
93-5112 HAZ	**Antimony(III) bromide, 99%** *(7789-61-9)* $SbBr_3$; FW: 361.48; off-white pwdr.; m.p. 96.6°; b.p. 280°; d. 4.148 *moisture sensitive*	50g 250g
93-5113	**Antimony(III) n-butoxide, 99%** *(2155-74-0)* $Sb(OC_4H_9)_3$; FW: 341.10; colorless liq.; b.p. 133-135°/4 mm; d. 1.23 *moisture sensitive*	5g 25g
93-5131 HAZ	**Antimony(III) chloride (99%-Sb)** *(10025-91-9)* $SbCl_3$; FW: 228.11; off-white xtl.; m.p. 73.4°; b.p. 283°; d. 3.140 *moisture sensitive*	250g 1kg
97-0373 amp HAZ	**Antimony(III) chloride, elec. gr. (99.999%-Sb) PURATREM** *(10025-91-9)* $SbCl_3$; FW: 228.11; off-white xtl.; m.p. 73.4°; b.p. 283°; d. 3.140 *moisture sensitive*	5g 25g
93-5102 HAZ	**Antimony(V) chloride, 99%** *(7647-18-9)* $SbCl_5$; FW: 299.02; colorless to yellow liq.; m.p. 2.8°; b.p. 79°/22 mm; d. 2.336 *moisture sensitive*	100g 500g
51-2200 amp HAZ	**Antimony(V) chloride, (99.999%-Sb) PURATREM** *(7647-18-9)* $SbCl_5$; FW: 299.02; yellow liq.; m.p. 2.8°; b.p. 79°/22mm; d. 2.336 *moisture sensitive*	5g 25g
93-5115 HAZ	**Antimony(III) ethoxide, 99%** *(10433-06-4)* $Sb(OC_2H_5)_3$; FW: 256.90; colorless liq.; b.p. 95°/11 mm; f.p. 140°F; d. 1.524 *moisture sensitive*	5g 25g

ANTIMONY (Compounds)

93-5132 HAZ	**Antimony(III) fluoride, 98%** *(7783-56-4)* SbF_3; FW: 178.75; off-white pwdr.; m.p. 292°; b.p. 319° subl.; d. 4.379 *moisture sensitive*	50g 250g
93-5116 HAZ	**Antimony(III) iodide (99.9%-Sb)** *(7790-44-5)* SbI_3; FW: 502.46; red pwdr.; m.p. 170°; b.p. 401°; d. 4.917 *moisture sensitive*	5g 25g 100g
93-5119 HAZ	**Antimony(III) oxide, 99+%** *(1309-64-4)* Sb_2O_3; FW: 291.50; white pwdr.; m.p. 656°; b.p. 1550° subl.; d. 5.67	250g 1kg
97-0380 HAZ	**Antimony(III) oxide, elec. gr. (99.999%-Sb) PURATREM** *(1309-64-4)* Sb_2O_3; FW: 291.50; white pwdr.; m.p. 656°; b.p. 1550° subl.; d. 5.67	25g 100g
51-5110 HAZ	**Antimony(IV) oxide (99.99%-Sb) PURATREM** *(1332-81-6)* Sb_2O_4; FW: 307.50; white to off-white pwdr.; d. 5.82	5g 25g
93-5106 HAZ	**Antimony(V) oxide (99.9%-Sb)** *(1314-60-9)* Sb_2O_5; FW: 323.5; -325 mesh white to light yellow pwdr. (avg. 10 microns); d. 3.80	10g 50g
97-0382 HAZ	**Antimony(V) oxide, elec. gr. (99.998%-Sb) PURATREM** *(1314-60-9)* Sb_2O_5; FW: 323.50; white to light yellow pwdr.; d. 3.80	5g 25g 100g
93-5120 HAZ	**Antimony(III) sulfide (99.999%-Sb) PURATREM** *(1345-04-6)* Sb_2S_3; FW: 339.68; black pwdr.; m.p. 550°; b.p. ~1150°; d. 4.12	10g 50g
51-2400 HAZ	**Antimony(V) sulfide, min. 98%** *(1315-04-4)* Sb_2S_5; FW: 403.82; yellow-orange solid	50g 250g
51-1430	**Antimony(III) telluride (99.96%-Sb)** *(1327-50-0)* Sb_2Te_3; FW: 626.32; black pwdr.	1g 5g
93-5130 HAZ	**Hydrogen hexafluoroantimonate(V), 65-70% aqueous solution** *(16950-06-4)* $HSbF_6$; FW: 236.75; yellow to colorless liq.	25g 100g
03-1200	**Lithium hexafluoroantimonate, min. 97%** *(18424-17-4)* *See* page 117	
93-0738	**Nitronium hexafluoroantimonate, min. 97%** *(17856-92-7)* *See* page 204	
51-3000 HAZ	**Triphenylantimony, 97%** *(603-36-1)* $(C_6H_5)_3Sb$; FW: 353.07; off-white xtl.; m.p. 54°; b.p. > 360°; d. 1.4343	10g 50g
93-5125	**Triphenylantimony dibromide, 98+%** *(1538-59-6)* $(C_6H_5)_3SbBr_2$; FW: 512.89; white xtl. *moisture sensitive*	1g 5g
93-5124 HAZ	**Triphenylantimony dichloride, 99%** *(594-31-0)* $(C_6H_5)_3SbCl_2$; FW: 423.98; white xtl.; m.p. 143-145° *moisture sensitive*	2g 10g
51-5000 HAZ	**Tris(dimethylamino)antimony (99.99%-Sb) PURATREM** *(7289-92-1)* $((CH_3)_2N)_3Sb$; FW: 253.99; colorless liq.; b.p. 32-34°/0.45mm; d. 1.325 *air sensitive, moisture sensitive*	1g 5g 25g

ARSENIC (Elemental Forms)

93-3332 HAZ	**Arsenic powder (99%)** *(7440-38-2)* As; FW: 74.92; -20 mesh gray pwdr.	25g 100g
93-3330 HAZ	**Arsenic sponge (99.99%)** *(7440-38-2)* As; FW: 74.92; irregular pieces, 30mm and down; m.p. 814°; b.p. 615°; d. 5.724	25g 100g

ARSENIC (Compounds)

93-3308 HAZ	**Arsenic(III) bromide (99.9%-As)** *(7784-33-0)* $AsBr_3$; FW: 314.65; colorless to yellow lumps; m.p. 32.8°; b.p. 221°; d. 3.54 *moisture sensitive*	50g
93-3310 HAZ	**Arsenic(III) chloride, 99%** *(7784-34-1)* $AsCl_3$; FW: 181.27; colorless liq.; m.p. -8.5°; b.p. 130.2°; d. 2.163 *moisture sensitive*	25g 100g

ARSENIC (Compounds)

93-3309 amp HAZ	**Arsenic(III) chloride (99.999%-As) PURATREM** *(7784-34-1)* $AsCl_3$; FW: 181.27; colorless liq.; m.p. -8.5°; b.p. 130.2°; d. 2.163 *moisture sensitive*	5g 25g 100g
93-3312 HAZ	**Arsenic(III) iodide, 98%** *(7784-45-4)* AsI_3; FW: 455.62; red pwdr.; m.p. 146°; b.p. 403°; d. 4.39 *moisture sensitive*	25g 100g
93-3313 HAZ	**Arsenic(III) oxide, tech. gr.** *(1327-53-3)* As_2O_3; FW: 197.84; white pwdr.; m.p. 315°; b.p. 465° subl.; d. 3.738	50g 250g
33-3313 HAZ	**Arsenic(III) oxide, primary standard, 99.95+% (ACS)** *(1327-53-3)* As_2O_3; FW: 197.84; white pwdr.; m.p. 315°; b.p. 465° subl.; d. 3.738	100g
97-0425 HAZ	**Arsenic(III) oxide, elec. gr. (99.999%-As) PURATREM** *(1327-53-3)* As_2O_3; FW: 197.84; white pwdr.; m.p. 315°; b.p. 465° subl.; d. 3.738	5g 25g 100g
93-3304 HAZ	**Arsenic(V) oxide (99.9+%-As)** *(1303-28-2)* As_2O_5; FW: 229.79; white pwdr.; m.p. 315° dec.; d. 4.32 *moisture sensitive*	10g 50g
93-3305	**Arsenic(III) selenide (99.999%-As) PURATREM** *(1303-36-2)* As_2Se_3; FW: 386.72; black xtl.; m.p. ~360°; d. 4.75	5g 25g
93-3316 HAZ	**Arsenic(III) sulfide (99.9%-As)** *(1303-33-9)* As_2S_3; FW: 246.03; orange pwdr. to coarse solid; m.p. 300°; b.p. 707°; d. 3.43 *moisture sensitive*	10g 50g
33-1199 HAZ	**Arsenic(III) sulfide, fused lumps (99.999%-As) PURATREM** *(1303-33-9)* As_2S_3; FW: 246.03; fused lumps; m.p. 300°; b.p. 707°; d. 3.43 *moisture sensitive*	10g 50g
93-3318 HAZ	**Dimethylarsinic acid (Cacodylic acid), 98%** *(75-60-5)* $(CH_3)_2AsOOH$; FW: 138.00; white pwdr.; m.p. 200°	10g 50g
93-3322 HAZ	**Phenylarsonic acid, 98%** *(98-05-5)* $C_6H_5AsO(OH)_2$; FW: 202.03; white pwdr.; m.p. 163° dec.; d. 1.760	5g 25g
33-3050 HAZ	**Tetraphenylarsonium chloride monohydrate, 99%** *(507-28-8)* $(C_6H_5)_4AsCl{\cdot}H_2O$; FW: 418.80 (436.81); white pwdr.; m.p. 257°	1g 5g 25g
33-3400 amp HAZ	**Triethylarsine, 99%** *(617-75-4)* $(C_2H_5)_3As$; FW: 162.09; colorless to pale yellow liq.; m.p. -91°; b.p. 140°; d. 1.152 *air sensitive*	5g 25g
33-3750 amp HAZ	**Trimethylarsine, 99%** *(593-88-4)* $(CH_3)_3As$; FW: 120.03; colorless liq.; m.p. -87.3°; b.p. 51°; f.p. 100°F; d. 1.124 *air sensitive*	5g 25g
98-1975 amp HAZ	**Trimethylarsine, elec. gr. (99.995%-As) PURATREM** *(593-88-4)* $(CH_3)_3As$; FW: 120.03; colorless liq.; m.p. -87.3°; b.p. 51°; f.p. 100°F; d. 1.124 *air sensitive*	25g
33-4000 HAZ	**Triphenylarsine, min. 97%** *(603-32-7)* $(C_6H_5)_3As$; FW: 306.24; white pwdr.; m.p. 59-60°; b.p. 233°/14 mm; d. 1.2225 **For detailed technical note visit strem.com.**	5g 25g
33-5000 HAZ	**Tris(dimethylamino)arsine, 99%** *(6596-96-9)* $((CH_3)_2N)_3As$; FW: 207.15; colorless liq.; b.p. 55°/10mm *air sensitive, moisture sensitive*	5g 25g

BARIUM (Elemental Forms)

56-0075 HAZ	**Barium pieces (99.7%, Sr-<1.0%)** *(7440-39-3)* Ba; FW: 137.34; 19mm and down (packed in mineral oil); m.p. 725°; b.p. 1640°; d. 3.51 *air sensitive, moisture sensitive*	10g 50g 250g
56-0074 amp HAZ	**Barium pieces, dendritic (99.9%)** *(7440-39-3)* Ba; FW: 137.34; ampouled under argon; m.p. 725°; b.p. 1640°; d. 3.51 *air sensitive, moisture sensitive*	5g 25g

BARIUM (Elemental Forms)

56-0080 HAZ	**Barium rod (99+%, Sr-<1.6%)** *(7440-39-3)* Ba; FW: 137.34; 22mm dia. (~100g/6.9cm) (packed under oil); m.p. 725°; b.p. 1640°; d. 3.51 *air sensitive, moisture sensitive*	100g 500g

BARIUM (Compounds)

93-5601 HAZ	**Barium acetate, 99% (ACS)** *(543-80-6)* $Ba(OOCCH_3)_2$; FW: 255.43; white pwdr.; d. 2.468	100g 500g
93-5657 HAZ	**Barium acetylacetonate hydrate** *(12084-29-6)* $Ba(CH_3COCHCOCH_3)_2{\cdot}XH_2O$; FW: 335.53; white to off-white pwdr.; m.p. > 320°	10g 50g 250g
56-5656	**Barium bis(N,N,N',N',N''-pentamethyldiethylenetriamine)bis[BREW] (99.99+%-Ba) PURATREM** $Ba(C_9H_{23}N_3)_2[C{\cdot}HyC(O)CHC(O)C{\cdot}Hy]_2$ (x=3-4, y=2x +1); pale yellow liq. *moisture sensitive* Note: 13-16 wt% Ba; ***Limited quantities available. Will discontinue when stock gone***	1g 5g 25g

Technical Note:

1. H-BREW is a mixture of propyl and butyl substituted beta-diketonates capable of forming a wide variety of metal complexes suitable for MOCVD. In most cases, the metal complexes are liquids, are completely miscible with polar and non-polar organic solvents and are miscible with other metal complexes in essentially all proportions.

93-5606 HAZ	**Barium bromide, anhydrous, min. 95%** *(10553-31-8)* $BaBr_2$; FW: 297.16; white pwdr.; m.p. 850°; d. 4.781	25g 100g
56-1020 HAZ	**Barium carbonate (99.9%-Ba, Sr < .03%)** *(513-77-9)* $BaCO_3$; FW: 197.35; -325 mesh pwdr.; d. 4.43	100g 500g
56-1025 HAZ	**Barium carbonate (99.999%-Ba) PURATREM** *(513-77-9)* $BaCO_3$; FW: 197.35; white pwdr.; d. 4.43	10g 50g
93-5652 HAZ	**Barium chloride, anhydrous, 98+%** *(10361-37-2)* $BaCl_2$; FW: 208.24; white pwdr.; m.p. 963°; b.p. 1560°; d. 3.856	100g 500g
93-5610 HAZ	**Barium chloride dihydrate, 99% (ACS)** *(10326-27-9)* $BaCl_2{\cdot}2H_2O$; FW: 208.24 (244.27); white xtl.; d. 3.097	250g 1kg
56-1030 HAZ	**Barium chloride dihydrate (99.999%-Ba) PURATREM** *(10326-27-9)* $BaCl_2{\cdot}2H_2O$; FW: 208.24 (244.28); white xtl.; d. 3.097	10g 50g
93-5626 HAZ	**Barium 2-ethylhexanoate, ~30% in xylene (7-10% Ba)** *(2457-01-4)* $Ba[OOCCH(C_2H_5)C_4H_9]_2$; FW: 423.76; viscous liq.; f.p. 85°F (xylenes)	25g 100g
56-4000 HAZ	**Barium 2-ethylhexoxide (~1M in hexanes/toluene)** *(29170-99-8)* $Ba[OCH_2(C_2H_5)CH(CH_2)_3CH_3]_2$; FW: 395.77; orange liq.; f.p. -9°F *moisture sensitive*	5g 25g 100g
93-5614 HAZ	**Barium fluoride, 99%** *(7787-32-8)* BaF_2; FW: 175.34; white pwdr.; m.p. 1280°; b.p. 2137°; d. 4.89	250g 1kg
93-5613 HAZ	**Barium fluoride (99.99+%-Ba) PURATREM** *(7787-32-8)* BaF_2; FW: 175.34; white pwdr.; m.p. 1280°; b.p. 2137°; d. 4.89	10g 50g
56-5000 HAZ	**Barium hexafluoroacetylacetonate** *(118131-57-0)* $Ba(CF_3COCHCOCF_3)_2$; FW: 551.44; white pwdr.; m.p. 220° dec.	1g 5g 25g
93-5654 HAZ	**Barium hydride (99.5%-Ba)** *(13477-09-3)* BaH_2; FW: 139.35; -60 mesh gray xtl.; m.p. 675° dec.; d. 4.21 *moisture sensitive*	2g 10g
93-5616 HAZ	**Barium hydroxide, anhydrous, min. 95%** *(17194-00-2)* $Ba(OH)_2$; FW: 171.34; white pwdr. *hygroscopic*	100g 500g
93-5617 HAZ	**Barium hydroxide octahydrate, 98+% (ACS)** *(12230-71-6)* $Ba(OH)_2{\cdot}8H_2O$; FW: 171.34 (315.46); white xtl.; m.p. 78°; d. 2.18	250g 1kg
93-5619 HAZ	**Barium iodide, anhydrous, min. 97%** *(13718-50-8)* BaI_2; FW: 391.15; off-white pwdr. *hygroscopic*	25g 100g
56-7075 HAZ	**Barium manganate, 90%** *(7787-35-1)* $BaMnO_4$; FW: 256.28; greenish-gray xtl.; d. 4.850 *moisture sensitive*	10g 50g

BARIUM (Compounds)

56-7000 HAZ	**Barium neodecanoate, superconductor grade (25-29% Ba)** *(55172-98-0)* $Ba(OOC_{10}H_{19})_2$; FW: 479.83; off-white solid	10g 50g
93-5625 HAZ	**Barium nitrate, 99.5%** *(10022-31-8)* $Ba(NO_3)_2$; FW: 261.35; white xtl.; m.p. 592°; d. 3.230 *hygroscopic*	100g 500g
93-5624 HAZ	**Barium nitrate (99.95%-Ba)** *(10022-31-8)* $Ba(NO_3)_2$; FW: 261.35; white xtl.; m.p. 592°; d. 3.230 *hygroscopic*	10g 50g
56-7500 HAZ	**Barium nitrate (99.999%-Ba) PURATREM** *(10022-31-8)* $Ba(NO_3)_2$; FW: 261.35; white xtl.; m.p. 592°; d. 3.230 *hygroscopic*	10g 50g
56-7510	**Barium nitride (99.7%-Ba)** *(12047-79-9)* Ba_3N_2; FW: 439.99; -20 mesh black pwdr.	1g 5g
93-5651 HAZ	**Barium oxide (99.5%-Ba)** *(1304-28-5)* BaO; FW: 153.33; -100 mesh off-white to light-gray pwdr.; m.p. 1923°; d. 5.72 *moisture sensitive*	25g 100g
93-5650 HAZ	**Barium perchlorate trihydrate (99.9%-Ba)** *(10294-39-0)* $Ba(ClO_4)_2 \cdot 3H_2O$; FW: 336.24 (390.29); white xtl.; m.p. 400° dec.; d. 2.74 *hygroscopic*	100g 500g
93-5630 HAZ	**Barium peroxide, min. 84% (99%-Ba)** *(1304-29-6)* BaO_2; FW: 169.34; white to off-white pwdr.; m.p. 450°; d. 4.96 *moisture sensitive*	250g 1kg
56-8000 HAZ	**Barium i-propoxide, dry powder** *(24363-37-9)* $Ba(OC_3H_7)_2$; FW: 255.52; off-white pwdr. *moisture sensitive*	5g 25g
56-8001 HAZ	**Barium i-propoxide (~20% in isopropanol)** *(24363-37-9)* $Ba(OC_3H_7)_2$; FW: 255.52; yellow to brown liq.; f.p. 72°F (isopropanol) *moisture sensitive*	5g 25g
93-5644 HAZ	**Barium stearate, tech. gr.** *(6865-35-6)* $Ba(O_2C_{18}H_{35})_2$; FW: 704.30; white pwdr.	250g 1kg
93-5636 HAZ	**Barium sulfide, 75%** *(21109-95-5)* BaS; FW: 169.40; black pwdr.; m.p. 1200°; d. 4.25 *air sensitive, moisture sensitive*	500g 2kg
78-0083 HAZ	**Barium tetracyanoplatinate(II) tetrahydrate, 99%** *(13755-32-3)* $BaPt(CN)_4 \cdot 4H_2O$; FW: 436.50 (508.57); yellow pwdr.; d. 2.076	1g 5g
93-5640	**Barium titanate, 99%** *(12047-27-7)* $BaTiO_3$; FW: 233.21; white pwdr.; m.p. 1620°; d. 5.85	250g 1kg
93-5639	**Barium titanate, sintered lump (99.9%-Ba)** *(12047-27-7)* $BaTiO_3$; FW: 233.21; 3-12mm white pieces; m.p. 1620°; d. 5.85	25g 100g
56-8100 HAZ	**Barium trifluoromethanesulfonate, 99% (Barium triflate)** *(2794-60-7)* $Ba(CF_3SO_3)_2$; FW: 435.47; white pwdr.; m.p. dec. *hygroscopic*	5g 25g
56-8120 HAZ	**Barium trifluoromethanesulfonimide, min. 97%** *(168106-22-7)* $Ba(C_2F_6NO_4S_2)_2$; FW: 697.62; white to off-white pwdr. *hygroscopic*	250mg 1g 5g
56-8400 HAZ	**Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)barium [Ba(-FOD)$_2$]** *(36885-31-1)* $Ba(C_{10}H_{10}F_7O_2)_2$; FW: 727.71; white to off-white pwdr.; m.p. 194-198°; b.p. dec. 280-300° (subl. 210°/0.2mm)	1g 5g 25g
56-8450 NEW amp HAZ	**Bis(pentamethylcyclopentadienyl)barium, 98%** *(112379-49-4)* $C_{20}H_{30}Ba$; FW: 407.78; white solid *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	500mg 2g
56-8460 HAZ	**Bis(n-propyltetramethylcyclopentadienyl)barium, min. 98%** *(210758-43-3)* $Ba[(C_3H_7)(CH_3)_4C_5]_2$; FW: 463.90; viscous yellow liq. *air sensitive, moisture sensitive*	250mg 1g 5g

BARIUM (Compounds)

56-8500 HAZ	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)barium hydrate [Ba(TMHD)$_2$]** *(17594-47-7)* $Ba(C_{11}H_{19}O_2)_2 \cdot XH_2O$; FW: 503.85; white pwdr.; m.p. 195-200°; b.p. dec. 285° (subl. 225°/0.05mm) *moisture sensitive*	1g 5g 25g
56-8600 HAZ	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)barium tetraglyme adduct (99.99%-Ba, Sr-0.5%) PURATREM** *(136629-60-2)* $Ba(C_{11}H_{19}O_2)_2 \cdot CH_3(OCH_2CH_2)_4OCH_3$; FW: 503.85 (726.13); white xtl.; m.p. 103°	1g 5g
56-8610 HAZ	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)barium triglyme adduct(99.99%-Ba, Sr-0.5%) PURATREM** *(149160-45-2)* $Ba(C_{11}H_{19}O_2)_2 \cdot CH_3(OCH_2CH_2)_3OCH_3$; FW: 503.85 (682.09); off-white pwdr.; m.p. 88°	1g 5g

BERYLLIUM (Elemental Forms)

04-0080 HAZ	**Beryllium foil (99.5%)** *(7440-41-7)* Be; FW: 9.012; 0.1mm thick (~0.12g/25 x25mm); m.p. 1278°; b.p. 2970° (5mm); d. 1.85	25 x 25mm 50 x 50mm
93-0420 HAZ	**Beryllium powder (99+%)** *(7440-41-7)* Be; FW: 9.01; -325 mesh; m.p. 1278°; b.p. 2970° (5mm); d. 1.85 Note: For sale in USA. For other countries contact Strem.	5g 25g

BERYLLIUM (Compounds)

04-4025 HAZ	**Beryllium oxide (99.95+%-Be)** *(1304-56-9)* BeO; FW: 25.01; white pwdr.; m.p. 2575°; b.p. 4300°; d. 3.010	5g 25g

BIOCATALYSTS (Compounds)

06-3110 NEW	**Alcalase® 2.4 L FG** *(9014-01-1)* brown liq.; d. 1.17 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 2.4 AU-A/g. Serine endoprotease that hydrolyzes internal peptide bonds. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3112 NEW	**Alcalase® 2.5 L** *(9014-01-1)* amber liq. (semitransparent); d. 1.08 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 2.5 AU-A/g. Serine endoprotease that hydrolyzes internal peptide bonds. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
07-3155 NEW	**CalB immo 1090™ - Immobilized enzyme** white to slightly yellow spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 300-710 micron; CalB immo 1090 is an adsorbed preparation and is suitable for applications in solvent-free systems like oils, as well as organic solvents and it and can be used for (regio- and stereoselective) esterifications and transesterifications. CalB Immo 1090 has many advantages including high activity and the possibility to use in oils, organic solvent and bi-phasic systems. Sold in collaboration with Purolite for research purposes only.	10g 50g 250g

BIOCATALYSTS (Compounds)

07-3152 NEW	**CalB immo 5587™ - Immobilized enzyme** white to slightly yellow spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 300-710 micron; CalB immo 5587 is an adsorbed preparation and is particularly suitable for applications where cost is an essential parameter, like biodiesel or industrial oil manufacture. CalB Immo 5587 has many advantages including cost-effectiveness in processes like biodiesel manufacture. It is also a highly robust carrier, particularly suitable for column configurations. Sold in collaboration with Purolite for research purposes only.	10g 50g 250g
07-3159 NEW	**CalB immo 5872™ - Immobilized enzyme** white to slightly yellow spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 300-1500 micron;CalB immo 5872 is an adsorbed preparation and is suitable for applications in solvent-free systems like oils, as well as organic solvents and it and can be used for (regio- and stereoselective) esterifications and transesterifications. CalB Immo 5872 has many advantages including cost-effectiveness and the possibility to use in oils, organic solvent and bi-phasic systems. Sold in collaboration with Purolite for research purposes only.	10g 50g 250g
07-3142 NEW	**CalB immo 8285™ - Immobilized enzyme** white to slightly yellow spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 100-710 micron; CalB immo 8285 is covalently immobilized and is suitable for applications in water, organic solvents as well as solvent-free systems and can be used for (regio- and stereoselective) hydrolysis, esterifications and transesterifications. The lipase is immobilized by covalent immobilization onto Purolites highly hydrophobic carrier Purolite ECR8285 (an epoxy/butyl methacrylate co-polymer). Sold in collaboration with Purolite for research purposes only.	10g 50g 250g
07-3148 NEW	**CalB immo 8806™ - Immobilized enzyme** white to slightly yellow spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 300-710 micron; CalB immo 8806 is an adsorbed preparation and is suitable for applications in solvent-free systems like oils, as well as organic solvents and it and can be used for (regio- and stereoselective) esterifications and transesterifications. CalB Immo 8806 has many advantages including high activity and the possibility to use in oils, organic solvent and bi-phasic systems. Sold in collaboration with Purolite for research purposes only.	10g 50g 250g
96-4050	**CalB immo KIT™ - Immobilized enzyme** *See* page 462	
07-3130 NEW	**CalB immo Plus™ - Immobilized enzyme** white to off white spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 300-710 micron; CalB immo Plus is suitable for applications in organic solvents as well as solvent-free systems and can be used for (regio- and stereoselective) esterifications and transesterifications. CalB Immo Plus has many advantages including high activity and high mechanical stability. Sold in collaboration with Purolite for research purposes only.	10g 50g 250g
07-3133 NEW	**CalB immo Plus Food Grade™ - Immobilized enzyme** white to slightly yellow spherical beads, dry *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year; Particle Size: 300-710 micron; CalBimmo Plus Food Grade is supplied in food-grade quality and conforms to the General Specifications and Considerations for Enzyme Preparations Used in Food Processing of the Joint FAO/WHO Expert Committee on Food Additives (JECFA). CalB immo Plus is suitable for applications in organic solvents as well as a solvent-free systems and can be used for (regio- and stereoselective) esterifications and transesterifications. CalB Immo Plus has many advantages including high activity and high mechanical stability. Sold in collaboration with Purolite for research purposes only.	10g 50g 250g

BIOCATALYSTS (Compounds)

06-0925 NEW	**Enzyme carrier Lifetech™ ECR1030M** White to off white spherical beads (wet); SA: 80 - 120 m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 220-340; Lifetech ECR1030M is a copolymer of divinylbenzene (DVB) and methacrylate with no functional groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase immobilization such as CALB. Lifetech ECR1030M main features are high mechanical stability compared to other existing resins, low surface area that grants high enzyme activity at low protein loading. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-2215 NEW	**Enzyme carrier Lifetech™ ECR1504** White to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Lifetech ECR1504 is a copolymer of divinylbenzene (DVB) and styerene functionalised with tertiary amines. It is used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the tertiary amines on the polymer. It is particularly suitable for immobilization of enzymes with iP in the range 3 - 5 like many glycosidaseses. Lifetech ECR1504 main features are possibility to regenerate the resin, pH adjustment before immobilization and large particle size for column applications. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-2220 NEW	**Enzyme carrier Lifetech™ ECR1508** White to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Lifetech ECR1508 is copolymer of divinylbenzene (DVB) and styerene functionalised with tertiary amines. It is used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the tertiary amines on the polymer. It is particularly suitable for immobilization of enzymes with iP in the range 3 - 5 like many glycosidaseses. Lifetech ECR1508 main features are possibility to regenerate the resin, pH adjustment before immobilization and large particle size for column applications. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-2224 NEW	**Enzyme carrier Lifetech™ ECR1604** White to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Lifetech ECR1604 is a copolymer of divinylbenzene (DVB) and styerene functionalised with quaternary amines. It is used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the tertiary amines on the polymer. It is particularly suitable for immobilization of enzymes with iP in the range 3 - 5 like many glycosidaseses. Lifetech ECR1604 main features are possibility to regenerate the resin, pH adjustment before immobilization and large particle size for column applications. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-2230 NEW	**Enzyme carrier Lifetech™ ECR1640** White to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Lifetech ECR1640 is a copolymer of divinylbenzene (DVB) and styerene functionalised with quaternary amines. It is used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the tertiary amines on the polymer. It is particularly suitable for immobilization of enzymes with iP in the range 3 - 5 like many glycosidaseses. Lifetech ECR1640 main features are possibility to regenerate the resin, pH adjustment before immobilization and large particle size for column applications. Sold in collaboration with Purolite for research purposes only.	50g 5x50g

BIOCATALYSTS (Compounds)

06-0928 NEW	**Enzyme carrier Lifetech™ ECR1061M** White to off white spherical beads (wet); SA: 400 - 510 m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 600-750; Lifetech ECR1030M is a copolymer of divinylbenzene (DVB) and methacrylate with no functional groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase immobilization such as CALB. Lifetech ECR1030M main features are high mechanical stability compared to other existing resins, low surface area that grants high enzyme activity at low protein loading. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-0905 NEW	**Enzyme carrier Lifetech™ ECR1090F** White to off white spherical beads (wet); SA: 750 - 850 m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 150-300 micron; Pore Diameter: 900-1100; Lifetech ECR1090F is a copolymer of divinylbenzene (DVB) and styrene with high porosity and no functional groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase immobilization. Lifetech ECR1090F main features are high porosity, high mechanical stability and high surface area. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-0913 NEW	**Enzyme carrier Lifetech™ ECR1090M** White to off white spherical beads (wet); SA: 750 - 850 m^2/g Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 900-1100; Lifetech ECR1090M is a copolymer of divinylbenzene (DVB) and styrene with high porosity and no functional groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase immobilization. Lifetech ECR1090M main features are high porosity, high mechanical stability and high surface area. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-0922 NEW	**Enzyme carrier Lifetech™ ECR1091M** White to off white spherical beads (wet); SA: > 450 m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 950-1200; Lifetech ECR1091M is a copolymer of divinylbenzene (DVB) and styrene with very high porosity and no functional groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase immobilization. Lifetech ECR1091M main features are high porosity, high mechanical stability and high surface area. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-0810 NEW	**Enzyme carrier Lifetech™ ECR8204F** White to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf life: 6 months; Particle Size: 150-300 micron; Pore Diameter: 300-600; Lifetech ECR1640 is a copolymer of divinylbenzene (DVB) and styerene functionalised with quaternary amines. It is used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the tertiary amines on the polymer. It is particularly suitable for immobilization of enzymes with iP in the range 3 - 5 like many glycosidaseses. Lifetech ECR1640 main features are possibility to regenerate the resin, pH adjustment before immobilization and large particle size for column applications. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-0813 NEW	**Enzyme carrier Lifetech™ ECR8204M** White to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 6 months; Particle size: 300-710 micron; Pore Diameter: 300-600; Lifetech ECR8204M is a methacrylate polymer functionalised with epoxy groups, used for covalent enzyme immobilization. Epoxides form very stable covalent linkages with different protein surface groups as ε-NH_2 in Lys or nucleophiles (amino, thiol, phenolic). Immobilization is performed under very mild experimental conditions of pH and temperature, at high ionic buffer strength. Lifetech ECR8204M main features are the low porosity, the hydrophilicity, high mechanical strengh and it is optimal for use in batch reactors and columns.	50g 5x50g

BIOCATALYSTS (Compounds)

06-0817 NEW	**Enzyme carrier Lifetech™ ECR8209F** white to off white spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 6 months; Particle Size: 150-300 micron; Pore Diameter: 300-600; Lifetech ECR8209F is a methacrylate polymer functionalised with epoxy groups, used for covalent enzyme immobilization. Epoxy groups form very stable covalent linkages with different protein surface groups as ε-NH_2 in Lys or nucleophiles (amino, thiol, phenolic). Immobilization is performed under very mild experimental conditions of pH and temperature, at high ionic buffer strength. Lifetech ECR8209F main features are the high porosity, the hydrophilicity and it is optimal for use in batch reactors.	50g 5x50g
07-1512 NEW	**Enzyme carrier Lifetech™ ECR8309F** white to off white spherical beads (wet); SA: 70 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 150-300 micron; Pore Diameter: 600-1200; Lifetech ECR8309F is a methacrylate polymer functionalised with amino groups on a short spacer (C2). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8309F main features are the medium porosity, the hydrophilicity and its optimal use in batch reactors. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-1515 NEW	**Enzyme carrier Lifetech™ ECR8309M** White to off white spherical beads (wet); SA: 70 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 600-1200; Lifetech ECR8309M is a methacrylate polymer functionalised with amino groups on a short spacer (C2). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8309M main features are the medium porosity, the hydrophilicity and its optimal use in batch reactors and columns. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-1518 NEW	**Enzyme carrier Lifetech™ ECR8315F** white to off white spherical beads (wet); SA: 60 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 150-300 micron; Pore Diameter: 1200-1800; Lifetech ECR8315F is a methacrylate polymer functionalised with amino groups on a short spacer (C2). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. Lifetech ECR8315F main features are the high porosity, the hydrophilicity and its optimal use in batch reactors. Sold in collaboration with Purolite for research purposes only.	50g 250g

BIOCATALYSTS (Compounds)

07-1520 NEW	**Enzyme carrier Lifetech™ ECR8315M** white to off white spherical beads (wet); SA: 60 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 1200-1800; Lifetech ECR8315M is a methacrylate polymer functionalised with amino groups on a short spacer (C2). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8315M main features are the medium porosity, the hydrophilicity and its optimal use in batch reactors and columns. Sold in collaboration with Purolite for research purposes only.	50g 250g
07-1523 NEW	**Enzyme carrier Lifetech™ ECR8409F** white to off white spherical beads (wet); SA: 70 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 150-300 micron; Pore Diameter: 600-1200; Lifetech ECR8409F is a methacrylate polymer functionalised with amino groups on a long spacer (C6). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8409F main features are the medium porosity, the hydrophilicity and its optimal use in batch reactors. Sold in collaboration with Purolite for research purposes only.	50g 250g
07-1525 NEW	**Enzyme carrier Lifetech™ ECR8409M** white to off white spherical beads (wet); SA: 70 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 600-1200; Lifetech ECR8409M is a methacrylate polymer functionalised with amino groups on a long spacer (C6). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8409M main features are the medium porosity, the hydrophilicity and its optimal use in batch reactors and columns. Sold in collaboration with Purolite for research purposes only.	50g 250g
07-1528 NEW	**Enzyme carrier Lifetech™ ECR8415F** white to off white spherical beads (wet); SA: 60 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 150-300 micron; Pore Diameter: 1200-1800; Lifetech ECR8415F is a methacrylate polymer functionalised with amino groups on a long spacer (C6). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8415F main features are the high porosity, the hydrophilicity and its optimal use in batch reactors. Sold in collaboration with Purolite for research purposes only.	50g 250g

BIOCATALYSTS (Compounds)

07-1530 NEW	**Enzyme carrier Lifetech™ ECR8415M** White to off white spherical beads (wet); SA: 60 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 1200-1800; Lifetech ECR8415M is a methacrylate polymer functionalised with amino groups on a long spacer (C6). It is used for covalent enzyme immobilization by pre-activation of the resin with glutaraldehyde and to subsequently form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature, at low ionic buffer strength. It can also be used for enzyme immobilization by ionic interaction of the ionizable surface aminoacids (Lys, Arg, His, Asp, Glu) with the charged amines on the polymer. Lifetech ECR8415M main features are the high porosity, the hydrophilicity and its optimal use in batch reactors. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-1532 NEW	**Enzyme carrier Lifetech™ ECR8806F** White to off white spherical beads (wet); SA: 70 min. m^2/g *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 150-300 micron; Pore Diameter: 350-600; Lifetech ECR8806F is a methacrylic polymer functionalised with octadecyl groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase and transaminases immobilization. Lifetech ECR8806F main features are very enzyme activity achieved upon immobilization compared to other existing resins. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
07-1535 NEW	**Enzyme carrier Lifetech™ ECR8806M** White to off white spherical beads (wet); SA: 70 min. m^2/g Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-710 micron; Pore Diameter: 350-600; Lifetech ECR8806M is a methacrylic polymer functionalised with octadecyl groups. It is used for enzyme immobilization by adsorption (hydrophobic interaction) and it is particularly suitable for lipase and transaminases immobilization. Lifetech ECR8806M main features are very high enzyme activity achieved upon immobilization compared to other existing resins. Optimal for column packed reactors. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-0820 NEW	**Enzyme carrier Lifetech™ ECR8209M** white to off white spherical beads (wet); SA: 70 min. m^2/g *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 6 months; Particle Size: 300-710 micron; Pore Diameter: 600-1200; Lifetech ECR8209M is a methacrylate polymer functionalised with epoxy groups, used for covalent enzyme immobilization. Epoxy groups form very stable covalent linkages with different protein surface groups as ε-NH2 in Lys or nucleophiles (amino, thiol, phenolic). Immobilization is performed under very mild experimental conditions of pH and temperature, at high ionic buffer strength. Lifetech ECR8209M main features are the high porosity, the hydrophilicity and it is optimal use in batch reactors and columns.	50g 5x50g
06-0823 NEW	**Enzyme carrier Lifetech™ ECR8215F** white to off white spherical beads (wet); SA: 60 min. m^2/g *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 6 months; Particle Size: 150-300 micron; Pore Diameter: 1200-1800; Lifetech ECR8215F is a methacrylate polymer functionalised with epoxy groups, used for covalent enzyme immobilization. Epoxy groups form very stable covalent linkages with different protein surface groups as ε-NH_2 in Lys or nucleophiles (amino, thiol, phenolic). Immobilization is performed under very mild experimental conditions of pH and temperature, at high ionic buffer strength. Lifetech ECR8215F main features are the very high porosity, the hydrophilicity and it is optimal for use in batch reactors.	50g 5x50g

BIOCATALYSTS (Compounds)

06-0826 NEW	**Enzyme carrier Lifetech™ ECR8215M** white to off white spherical beads (wet); SA: 60 min. m^2/g *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 6 months; Particle Size: 300-710 micron; Pore Diameter: 1200-1800; Lifetech ECR8215M is a methacrylate polymer functionalised with epoxy groups, used for covalent enzyme immobilization. Epoxy groups form very stable covalent linkages with different protein surface groups as ε-NH2 in Lys or nucleophiles (amino, thiol, phenolic). Immobilization is performed under very mild experimental conditions of pH and temperature, at high ionic buffer strength. Lifetech ECR8215M main features are the very high porosity, the hydrophilicity and its optimal use in batch reactors and columns.	50g 5x50g
06-0828 NEW	**Enzyme carrier Lifetech™ ECR8285** white to off white spherical beads (wet); SA: 100-200 m^2/g *(store cold)* Note: Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 6 months; Particle Size: 250-1000 micron; Pore Diameter: 400-600; Lifetech ECR8285 is a methacrylate polymer functionalised with both butyl and epoxy groups. This combination creates a good balance of hydrophobicity that makes the polymer optimal for immobilization of hydrophobic enzymes like lipases and transaminases. Epoxides form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature. Lifetech ECR8285 main features are the process advtantages deriving from hydrophobic property combined with epoxy groups allowing the use in bi-phasic systems. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
96-0255	**Enzyme carrier Lifetech™ ECRKIT1** *See* page 540	
06-3115 NEW	**Esperase® 8.0 L** *(9014-01-1)* amber liq. (semitransparent); d. 1.07 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 8KNPU-E/g. Serine endoprotease that hydrolyzes internal peptide bonds. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
96-4065	**Lipase immo Kit - Immobilized enzymes** *See* page 462	
06-3105 NEW	**Lipozyme® CALB L** *(9001-62-1)* yellow to light-brown liq.; d. 1.2 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 5000 LU/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3140 NEW	**Lipozyme® TL 100 L** *(9001-62-1)* yellow liq.; d. 1.05 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 100 KLU/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g

BIOCATALYSTS (Compounds)

06-3155 NEW	**Lipozyme® TL IM** *(9001-62-1)* off-white immobilized granulate; d. 0.4 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 250 IUN/g. Lipase that hydrolyzes ester bonds in glycerides. It is a 1,3 specific lipase which is immobilized on a non-compressible silica gel carrier into an immobilized granulate. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3160 NEW	**Neutrase® 0.8 L** *(9080-56-2)* brown liq.; d. 1.26 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 0.8 AU/g. Kinetic resolution of amino esters is a neutral, zinc metallo endoprotease, that randomly hydrolyzes internal peptide bonds and also facilitates enzymatic synthesis of oligopeptides by the reverse proteolysis reaction with zinc metal as co-catalyst. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3100 NEW	**NovoCor® AD L** *(9001-62-1)* brown liq.; d. 1.17 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 6000 LU/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3123 NEW	**Novozym® 435** *(9001-62-1)* off-white immobilized granulate; d. 0.4 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 10000 PLU/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	5g 25g
06-3120 NEW	**Novozym® 40086** *(9001-62-1)* brown immobilized granulate; d. 0.33 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 275 IUN/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	5g 25g
06-3135 NEW	**Novozym® 51032** *(9001-62-1)* yellow to light-brown liq.; d. 1.04 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 15 KLU/g. Lipase that hydrolyzes ester bonds in glycerides. Product may be hazy and contain slight precipitate. This does not affect enzyme activity or performance. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g

BIOCATALYSTS (Compounds)

96-0224	**Novozymes Endoprotease Screening Kit (contains 6 endoprotease enzymes)** *See* page 463	
96-0220	**Novozymes Lipase Screening Kit (contains 9 lipase enzymes)** *See* page 463	
06-3118 NEW	**Palatase® 20000 L** *(9001-62-1)* brown liq.; d. 1.19 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 20000 LU-MM/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	5g 25g 100g
96-1580	**Provivi Carbene/Nitrene Transferase Screening Kit** *See* page 464	
06-3125 NEW	**Resinase® HT** *(9001-62-1)* yellow liq.; d. 1.05 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 50 KLU/g. Lipase that hydrolyzes ester bonds in glycerides. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3137 NEW	**Savinase® 12 T** *(9014-01-1)* off-white granulate; d. 1.3 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 12 KNPU-S/g. Serine endoprotease that hydrolyzes internal peptide bonds. The granulate contains enzyme concentrate, inorganic salt, binder and coating materials. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g
06-3150 NEW	**Savinase® 16 L** *(9014-01-1)* amber liq. (semitransparent); d. 1.16 *(store cold)* Note: Store at 0-10°C. DO NOT FREEZE. Declared activity 16 KNPU-S/g. A serine endoprotease that hydrolyzes internal peptide bonds. Color can vary from batch to batch. Color intensity is not an indication of enzyme activity. Packaging must be kept intact, dry and away from sunlight. Please follow the recommendations and use the product before the best before date to avoid the need for a higher dosage. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes	10g 50g 250g

BISMUTH (Elemental Forms)

83-0050	**Bismuth granules (99.9999%)** *(7440-69-9)* Bi; FW: 208.98; 1-3 mm; m.p. 271.3°; b.p. 1560°; d. 9.80	10g 50g 250g
83-0075	**Bismuth pieces (99.99%)** *(7440-69-9)* Bi; FW: 208.98; hemispheres (~10g/piece); m.p. 271.3°; b.p. 1560°; d. 9.80	250g 1kg
93-8345 HAZ	**Bismuth powder (99.5%)** *(7440-69-9)* Bi; FW: 208.98; -200 mesh; m.p. 271.3°; b.p. 1560°; d. 9.80	100g 500g

BISMUTH (Elemental Forms)

93-8347 HAZ	**Bismuth powder (99.9%)** *(7440-69-9)* Bi; FW: 208.98; -200 mesh; m.p. 271.3°; b.p. 1560°; d. 9.80	50g 250g
93-8348 HAZ	**Bismuth powder (99.999%)** *(7440-69-9)* Bi; FW: 208.98; -200 mesh; m.p. 271.3°; b.p. 1560°; d. 9.80	10g 50g
83-0080	**Bismuth rod (99.9999%)** *(7440-69-9)* Bi; FW: 208.98; 10mm dia. (~7.7g/cm); m.p. 271.3°; b.p. 1560°; d. 9.80	25g 100g
93-8346	**Bismuth shot, elongated (99.99%)** *(7440-69-9)* Bi; FW: 208.98; ~1.5-2mm dia. x 3-4mm long; m.p. 271.3°; b.p. 1560°; d. 9.80	100g 500g
83-0085	**Bismuth shot, elongated (99.999%)** *(7440-69-9)* Bi; FW: 208.98; 1-3mm dia.; m.p. 271.3°; b.p. 1560°; d. 9.80	100g 500g

BISMUTH (Compounds)

93-8352	**Bismuth(III) acetate, 99%** *(22306-37-2)* $Bi(OOCCH_3)_3$; FW: 386.12; white xtl. *moisture sensitive*	25g 100g
93-8313 HAZ	**Bismuth(III) bromide, 98+%** *(7787-58-8)* $BiBr_3$; FW: 448.71; yellow pwdr.; m.p. 218°; b.p. 453° *moisture sensitive*	10g 50g
93-8314	**Bismuth(III) chloride, anhydrous, 99+% (99.9+%-Bi)** *(7787-60-2)* $BiCl_3$; FW: 315.34; white xtl.; m.p. 230-232°; b.p. 447°; d. 4.75 *moisture sensitive*	25g 100g
93-8315	**Bismuth(III) chloride, anhydrous (99.999%-Bi) PURATREM** *(7787-60-2)* $BiCl_3$; FW: 315.34; white xtl.; m.p. 230-232°; b.p. 447°; d. 4.75 *moisture sensitive*	5g 25g
83-2415	**Bismuth(III) 2-ethylhexanoate, ~30% wt/wt Bi in 2-ethylhexanoic acid (99.98%-Bi)** *(67874-71-9)* $Bi[OOCCH(C_2H_5)C_4H_9]_3$; FW: 638.61; liq.	50g 250g
83-2400	**Bismuth(III) 2-ethylhexanoate, 72% in mineral spirits (~28% Bi)** *(67874-71-9)* $Bi[OOCCH(C_2H_5)C_4H_9]_3$; FW: 638.61; brown liq.; f.p. 162°F; d. 1.28	250g 1kg
83-2401 HAZ	**Bismuth(III) 2-ethylhexanoate, 70-75% in xylenes (~24% Bi) (99.99+%-Bi) PURATREM** *(67874-71-9)* $Bi[OOCCH(C_2H_5)C_4H_9]_3$; FW: 638.61; light yellow liq.	25g 100g
93-8316	**Bismuth(III) fluoride anhydrous, 99%** *(7787-61-3)* BiF_3; FW: 265.98; off-white pwdr.; m.p. 727°; d. 5.32 *moisture sensitive*	25g 100g
83-3000	**Bismuth(III) fluoride (99.99+%-Bi) PURATREM** *(7787-61-3)* BiF_3; FW: 265.98; white to gray xtl.; m.p. 727°; d. 5.32 *moisture sensitive*	10g 50g
93-8317 HAZ	**Bismuth(III) iodide (99.999%-Bi) PURATREM** *(7787-64-6)* BiI_3; FW: 589.69; gray pwdr.; m.p. 408°; b.p. ~500°; d. 5.778 *moisture sensitive*	5g 25g
83-7000	**Bismuth(III) neodecanoate, superconductor grade ~60% in neodecanoic acid (15-20% Bi)** *(34364-26-6)* $Bi(OOCC_9H_{19}\text{-neo})_3$; FW: 722.71; viscous liq.	10g 50g 250g
93-8304 HAZ	**Bismuth(III) nitrate pentahydrate, 98% (ACS)** *(10035-06-0)* $Bi(NO_3)_3{\cdot}5H_2O$; FW: 394.99 (485.07); white xtl.; m.p. 30°; d. 2.83 *hygroscopic*	250g 1kg
93-8303 HAZ	**Bismuth(III) nitrate pentahydrate (99.999%-Bi) PURATREM** *(10035-06-0)* $Bi(NO_3)_3{\cdot}5H_2O$; FW: 394.99 (485.07); white xtl.; d. 2.83 *moisture sensitive*	5g 25g 100g
93-8318	**Bismuth(III) oxide (99.9%-Bi)** *(1304-76-3)* Bi_2O_3; FW: 465.96; yellow pwdr.; m.p. 817°; b.p. 1890°; d. 8.9	100g 500g
93-8319	**Bismuth(III) oxide (99.999%-Bi) PURATREM** *(1304-76-3)* Bi_2O_3; FW: 465.96; yellow pwdr.; m.p. 817°; b.p. 1890°; d. 8.9	25g 100g 500g
83-4025	**Bismuth(III) oxide (99.9998%-Bi) PURATREM** *(1304-76-3)* Bi_2O_3; FW: 465.96; yellow pwdr.; m.p. 817°; b.p. 1890°; d. 8.9	25g 100g
93-8309	**Bismuth(III) sulfide (99.9%-Bi)** *(1345-07-9)* Bi_2S_3; FW: 514.15; -200 mesh gray to black pwdr.; m.p. 685° dec.; d. 7.39	25g 100g

BISMUTH (Compounds)

93-8351 **Bismuth(III) sulfide (99.999%-Bi) PURATREM** *(1345-07-9)* — 10g, 50g
Bi_2S_3; FW: 514.15; gray to black pwdr.; m.p. 685° dec.; d. 7.39

83-4075 **Bismuth(III) telluride (99.99%-Bi) PURATREM** *(1304-82-1)* — 5g, 25g
Bi_2Te_3; FW: 800.76; black pwdr.; m.p. 573°

93-8312 **Bismuth(III) titanate, 98%** *(12048-51-0)* — 25g, 100g
$Bi_2Ti_2O_7$; FW: 625.76; white pwdr.

83-8000 **Bismuth(III) trifluoromethanesulfonate, min. 98% (Bismuth triflate)** — 1g, 5g, 25g
(88189-03-1)
$Bi(SO_3CF_3)_3$; FW: 656.19; white to off-white pwdr.
hygroscopic

Technical Note:
1. Powerful Lewis acid useful in a number of catalytic reactions.

References:
1. *Synlett,* **2003**, *10*, 1566

93-8350 **Triphenylbismuth, 99%** *(603-33-8)* — 10g, 50g
$(C_6H_5)_3Bi$; FW: 440.30; white xtl.; m.p. 77-78°; b.p. dec. 310° (subl. 100°/0.2mm); d. 1.585
Note: For sale in USA. For other countries contact Strem.

83-1000 **Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)bismuth(III), min. 98% (99.9%-Bi) [Bi(TMHD)$_3$]** *(142617-53-6)* — 1g, 5g, 25g
$Bi(C_{11}H_{19}O_2)_3$; FW: 758.74; off-white xtl.; m.p. 114-116°; b.p. dec. 295° (subl. 150°/0.05mm)

BORON (Elemental Forms)

93-0581 HAZ **Boron powder, amorphous (93-96%)** *(7440-42-8)* — 10g, 50g
B; FW: 10.81; 0.4-0.7 microns; m.p. 2300°; b.p. 2550°; d. 2.34-2.37
Note: For sale in USA. For other countries contact Strem.

05-0050 HAZ **Boron powder, amorphous (min. 98%)** *(7440-42-8)* — 10g, 50g
B; FW: 10.81; < 1 micron; m.p. 2300°; b.p. 2550°; d. 2.34-2.37
Note: For sale in USA. For other countries contact Strem.

93-0580 HAZ **Boron powder, crystalline (99.4%)** *(7440-42-8)* — 5g, 25g
B; FW: 10.81; 1-20mm pieces; m.p. 2300°; b.p. 2550°; d. 2.34-2.37

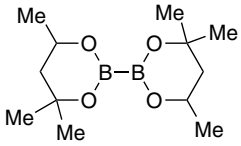
05-0065 HAZ **Boron powder, crystalline (99.99%)** *(7440-42-8)* — 250mg, 1g
B; FW: 10.81; -4 + 40 mesh; m.p. 2300°; b.p. 2550°; d. 2.34-2.37

05-0055 HAZ **Boron powder, crystalline, elec. gr. (99.9999%)** *(7440-42-8)* — 250mg, 1g, 5g
B; FW: 10.81; -4 + 40 mesh; m.p. 2300°; b.p. 2550°; d. 2.34-2.37

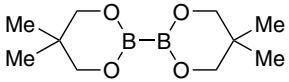
BORON (Compounds)

96-0350 **Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE)**
See page 537

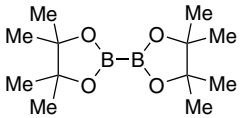
05-0020 **Bis(hexyleneglycolato)diboron, 99%** — 1g, 5g
(230299-21-5)
$C_{12}H_{24}B_2O_4$; FW: 253.94; white pwdr.; m.p. 98-101°



05-0025 **Bis(neopentylglycolato)diboron, min. 97%** — 1g, 5g, 25g
(201733-56-4)
$C_{10}H_{20}B_2O_4$; FW: 225.89; white xtl.; m.p. 182-185°
moisture sensitive

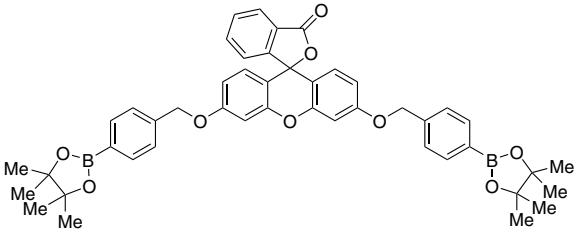


05-0030 **Bis(pinacolato)diboron, 99%** *(73183-34-3)* — 500mg, 2g, 10g, 50g, 500g
$C_{12}H_{24}B_2O_4$; FW: 253.94; white to off-white xtl.; m.p. 144-145°; d. 0.98
moisture sensitive
For detailed technical note visit strem.com.



BORON (Compounds)

05-0058 **3',6'-Bis{[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)oxy]-3H-[spiro(isobenzofuran-1,9,-xanthen]-3-one} FBBBE** *(1522117-83-4)* — 5mg
$C_{46}H_{46}B_2O_9$; FW: 764.47; faint yellow pwdr.
light sensitive, (store cold)
Note: Sold under license from The Regents of the University of California. US Patent application 61/762,706. Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE) component.

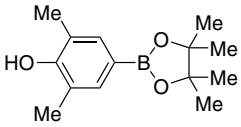
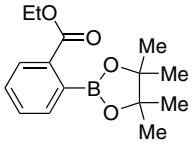
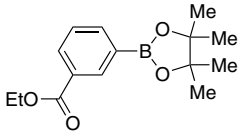
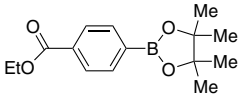
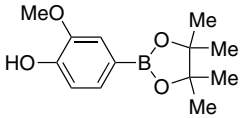


05-0101 HAZ	**Borane, t-butylamine complex, powder, min. 97%** *(7337-45-3)* $(CH_3)_3CNH_2{:}BH_3$; FW: 86.97; white pwdr.; m.p. 98° dec.	25g 100g
93-0554 HAZ	**Borane, dimethylamine complex, min. 97%** *(74-94-2)* $(CH_3)_2NH{:}BH_3$; FW: 58.92; white xtl.; m.p. 36°; b.p. 59-65°/1-2 mm; d. 0.69 *moisture sensitive, (store cold)*	10g 50g
05-0110 HAZ	**Borane, dimethylsulfide complex (contains 5-6% excess dimethylsulfide)** *(13292-87-0)* $(CH_3)_2S{:}BH_3$; FW: 75.97; colorless liq.; m.p. -40°; f.p. 65°F; d. 0.801 *moisture sensitive, (store cold)*	25g 100g
93-0535 HAZ	**Borane, pyridine complex, min. 93%** *(110-51-0)* $C_5H_5N{:}BH_3$; FW: 92.94; colorless liq.; m.p. 10-11°; b.p. 65°/1 mm; f.p. 70°F; d. 0.92 *moisture sensitive*	10g 50g
93-0504	**Boric acid, 99.8%** *(10043-35-3)* H_3BO_3; FW: 61.83; white xtl.; m.p. 171°; d. 1.435	500g 2kg
93-0559	**Boric acid (99.99%-B) PURATREM** *(10043-35-3)* H_3BO_3; FW: 61.83; white xtl.; m.p. 171°; d. 1.435	250g 1kg
05-0205	**Boric acid (99.9995%-B) PURATREM** *(10043-35-3)* H_3BO_3; FW: 61.83; white xtl.; m.p. 171°; d. 1.435	10g 50g
93-0514 HAZ	**Boron bromide, 99+%** *(10294-33-4)* BBr_3; FW: 250.54; pale yellow to orange liq.; m.p. -46°; b.p. 91.3°; d. 2.6431 *moisture sensitive, (store cold)*	25g 100g 500g
97-1725 amp HAZ	**Boron bromide, elec. gr. (99.999%-B) PURATREM** *(10294-33-4)* BBr_3; FW: 250.54; pale yellow to orange liq.; m.p. -46°; b.p. 91.3°; d. 2.6431 *moisture sensitive*	5g 25g 100g
93-0509	**Boron carbide, powder, 99+%** *(12069-32-8)* B_4C; FW: 55.26; -325 mesh gray to black pwdr.; m.p. 2350°; b.p. > 3500°; d. 2.52 Note: For sale in USA. For other countries contact Strem.	50g 250g
05-0120 NEW	**Boron carbide, 0.1-1.5 microns (99.9+%-B)** *(12069-32-8)* B_4C; FW: 55.26; gray to black pwdr.; SA: 22-27 m^2/g; m.p. 2350°; b.p. >3500°; d. 2.52 Note: For sale in USA. For other countries contact Strem. **For detailed technical note visit strem.com.**	100g 500g
93-0517 HAZ	**Boron fluoride, acetic acid complex, min. 97%** *(373-61-5)* $BF_3{\cdot}2CH_3COOH$; FW: 187.91; colorless to pale yellow liq.; m.p. -47°; f.p. 181.4°F; d. 1.353 *moisture sensitive*	100g 500g
93-0519 HAZ	**Boron fluoride, ethyl ether complex (47-48% Boron fluoride)** *(109-63-7)* $BF_3{\cdot}O(C_2H_5)_2$; FW: 141.94; pale yellow liq.; b.p. 126°; f.p. 118°F; d. 1.125 (25°) *moisture sensitive*	100g 500g

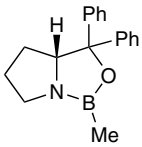
BORON (Compounds)

93-0512	**Boron nitride, 99+%** *(10043-11-5)* BN; FW: 24.82; off-white pwdr.; d. 2.25	25g 100g
05-0125 NEW	**Boron nitride, hexagonal crystalline solid, min. 99%** *(10043-11-5)* BN; FW: 24.82; off-white pwdr.	50g 250g
93-0526	**Boron oxide (99.6%-B)** *(1303-86-2)* B_2O_3; FW: 69.62; white pwdr.; m.p. 450°; b.p. ~1860°; d. 2.46 *hygroscopic*	250g 1kg
93-0527	**Boron oxide (99.9+%-B)** *(1303-86-2)* B_2O_3; FW: 69.62; white pwdr.; m.p. 450°; b.p. ~1860°; d. 2.46 *hygroscopic*	50g 250g
05-0370	**t-Butyl-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl) phenyl carbonate, min. 97%** *(480424-71-3)* $C_{17}H_{25}BO_5$; FW: 320.19; pale yellow pwdr.; m.p. 74-76°	1g 5g
05-0380	**t-Butyl-3-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl carbonate, min. 97%** *(480438-74-2)* $C_{17}H_{25}BO_5$; FW: 320.19; white pwdr.; m.p. 86-88°	1g 5g
05-0360	**t-Butyl-N-[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]carbamate, min. 97%** *(330793-01-6)* $C_{17}H_{26}BNO_4$; FW: 319.20; white xtl.; m.p. 169-170°	1g 5g
05-0300	**o-Carborane, min. 95%** *(16872-09-6)* 1,2-$H_2C_2B_{10}H_{10}$; FW: 144.22; white pwdr.; m.p. 285-287° Note: For sale in USA. For other countries contact Strem.	1g 5g
05-0399	**3-Carboxyphenylboronic acid, min. 97%** *(25487-66-5)* $HOOCC_6H_4B(OH)_2$; FW: 165.94; white to off-white pwdr.	1g 5g
05-0400	**4-Carboxyphenylboronic acid, min. 97%** *(14047-29-1)* $HOOCC_6H_4B(OH)_2$; FW: 165.94; white to off-white pwdr.; m.p. 238-240°	1g 5g
55-5525	**Cesium carborane** *(12539-26-3)* *See* page 43	
55-1800	**Cesium dodecahydrododecaborate, min. 98%** *(12008-75-2)* *See* page 43	
05-0430	**4-Chlorophenylboronic acid, min. 97%** *(1679-18-1)* $ClC_6H_4B(OH)_2$; FW: 156.38; white to off-white pwdr.; m.p. 284-289°	5g 25g
05-0440	**Cyclopropylboronic acid, min. 97%** *(411235-57-9)* $(C_3H_5)B(OH)_2$; FW: 85.90; white pwdr. *moisture sensitive*	1g 5g
05-0500 HAZ	**Decaborane, min. 97%** *(17702-41-9)* $B_{10}H_{14}$; FW: 122.21; white xtl.; m.p. 100°; b.p. 213°; d. 0.94 *(store cold)* Note: For sale in USA. For other countries contact Strem.	250mg 1g

BORON (Compounds)

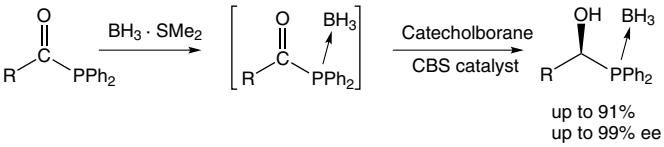
05-0750	**N,N-Dimethylanilinium tetra(pentafluorophenyl)borate, 98%** *(118612-00-3)* $[C_6H_5N(CH_3)_2H]^+[B(C_6F_5)_4]^-$; FW: 801.23; white to off-white pwdr. *hygroscopic*	250mg 1g 5g
05-0760	**2,6-Dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%** *(269410-25-5)* $C_{14}H_{21}BO_3$; FW: 248.13; yellow solid; m.p. 105-109° 	1g 5g
05-0770	**Ethyl-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl) benzoate, min. 97%** *(269409-99-6)* $C_{15}H_{21}BO_4$; FW: 276.14; white to yellow pwdr.; m.p. 55-58° 	1g 5g
05-0775	**Ethyl-3-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzoate, min. 97%** *(269410-00-6)* $C_{15}H_{21}BO_4$; FW: 276.14; white pwdr.; m.p. 41-42° 	1g 5g
05-0765	**Ethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzoate, min. 97%** *(195062-62-5)* $C_{15}H_{21}BO_4$; FW: 276.14; colorless to pale yellow liq.; b.p. 105-115°/0.01mm; d. 1.052 	1g 5g
05-0800	**4-Fluorophenylboronic acid, min. 97%** *(1765-93-1)* $FC_6H_4B(OH)_2$; FW: 139.92; white to off-white pwdr.; m.p. 263-265°	5g 25g
05-0780	**Hexylboronic acid, min. 97%** *(16343-08-1)* $CH_3(CH_2)_5B(OH)_2$; FW: 130.00; white to off-white pwdr.	5g 25g
05-0878	**2-Methoxyphenylboronic acid, min. 97%** *(5720-06-9)* $CH_3OC_6H_4B(OH)_2$; FW: 151.96; white to off-white pwdr.	5g 25g
05-0880	**4-Methoxyphenylboronic acid, min. 97%** *(5720-07-0)* $CH_3OC_6H_4B(OH)_2$; FW: 151.96; white to off-white pwdr.; m.p. 204-206°	5g 25g
05-0950	**2-Methoxy-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%** *(269410-22-2)* $C_{13}H_{19}BO_4$; FW: 250.11; white to off-white pwdr.; m.p. 104-107° 	1g 5g
05-1010	**4-(Methylthiophenyl)boronic acid, min. 97%** *(98546-51-1)* $CH_3SC_6H_4B(OH)_2$; FW: 168.02; white to off-white pwdr.; m.p. 210-214°	1g 5g
05-1030	**1-Naphthylboronic acid, min. 97%** *(13922-41-3)* $C_{10}H_7B(OH)_2$; FW: 171.99; white to off-white pwdr.; m.p. 210-211°	1g 5g
93-0740	**Nitronium tetrafluoroborate, min. 97%** *(13826-86-3)* *See* page 204	
93-0724	**Nitrosonium tetrafluoroborate, min. 97%** *(14635-75-7)* *See* page 204	
93-0533 HAZ	**Phenylboron dichloride, min. 97%** *(873-51-8)* $C_6H_5BCl_2$; FW: 158.83; colorless liq.; m.p. 7°; b.p. 175°; f.p. -5°F; d. 1.194 (20°) *moisture sensitive*	1g 5g 25g
93-0570	**Phenylboronic acid, min. 97%** *(98-80-6)* $C_6H_5B(OH)_2$; FW: 121.94; white to off-white pwdr.; m.p. 215°	10g 50g
19-1500	**Potassium allyltrifluoroborate, 99%** *(233664-53-4)* *See* page 340	
19-1800	**Potassium dodecahydrododecaborate hydrate, min. 98%** *(874881-81-9)* *See* page 341	

BORON (Compounds)

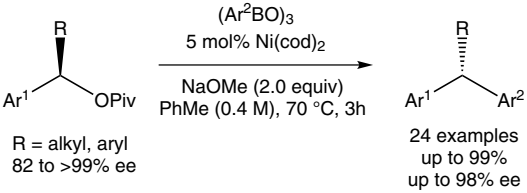
19-1965	**Potassium tri-sec-butylborohydride, 1.0M in THF, in Sure/Seal™ bottle** *(54575-49-4)* *See* page 345	
11-2800	**Sodium cyanoborohydride, 95%** *(25895-60-7)* *See* page 417	
11-0575	**Sodium tetraethylborate, min. 98%** *(15523-24-7)* *See* page 421	
93-1189	**Sodium tetrafluoroborate, 98%** *(13755-29-8)* *See* page 421	
11-0590	**Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, min. 98% NaBARF** *(79060-88-1)* *See* page 421	
93-0571	**Sodium tetraphenylborate, 99.5+% (ACS)** *(143-66-8)* *See* page 421	
11-0595	**Sodium triacetoxyborohydride, min. 95%** *(56553-60-7)* *See* page 421	
93-0503 HAZ	**Tetrafluoroboric acid, 48% aqueous solution** *(16872-11-0)* HBF_4; FW: 87.81; colorless to light yellow liq.	500g 4 x 500g
05-1000 HAZ	**(R)-Tetrahydro-1-methyl-3,3-diphenyl-1H,3H-pyrrolo[1,2-c][1,3,2]oxazaborole, 0.9-1.1M in toluene [(R)-Methyloxazaborolidine] (R)-CBS Catalyst** *(112022-83-0)* $C_{18}H_{20}BNO$; FW: 277.17; liq.; f.p. 40°F (toluene); d. 0.925 *moisture sensitive* 	10ml 50ml

Technical Notes:

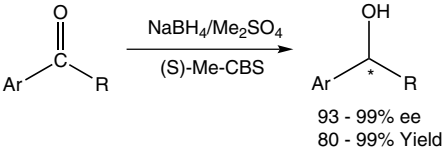
1. Convenient catalyst for the enantioselective borane reduction of ketones at ambient temperatures.
2. Asymmetric synthesis of α-chiral hydroxyalkylphosphines via a catalytic, enantioselective reduction of acylphosphines.
3. Nickel-catalyzed cross-couplings of benzylic pivalates with arylboroxines: Stereospecific formation of diarylalkanes and triarylmethanes.
4. Enantioselective reduction of prochiral ketones with $NaBH_4/Me_2SO_4$/(S)-Me-CBS.



Tech. Note (2)
Ref. (1)



Tech. Note (3)
Ref. (2)



Tech. Note (4)
Ref. (3)

References:

1. *Org. Lett.,* **2014**, *16*, 5830
2. *J. Am. Chem. Soc.,* **2013**, *135*, 3307
3. *Synthetic Commun.,* **2014**, *44*, 1515

BORON (Compounds)

05-1001
HAZ

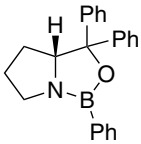
(S)-Tetrahydro-1-methyl-3,3-diphenyl-1H,3H-pyrrolo[1,2-c][1,3,2]oxazaborole, 0.9-1.1M in toluene [(S)-Methyloxazaborolidine] (S)-CBS Catalyst *(112022-81-8)*
$C_{18}H_{20}BNO$; FW: 277.17; liq.; f.p. 40°F (toluene); d. 0.925
moisture sensitive

10ml
50ml

Technical Note:
1. See 05-1000 (page 28)

05-1002

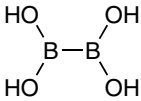
(R)-Tetrahydro-1,3,3-triphenyl-1H,3H-pyrrolo[1,2-c][1,3,2] oxaborole, 99% (R)-Phenyl oxazaborolidine *(145238-45-5)*
$C_{23}H_{22}BNO$; FW: 339.24; white to off-white pwdr.
moisture sensitive
Note: **Limited quantity available**.
For detailed technical note visit strem.com.



5g

05-1015

Tetrahydroxydiboron, min. 95% *(13675-18-8)*
$(OH)_2BB(OH)_2$; FW: 89.65; white solid; m.p. 143-148°
moisture sensitive
For detailed technical note visit strem.com.



1g
5g
25g

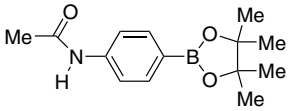
05-1035

Tetrakis(dimethylamino)diboron, min. 97% *(1630-79-1)*
$B_2(N(CH_3)_2)_4$; FW: 197.93; colorless liq.; b.p. 55-57° (2.5mm); f.p. 99°C; d. 0.926
moisture sensitive

1g
5g

05-1032

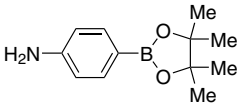
4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)acetanilide, min. 97% *(214360-60-8)*
$C_{14}H_{20}BNO_3$; FW: 261.13; white pwdr.; m.p. 165-167°



1g
5g

05-1034

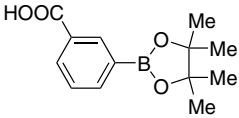
4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl) aniline, min. 97% *(214360-73-3)*
$C_{12}H_{18}BNO_2$; FW: 219.09; beige pwdr.; m.p. 167-171°



1g
5g

05-1036

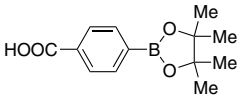
3-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl) benzoic acid, min. 97% *(269409-73-6)*
$C_{13}H_{17}BO_4$; FW: 248.09; white pwdr.; m.p. 208-212°



1g
5g

05-1037

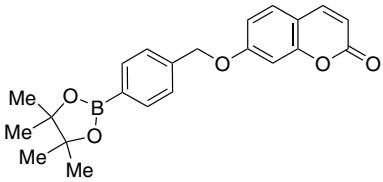
4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl) benzoic acid, min. 97% *(180516-87-4)*
$C_{13}H_{17}BO_4$; FW: 248.09; white to yellow pwdr.; m.p. 229-231°



1g
5g

05-0054

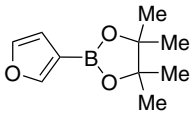
7-{[(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)benzyl]oxy}-2H-1-benzopyran-2-one CBBE *(1522117-80-1)*
$C_{22}H_{23}BO_5$; FW: 378.23; white pwdr.
light sensitive, (store cold)
Note: Sold under license from The Regents of the University of California. US Patent application 61/762,706. Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE) component.



5mg

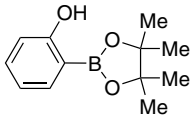
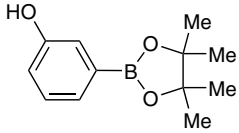
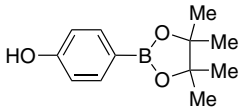
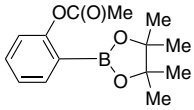
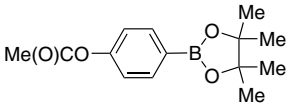
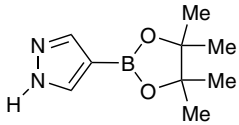
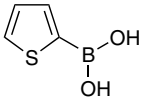
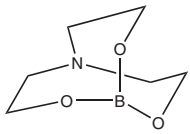
05-1039

3-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)furan, min. 97% *(248924-59-6)*
$C_{10}H_{15}BO_3$; FW: 194.04; white xtl.; m.p. 63-64°



1g
5g

BORON (Compounds)

05-1042	**2-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%** *(269409-97-4)* $C_{12}H_{17}BO_3$; FW: 220.08; pale yellow liq.; b.p. 100°/0.2mm 	1g 5g
05-1043	**3-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl) phenol, min. 97%** *(214360-76-6)* $C_{12}H_{17}BO_3$; FW: 220.08; pale yellow pwdr.; m.p. 96-98° 	1g 5g
05-1044	**4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl) phenol, min. 97%** *(269409-70-3)* $C_{12}H_{17}BO_3$; FW: 220.08; pale yellow pwdr.; m.p. 114-116° 	1g 5g
05-1045	**2-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl acetate, min. 97%** *(480424-68-8)* $C_{14}H_{19}BO_4$; FW: 262.14; colorless xtl.; m.p. 46-48° 	1g 5g
05-1047	**4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl acetate, min. 97%** *(480424-70-2)* $C_{14}H_{19}BO_4$; FW: 262.14; white to yellow pwdr.; m.p. 71-73° 	1g 5g
05-1048	**4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole, min. 97%** *(269410-08-4)* $C_9H_{15}BN_2O_2$; FW: 194.04; off-white to tan pwdr. 	1g 5g
05-1040	**2-Thiopheneboronic acid, min. 97%** *(6165-68-0)* $C_4H_3SB(OH)_2$; FW: 127.96; white to off-white pwdr.; m.p. 138-140° *(store cold)* 	5g 25g
05-1049	**m-Tolylboronic acid, min. 97%** *(17933-03-8)* $CH_3C_6H_4B(OH)_2$; FW: 135.96; white to off-white pwdr.; m.p. 160-162°	5g 25g
05-1050	**o-Tolylboronic acid, min. 97%** *(16419-60-6)* $CH_3C_6H_4B(OH)_2$; FW: 135.96; white to off-white pwdr.; m.p. 162-164°	5g 25g
05-1051	**p-Tolylboronic acid, min. 97%** *(5720-05-8)* $CH_3C_6H_4B(OH)_2$; FW: 135.96; white to off-white pwdr.; m.p. 248-250°	5g 25g
05-1100 HAZ	**B-Tribromoborazine, min. 95%** *(13703-88-3)* $(BrBNH)_3$; FW: 317.20; white pwdr. *moisture sensitive*	1g 5g
93-0528	**Tri-n-butylborate, 98%** *(688-74-4)* $B(OC_4H_9)_3$; FW: 230.16; colorless liq.; m.p. -70°; b.p. 230-235°; f.p. 200°F; d. 0.853 *moisture sensitive*	100g 500g
93-0568 HAZ	**B-Trichloroborazine, min. 95%** *(933-18-6)* $(ClBNH)_3$; FW: 183.84; white pwdr.; m.p. 84°; d. 1.58 *moisture sensitive*	250mg 1g 5g
93-0538	**Triethanolamineborate, min. 95%** *(283-56-7)* $B(OCH_2CH_2)_3N$; FW: 156.98; white pwdr.; m.p. 235-237° 	25g 100g

BORON (Compounds)

93-0540 HAZ	**Triethylborane, 98%** *(97-94-9)* $B(C_2H_5)_3$; FW: 98.00; colorless liq.; m.p. -92.9°; b.p. 95°; f.p. 32.8°F; d. 0.6961 (23°) *pyrophoric*	100g
93-0530 HAZ	**Triethylborate, 98.5+%** *(150-46-9)* $B(OC_2H_5)_3$; FW: 146.00; colorless liq.; m.p. -84.8°; b.p. 117.4°; f.p. 52°F; d. 0.864 *moisture sensitive*	100g 500g
93-0574 HAZ	**Trimethoxyboroxine, min. 95%** *(102-24-9)* $(CH_3O)_3B_3O_3$; FW: 173.6; colorless, slightly opaque liq.; m.p. 10-11°; f.p. 50°F; d. 1.216 *moisture sensitive*	100g 500g
93-0567 HAZ	**Trimethylborane, 98%** *(593-90-8)* $(CH_3)_3B$; FW: 55.92; colorless gas; m.p. -161.5°; b.p. -20.2°; d. 0.625 (-100°) *pyrophoric*	25g
93-0531 HAZ	**Trimethylborate, 98%** *(121-43-7)* $B(OCH_3)_3$; FW: 103.92; colorless liq.; m.p. -29°; b.p. 68.7°; f.p. 30°F; d. 0.915 *moisture sensitive*	500g 2kg
05-1320 NEW HAZ	**Trimethylborate, 99.95+%** *(121-43-7)* $B(OCH_3)_3$; FW: 103.92; colorless liq.; m.p. -29°; b.p. 68.7°; f.p. 30°F; d. 0.915 *moisture sensitive*	25g 100g
93-0543 HAZ	**Triphenylborane, min. 95%** *(960-71-4)* $B(C_6H_5)_3$; FW: 242.13; off-white pwdr.; m.p. 146-148°; b.p. 208°/14 mm *air sensitive*	1g 5g 25g
05-1295	**Triphenylborane, ammonia complex, min. 98%** *(13276-04-5)* $(C_6H_5)_3B{:}NH_3$; FW: 259.15; white pwdr.	1g 5g
05-1400 HAZ	**Tri-i-propylborate, min. 98%** *(5419-55-6)* $B(OCH(CH_3)_2)_3$; FW: 188.08; colorless liq.; b.p. 139-141°; f.p. 50°F; d. 0.815 *moisture sensitive*	100g 500g

Technical Note:

1. Transmetaling agent for the preparation of boronic acids.

References:

1. *Macromolecules,* **1998**, *31*, 2047
2. *J. Org. Chem.,* **1984**, *49*, 5243

05-1500	**Tris(pentafluorophenyl)borane, min. 97%** *(1109-15-5)* $(C_6F_5)_3B$; FW: 511.99; off-white pwdr. *moisture sensitive*	1g 5g 25g
05-2000 HAZ	**Tris(trimethylsiloxy)borate, min. 97%** *(4325-85-3)* $[(CH_3)_3SiO]_3B$; FW: 278.38; colorless liq.; m.p. -35°; b.p. 184°; f.p. 106°F; d. 0.828 *air sensitive*	10g 50g
05-5000	**Trityltetra(pentafluorophenyl)borate, min. 97%** *(136040-19-2)* $(C_6H_5)_3C^+(C_6F_5)_4B^-$; FW: 922.40; yellow pwdr. *hygroscopic*	250mg 1g 5g

BROMINE (Compounds)

93-3501 HAZ	**Bromine (99.5%)** *(7726-95-6)* Br_2; FW: 159.82; dark red liq.; m.p. -7.25°; b.p. 58.8°; d. 3.12 *(store cold)*	250g 1kg
06-0201	**Carbon tetrabromide, vacuum sublimed (99.998%-C) PURATREM** *(558-13-4)* *See* page 38	
93-3504 HAZ	**Hydrobromic acid, 48%** *(10035-10-6)* HBr; FW: 80.92; colorless liq.; m.p. -11°; b.p. 126°; d. 1.490	250g 1kg 5 x 1kg

CADMIUM (Elemental Forms)

93-4851 HAZ	**Cadmium granules (99.999%)** *(7440-43-9)* Cd; FW: 112.41; 1-5 mm; m.p. 320.9°; b.p. 765°; d. 8.642	25g 100g
93-4844 HAZ	**Cadmium pieces (99.9%)** *(7440-43-9)* Cd; FW: 112.41; pieces; m.p. 320.9°; b.p. 765°; d. 8.642	100g 500g
93-4841 HAZ	**Cadmium powder (99.9%)** *(7440-43-9)* Cd; FW: 112.41; -200 mesh; m.p. 320.9°; b.p. 765°; d. 8.642	250g 1kg
93-4848 HAZ	**Cadmium powder (99.999%)** *(7440-43-9)* Cd; FW: 112.41; -200 mesh; m.p. 320.9°; b.p. 765°; d. 8.642	10g 50g
93-4850 HAZ	**Cadmium shot (99.95%)** *(7440-43-9)* Cd; FW: 112.41; tear drop; m.p. 320.9°; b.p. 765°; d. 8.642	50g 250g

CADMIUM (Compounds)

48-0100 HAZ	**Cadmium acetate, anhydrous (99.999%-Cd) PURATREM** *(543-90-8)* $Cd(OOCCH_3)_2$; FW: 230.50; white pwdr.; m.p. 232-235°	5g 25g
93-4801 HAZ	**Cadmium acetate dihydrate, 98%** *(5743-04-4)* $Cd(OOCCH_3)_2 \cdot 2H_2O$; FW: 230.50 (266.54); white pwdr.; m.p. 72-73°; d. 2.341	250g 1kg
93-4802 HAZ	**Cadmium acetylacetonate, 98%** *(14689-45-3)* $Cd(CH_3COCHCOCH_3)_2$; FW: 310.64; white pwdr.; m.p. dec.	25g 100g
48-0150 HAZ	**Cadmium arsenide (99.999%-Cd) PURATREM** *(12006-15-4)* Cd_3As_2; FW: 487.07; dark gray solid; d. 3.031 *moisture sensitive*	5g 25g
93-4805 HAZ	**Cadmium bromide, anhydrous, 99%** *(7789-42-6)* $CdBr_2$; FW: 272.22; white pwdr.; m.p. 567°; b.p. 863°; d. 5.192 *hygroscopic*	10g 50g
93-4806 HAZ	**Cadmium chloride, anhydrous, 99+% (ACS)** *(10108-64-2)* $CdCl_2$; FW: 183.32; white pwdr.; m.p. 568°; b.p. 960°; d. 4.047 *hygroscopic*	50g 250g
48-1500 HAZ	**Cadmium chloride, anhydrous (99.995%-Cd) PURATREM** *(10108-64-2)* $CdCl_2$; FW: 183.32; white pwdr.; m.p. 568°; b.p. 960°; d. 4.047 *hygroscopic*	10g 50g
48-0200 HAZ	**Cadmium chloride hydrate (99.998%-Cd) PURATREM** *(34330-64-8)* $CdCl_2 \cdot XH_2O$; FW: 183.32; white xtl.	5g 25g
48-1501 amp HAZ	**Cadmium chloride, (99.999%-Cd) (O_2 < 50ppm) PURATREM** *(10108-64-2)* $CdCl_2$; FW: 183.32; -20 mesh white pwdr. (under argon); m.p. 568°; b.p. 960°; d. 4.047 *hygroscopic*	5g 25g
93-4811 HAZ	**Cadmium fluoride, 99%** *(7790-79-6)* CdF_2; FW: 150.40; white pwdr.; m.p. 1100°; b.p. 1758°; d. 6.64	25g 100g
93-4810 HAZ	**Cadmium fluoride (99.98%-Cd)** *(7790-79-6)* CdF_2; FW: 150.40; white pwdr.; m.p. 1100°; b.p. 1758°; d. 6.64	10g 50g
93-4812 HAZ	**Cadmium iodide, 99%** *(7790-80-9)* CdI_2; FW: 366.21; white pwdr.; m.p. 387°; b.p. 796°; d. 5.670 *air sensitive*	25g 100g
93-4815 HAZ	**Cadmium nitrate tetrahydrate, 98%** *(10022-68-1)* $Cd(NO_3)_2 \cdot 4H_2O$; FW: 236.41 (308.47); colorless, deliquescent xtl.; m.p. 59.4°; d. 2.45	100g 500g
93-4835 HAZ	**Cadmium oxide, 99%** *(1306-19-0)* CdO; FW: 128.40; reddish-brown pwdr.; m.p. 1430°; d. 8.15	250g 1kg
93-4817 HAZ	**Cadmium oxide (99.99%-Cd) PURATREM** *(1306-19-0)* CdO; FW: 128.40; reddish-brown pwdr.; m.p. 1430°; d. 8.15	250g 1kg
48-0800 HAZ	**Cadmium oxide (99.999%-Cd) PURATREM** *(1306-19-0)* CdO; FW: 128.40; red to brown pwdr.; m.p. 1430°; d. 8.15	25g 100g 500g
93-4818 HAZ	**Cadmium perchlorate hexahydrate, 99%** *(10326-28-0)* $Cd(ClO_4)_2 \cdot 6H_2O$; FW: 311.30 (419.39); white xtl.	25g 100g
93-4836 HAZ	**Cadmium selenide (99.999+%-Cd) PURATREM** *(1306-24-7)* CdSe; FW: 191.36; black pwdr.; m.p. > 1350°; d. 5.81	5g 25g

CADMIUM (Compounds)

	Cadmium selenide CANdot® quantum dots (CdSe core), 50umol/L in hexanes *(1306-24-7)* *See* page 139	
96-0800	**Cadmium selenide CANdot® quantum dot (CdSe core) kit, 50umol/L in hexanes, 525-625nm peak emissions** *(1306-24-7)* *See* page 533	
	Cadmium selenide/cadmium sulfide CANdot® quantum rods (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes *(1306-24-7)* *See* page 139	
96-0813	**Cadmium selenide/cadmium sulfide CANdot® quantum rod kit (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 560nm, 590nm, 620nm peak emissions** *(1306-24-7)* *See* page 533	
	Cadmium selenide/Zinc sulfide core/shell quantum dots with Amine in water FWHM <25nm QY>50% *See* page 140	
	Cadmium selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water FWHM <25nm QY>50% *See* page 140	
	Cadmium selenide/Zinc sulfide core/shell quantum dots with PEG in water FWHM <25nm QY>50% *See* page 140	
	Cadmium selenide/Zinc sulfide quantum dots in solid form *See* page 139	
93-4821 HAZ	**Cadmium sulfate hydrate, 98+% (ACS)** *(15244-35-6)* $3CdSO_4 \cdot 8H_2O$; FW: 625.38 (769.51); white pwdr.; d. 3.09	50g 250g
93-4823 HAZ	**Cadmium sulfide, 98%** *(1306-23-6)* CdS; FW: 144.46; yellow to orange pwdr.; m.p. 1750°; d. 4.82	25g 100g 500g
93-4822 HAZ	**Cadmium sulfide (99.9+%-Cd)** *(1306-23-6)* CdS; FW: 144.46; yellow to orange pwdr.; m.p. 1750°; d. 4.82	25g 100g 500g
93-4840 HAZ	**Cadmium sulfide (99.999%-Cd) PURATREM** *(1306-23-6)* CdS; FW: 144.46; yellow to orange pwdr.; m.p. 1750°; d. 4.82	10g 50g 250g
	Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with Amine in water FWHM <35nm QY>50% *See* page 141	
	Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water FWHM <35nm QY>50% *See* page 141	
	Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with PEG in water FWHM <35nm QY>50% *See* page 141	
	Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form FWHM <35nm, QY >50% *See* page 140	
	Cadmium sulfide/Zinc sulfide core/shell quantum dots with Amine in water FWHM <35nm QY>50% *See* page 142	
	Cadmium sulfide/Zinc sulfide core/shell quantum dots with carboxylic acid in water FWHM <35nm QY>50% *See* page 143	
	Cadmium sulfide/Zinc sulfide core/shell quantum dots with PEG in water FWHM <35nm QY>50% *See* page 143	
	Cadmium sulfide/Zinc sulfide quantum dots in solid form FWHM <35nm, QY >50% *See* page 142	

CADMIUM (Compounds)

48-2000 HAZ	**Cadmium telluride (99.999%-Cd) PURATREM** *(1306-25-8)* CdTe; FW: 240.00; -200 mesh black pwdr.; m.p. 1041°; d. 6.20	5g 25g
93-4825 HAZ	**Cadmium telluride (99.999%-Cd) PURATREM** *(1306-25-8)* CdTe; FW: 240.00; black lumps; m.p. 1041°; d. 6.20	10g 50g
48-5040 HAZ	**Dimethylcadmium, min. 97%** *(506-82-1)* $(CH_3)_2Cd$; FW: 142.88; colorless liq.; m.p. -4.5°; b.p. 105.5°; f.p. -1°F; d. 1.985 (18°) *moisture sensitive, pyrophoric* Note: Material may contain a small amount of precipitate.	5g 25g 100g
48-5041 HAZ	**Dimethylcadmium, min. 97% (10 wt% in hexanes)** *(506-82-1)* $(CH_3)_2Cd$; FW: 142.88; colorless liq. *air sensitive, moisture sensitive*	50g 250g
97-5040 HAZ	**Dimethylcadmium, elec. gr. (99.995+%-Cd) PURATREM** *(506-82-1)* $(CH_3)_2Cd$; FW: 142.88; colorless liq.; m.p. -4.5°; b.p. 105.5°; f.p. -1°F; d. 1.985 (18°) *moisture sensitive, pyrophoric* Note: Material may contain a small amount of precipitate.	25g 100g

CALCIUM (Elemental Forms)

20-0074 amp HAZ	**Calcium, crystalline, dendritic (99.99%)** *(7440-70-2)* Ca; FW: 40.08; ampouled under argon; m.p. 842°; b.p. 1484°; d. 1.54 *air sensitive, moisture sensitive*	5g 25g
93-2075 HAZ	**Calcium granules (99.5%)** *(7440-70-2)* Ca; FW: 40.08; -6 mesh; m.p. 842°; b.p. 1484°; d. 1.54 *air sensitive, moisture sensitive*	100g 500g
93-2076 HAZ	**Calcium shot (99%)** *(7440-70-2)* Ca; FW: 40.08; 10mm dia.; m.p. 842°; b.p. 1484°; d. 1.54 *air sensitive, moisture sensitive*	50g 250g
93-2077 HAZ	**Calcium turnings (99%)** *(7440-70-2)* Ca; FW: 40.08; turnings; m.p. 842°; b.p. 1484°; d. 1.54 *air sensitive, moisture sensitive*	50g 250g

CALCIUM (Compounds)

20-8400	**Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)calcium [Ca(FOD)$_2$]** *(36885-29-7)* $Ca[C_3F_7COCHCOC(CH_3)_3]_2$; FW: 630.30; white pwdr.; m.p. 208-210°; b.p. dec. 250° (subl. 170°/0.1mm)	1g 5g 25g
20-8450 NEW HAZ	**Bis(pentamethylcyclopentadienyl)calcium tetrahydrofuran, 98%** *(101200-05-9)* $[(CH_3)_5C_5]_2Ca(C_4H_8O)_2$; FW: 454.74; pale yellow pwdr. *air sensitive*	500mg 2g
20-1000	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)calcium, min. 97% [Ca(TMHD)$_2$]** *(118448-18-3)* $Ca(C_{11}H_{19}O_2)_2$; FW: 406.62; white pwdr.; m.p. 220-223°; b.p. dec. 280° (subl. 205°/0.1mm)	1g 5g 25g

Technical Notes:

1. Volatile source of calcium for use in the growth of: calcium carbonate Ref. (1).
2. Volatile source of calcium for use in the growth of: calcium oxide Ref. (2).
3. Volatile source of calcium for use in the growth of: calcium fluoride Ref. (3).

References:

1. *Thin Solid Films,* **2004**, *450*, 161
2. *Physica B: Condensed Matter (Amsterdam, Netherlands)* **2009**, *404*, 8, 11, 1398
3. *Chem. Mater.* **2007**, *19*, 3387

93-2001	**Calcium acetate monohydrate, 98%** *(62-54-4)* $Ca(OOCCCH_3)_2 \cdot H_2O$; FW: 158.17 (176.19); white pwdr.	250g 1kg
93-2002	**Calcium acetylacetonate hydrate** *(19372-44-2)* $Ca(CH_3COCHCOCH_3)_2 \cdot XH_2O$; FW: 238.32; white pwdr.; m.p. 175° dec.	25g 100g
93-2004 HAZ	**Calcium arsenate, min. 95%** *(7778-44-1)* $Ca_3(AsO_4)_2$; FW: 398.08; white pwdr.; d. 3.620	25g 100g 500g

CALCIUM (Compounds)

20-1500	**Calcium bromide, anhydrous (99.5%-Ca)** *(7789-41-5)* $CaBr_2$; FW: 199.90; -80 mesh white pwdr.; b.p. 806-812°; d. 3.353 *hygroscopic*	50g 250g
93-2007	**Calcium bromide hydrate, 98%** *(71626-99-8)* $CaBr_2 \cdot XH_2O$; FW: 199.90; white pwdr.	100g 500g
93-2010	**Calcium carbonate, 98%** *(471-34-1)* $CaCO_3$; FW: 100.09; white pwdr.; d. 2.930	250g 1kg
93-2011	**Calcium carbonate (99.95%-Ca)** *(471-34-1)* $CaCO_3$; FW: 100.09; -325 mesh white pwdr.; d. 2.930	100g 500g
20-0200	**Calcium carbonate (99.999%-Ca) PURATREM** *(471-34-1)* $CaCO_3$; FW: 100.09; white pwdr.; d. 2.930	10g 50g
20-2060	**Calcium chloride hydrate (99.999+%-Ca) PURATREM** *(22691-02-7)* $CaCl_2 \cdot XH_2O$; FW: 110.99; white pwdr.	5g 25g 100g
93-2012 HAZ	**Calcium chromate, min. 95%** *(13765-19-0)* $CaCrO_4$; FW: 156.06; yellow xtl.	100g 500g
93-2014	**Calcium 2-ethylhexanoate, superconductor grade, 40% in 2-ethylhexanoic acid (3-8% Ca)** *(136-51-6)* $Ca[OOCCH(C_2H_5)C_4H_9]_2$; FW: 326.50; viscous liq.	25g 100g
93-2017	**Calcium fluoride (99.9%-Ca)** *(7789-75-5)* CaF_2; FW: 78.08; <5 micron white pwdr.; m.p. 1360°; b.p. ~2500°; d. 3.180	250g 1kg
20-2500	**Calcium hexafluoroacetylacetonate dihydrate, 97%** *(203863-17-6)* $Ca(CF_3COCHCOCF_3)_2.2H_2O$; FW: 454.18 (486.18); off-white pwdr.; m.p. 135-140°; b.p. dec. 230-240° (subl. 180°/0.07mm)	1g 5g 25g
93-2021 HAZ	**Calcium hydride, 95%** *(7789-78-8)* CaH_2; FW: 42.10; 1-20mm light gray granules; m.p. 816° (H_2); d. 1.9 *moisture sensitive*	50g 250g
20-2021 HAZ	**Calcium hydride, min. 97%** *(7789-78-8)* CaH_2; FW: 42.10; 0-2mm white to gray pwdr.; m.p. 816° (H_2); d. 1.9 *moisture sensitive*	50g 250g
93-2023 HAZ	**Calcium iodate, 98%** *(7789-80-2)* $Ca(IO_3)_2$; FW: 389.89; white pwdr.; m.p. 540° dec.; d. 4.519	50g 250g
93-2024	**Calcium iodide, anhydrous, 98+%** *(10102-68-8)* CaI_2; FW: 293.89; -20 mesh off-white pwdr. *hygroscopic*	25g 100g
93-2025	**Calcium iodide hydrate, min. 98%** *(71626-98-7)* $CaI_2 \cdot XH_2O$; FW: 293.89; white lumps *moisture sensitive*	50g 250g
93-2062 HAZ	**Calcium methoxide, min. 90% (balance methanol)** *(2556-53-8)* $Ca(OCH_3)_2$; FW: 102.15; off-white pwdr. *moisture sensitive*	25g 100g
93-2026	**Calcium molybdate (99.9+%-Ca)** *(7789-82-4)* $CaMoO_4$; FW: 200.01; white pwdr.; m.p. 965°; d. 4.38-4.53	25g 100g
93-2027 HAZ	**Calcium naphthenate, ~35% in mineral spirits (4% Ca)** *(61789-36-4)* viscous liq.	500g 2kg
20-7000	**Calcium neodecanoate, superconductor grade (9-11% Ca)** *(27253-33-4)* $Ca(OOCC_9H_{19}\text{-neo})_2$; FW: 382.56; waxy solid	10g 50g
93-2028 HAZ	**Calcium nitrate tetrahydrate, 99%** *(13477-34-4)* $Ca(NO_3)_2 \cdot 4H_2O$; FW: 164.09 (236.16); white xtl.; m.p. 39.7°; b.p. 132° dec.; d. 1.82	250g 1kg
20-2025	**Calcium nitride (99%-Ca)** *(12013-82-0)* Ca_3N_2; FW: 148.25; -200 mesh black pwdr. *air sensitive, moisture sensitive*	5g 25g
93-2031 HAZ	**Calcium oxide, 98%** *(1305-78-8)* CaO; FW: 56.08; white pwdr.; m.p. 2580°; b.p. 2850°; d. 3.30 *moisture sensitive*	250g 1kg
20-2030 HAZ	**Calcium oxide (99.95%-Ca)** *(1305-78-8)* CaO; FW: 56.08; -325 mesh white pwdr.; m.p. 2580°; b.p. 2850°; d. 3.30 *moisture sensitive*	10g 50g

CALCIUM (Compounds)

93-2033 HAZ	**Calcium perchlorate hydrate, 99%** *(13477-36-6)* $Ca(ClO_4)_2 \cdot XH_2O$; FW: 238.98; white xtl.	100g 500g
20-2035	**Calcium phosphate, dibasic (99.95%-Ca)** *(7757-93-9)* $CaHPO_4$; FW: 136.06; 6-8 micron white pwdr.	50g 250g
20-2037	**Calcium phosphate, monobasic, monohydrate, 99%** *(10031-30-8)* $Ca(H_2PO_4)_2 \cdot H_2O$; FW: 234.06 (252.07); white pwdr.	250g 1kg
20-2039	**Calcium phosphate, tribasic (~37% Ca)** *(7758-87-4)* $Ca_{10}(OH)_2(PO_4)_6$; FW: 1004.62; white pwdr.	250g 1kg 5kg
93-2072 HAZ	**Calcium phosphide, 97%** *(1305-99-3)* Ca_3P_2; FW: 182.19; 1/2" pieces and down; m.p. ~1600°; d. 2.51 *moisture sensitive*	25g 100g
93-2073	**Calcium pyrophosphate (99.95%-Ca)** *(7790-76-3)* $Ca_2P_2O_7$; FW: 254.10; 6-8 micron white pwdr.; m.p. 1230°; d. 3.09	25g 100g
93-2043 HAZ	**Calcium silicide, 90% (~4% Fe, ~6% Ba+Al)** *(12013-56-8)* $CaSi_2$; FW: 96.25; -325 mesh pwdr. *moisture sensitive*	100g 500g 2kg
93-2045	**Calcium stearate, min. 85%** *(1592-23-0)* $Ca(O_2C_{18}H_{35})_2$; FW: 607.04; white pwdr.	100g 1kg
93-2074	**Calcium sulfate dihydrate, 98+% (ACS)** *(10101-41-4)* $CaSO_4 \cdot 2H_2O$; FW: 136.14 (172.17); white pwdr.; d. 2.32	500g 2kg
93-2047 HAZ	**Calcium sulfide (99.9+%-Ca)** *(20548-54-3)* CaS; FW: 72.14; off-white pwdr.; d. 2.5 *moisture sensitive*	10g 50g
20-2050	**Calcium titanate, 99%** *(12049-50-2)* $CaTiO_3$; FW: 135.98; off-white pwdr.; m.p. 1975°; d. 4.10	500g 2kg
20-5000	**Calcium trifluoromethanesulfonate, min. 96% (Calcium triflate)** *(55120-75-7)* $Ca(CF_3SO_3)_2$; FW: 338.21; white pwdr.; m.p. dec. *hygroscopic*	10g 50g
20-5025	**Calcium trifluoromethanesulfonimide, min. 97%** *(165324-09-4)* $Ca(C_2F_6NO_4S_2)_2$; FW: 600.37; white solid *hygroscopic*	250mg 1g 5g
20-2052	**Calcium tungstate, 98%** *(7790-75-2)* $CaWO_4$; FW: 287.93; white pwdr.; m.p. 1620°; d. 6.062	100g 500g

CARBON (Elemental Forms)

06-0025	**Acetylene carbon black (100% compressed)** *(1333-86-4)* C; FW: 12.011; black pwdr. (avg. particle size 0.042 microns); SA: 80m²/g; m.p. 3652-3697° (subl.); b.p. 4200°; d. bulk 0.21g/cm³	250g 1kg
06-0026	**Acetylene carbon black (50% compressed)** *(1333-86-4)* C; FW: 12.011; black pwdr. (avg. particle size 0.042 microns); SA: 80m²/g; m.p. 3652-3697° (subl.); b.p. 4200°; d. bulk 0.10/g/cm³	250g 1kg
06-0100	**Activated carbon** *(7440-44-0)* C; FW: 12.011; black pwdr.; SA: 1300-1400 m²/g; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	300g 1kg
06-0050	**Activated carbon** *(7440-44-0)* C; FW: 12.011; 4 x 10 mesh black gran.; SA: 1000 m²/g; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	500g 2kg
	Carbon nanotubes *(308068-56-6)* *See* page 148	
93-0601	**Carbon powder (99+%)** *(7440-44-0)* C; FW: 12.011; -325 mesh pwdr.; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	250g 1kg
93-0602	**Carbon powder (99.999%)** *(7440-44-0)* C; FW: 12.011; -200 mesh pwdr.; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	5g 25g
93-0605	**Carbon rods (99.999%)** *(7440-44-0)* C; FW: 12.011; 3mm dia. x 30cm; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	1rod 5rods

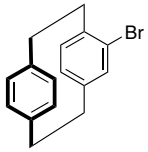
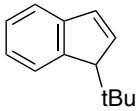
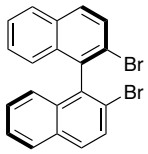
CARBON (Elemental Forms)

93-0608	**Carbon sheet (99.8%)** *(7440-44-0)* C; FW: 12.011; 0.25 mm thick x 15 cm wide; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	30 x 15cm 150 x 15cm
93-0607	**Carbon sheet (99.8%)** *(7440-44-0)* C; FW: 12.011; 0.127 mm thick x 15 cm wide; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	30 x 15cm 150 x 15cm
93-0609	**Carbon yarn (99.9%)** *(7440-44-0)* C; FW: 12.011; ~0.6mm dia.; m.p. 3652-3697° (subl.); b.p. 4200°; d. 1.8-2.1 (amorphous)	5m 25m
06-0502	**Fullerene - C_{60}, min. 99.9% (Buckminsterfullerene)** *(99685-96-8)* C_{60}; FW: 720.66; black pwdr.	25mg 100mg 500mg
06-0602	**Fullerene - C_{60}, 99.9+% (Buckminsterfullerene)** *(99685-96-8)* C_{60}; FW: 720.66; black pwdr.	25mg 100mg 500mg
06-0500	**Fullerenes - C_{60}/C_{70} mixture (contains ~20% C_{70} and ~1% higher fullerenes)** *(131159-39-2)* C_{60}, C_{70}; FW: 720.66, 840.77; black pwdr.; d. 1.6	50mg 250mg 1g
06-0503	**Fullerene - C_{70}, min. 98%** *(115383-22-7)* C_{70}; FW: 840.77; black pwdr.	10mg 50mg 250mg
06-0603	**Fullerene - C_{70}, min. 99%** *(115383-22-7)* C_{70}; FW: 840.77; black pwdr.	10mg 50mg 250mg
06-0525	**Fullerene - C_{76}, min. 95%** *(135113-15-4)* C_{76}; FW: 912.84; black pwdr.	5mg
06-0526	**Fullerene - C_{76}, min. 98%** *(135113-15-4)* C_{76}; FW: 912.84; black pwdr.	5mg
06-0527	**Fullerene - C_{76}, 99.9%** *(135113-15-4)* C_{76}; FW: 912.84; black pwdr.	5mg
06-0530	**Fullerene - C_{78}, min. 95%** *(136316-32-0)* C_{78}; FW: 936.86; black pwdr.	5mg
06-0507	**Fullerene - C_{84}, min. 95%** *(135113-16-5)* C_{84}; FW: 1008.93; black pwdr.	5mg
06-0607	**Fullerene - C_{84}, min. 99%** *(135113-16-5)* C_{84}; FW: 1008.92; black pwdr.	5mg
06-0512	**Fullerene carbon soot (contains 5-8wt% C_{60}/C_{70} and higher fullerenes)** *(131159-39-2)* C_{60}/C_{70}; black pwdr.	5g 25g
06-0274	**Graphene film, monolayer, on copper foil (1cm x 1cm)** *(1034343-98-0)* *See* page 143	
	Graphene film, monolayer, on Si/SiO_2 wafer (1cm x1cm), by CVD *(1034343-98-0)* *See* page 143	
	Graphene nanoplatelets *(1034343-98-0)* *See* page 146	
	Graphene nanoplatelets aggregates *(1034343-98-0)* *See* page 146	
06-0323	**Graphene oxide (0.8-1.2nm thick x 1-15 microns wide, made by the Staudenmaier Method)** *See* page 143	
06-2545	**Graphene oxide (4mg/ml water dispersion)** *(1034343-98-0)* *See* page 144	
06-2550	**Graphene oxide, reduced** *(1034343-98-0)* *See* page 144	
06-0318	**Graphene powder (1-5 layers thick x 0.5-5 microns wide, surface area 650-750 m^2/g)** *(1034343-98-0)* *See* page 144	

CARBON (Elemental Forms)

06-0313	**Graphene powder (single layer, surface area 400-1000 m²/g)** *(1034343-98-0)* *See* page 144	
	Graphene Quantum Dots (GQDs) *(1034343-98-0)* *See* page 147	
06-2510	**Monolayer Graphene on Cu (10 mm x 10 mm)** *(1034343-98-0)* *See* page 144	
06-2518	**Monolayer Graphene on Cu (60 mm x 40 mm)** *(1034343-98-0)* *See* page 145	
06-2523	**Monolayer Graphene on Cu with PMMA coating (60mm x 40mm)** *(1034343-98-0)* *See* page 145	
06-2534	**Monolayer Graphene on SiO_2/Si (10mm x 10mm)** *(1034343-98-0)* *See* page 145	

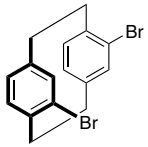
CARBON (Compounds)

06-0114	**2-Bromo-1,1'-binaphthyl, 98%** *(207611-58-3)* $C_{20}H_{13}Br$; FW: 333.22; white pwdr.	500mg 2g
06-0104	**racemic-4-Bromo[2.2]paracyclophane, min. 95%** *(1908-61-8)* $C_{16}H_{15}Br$; FW: 287.19; white pwdr. Note: Paracyclophane Kit component. 	500mg 2g
06-0135 NEW	**1-t-Butyl-1H-indene, min. 95%** *(40650-31-5)* $C_{13}H_{16}$; FW: 172.27; colorless liq. 	250mg 1g
06-0115 HAZ	**n-Butylisocyanide, 97%** *(2769-64-4)* $C_4H_9N{\equiv}C$; FW: 83.13; colorless to pale yellow liq.; d. 0.795 *(store cold), STENCH*	1g 5g
06-0120 amp HAZ	**t-Butylisocyanide, min. 98%** *(7188-38-7)* $(CH_3)_3CN{\equiv}C$; FW: 83.13; colorless liq.; b.p. 90-92°; f.p. 28°F; d. 0.735 *(store cold), STENCH*	1g 5g
06-0150 HAZ	**t-Butylmethylacetylene, min. 98%** *(999-78-0)* $C_4H_9C{\equiv}C(CH_3)$; FW: 96.17; colorless liq.; b.p. 83°; f.p. 14°F; d. 0.718	1g 5g
06-0201 amp HAZ	**Carbon tetrabromide, vacuum sublimed (99.998%-C) PURATREM** *(558-13-4)* CBr_4; FW: 331.65; white xtl.; m.p. 88-90°; b.p. 190°	25g 100g
06-0350 HAZ	**Cyclooctatetraene, 98% COT** *(629-20-9)* C_8H_8; FW: 104.15; pale yellow liq.; m.p. -5°; b.p. 142-143°; f.p. 73°F; d. 0.943 *air sensitive, (store cold)* Note: Inhibited with 0.1% hydroquinone.	1g 5g
06-5000	**neo-Decanoic acid, prime grade** *(26896-20-8)* isomeric C_{10} acids; colorless liq.; b.p. 243-253°; d. 0.92	100g 500g
06-0483 NEW	**(1R)-2,2'-Dibromo-1,1'-binaphthalene, min. 98%** *(86688-08-6)* $C_{20}H_{12}Br_2$; FW: 412.12; white to light-yellow solid Note: Sold in collaboration with Daicel for research purposes only. 	50mg 100mg
06-0484 NEW	**(1S)-2,2'-Dibromo-1,1'-binaphthalene, min. 98%** *(150024-49-0)* $C_{20}H_{12}Br_2$; FW: 412.12; white to light-yellow pwdr. Note: Sold in collaboration with Daicel for research purposes only.	50mg 100mg
06-0450	**racemic-2,2'-Dibromo-1,1'-binaphthyl, min. 96%** *(74866-28-7)* $C_{20}H_{12}Br_2$; FW: 412.13; white to off-white pwdr.; m.p. 178-181°	1g 5g

CARBON (Compounds)

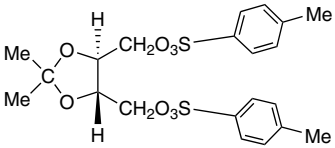
06-0477 **2,2'-Dibromobiphenyl, 98+%** *(13029-09-9)* — 1g, 5g
$C_{12}H_8Br_2$; FW: 312.00; white pwdr.

06-0460 **racemic-4,12-Dibromo[2.2]paracyclophane, min. 95%** — 250mg, 1g
(23927-40-4)
$C_{16}H_{14}Br_2$; FW: 366.09; white to off-white pwdr.
Note: Paracyclophane Kit component.



06-0550 **Diphenylacetylene, 99%** *(501-65-5)* — 2g, 10g
$C_6H_5C{\equiv}CC_6H_5$; FW: 178.23; white pwdr.; m.p. 59-61°; b.p. 170°/19 mm; d. 0.990

06-1050 **(4R,5R)-(-)-O-Isopropylidene-2,3-dihydroxy-1,4-bis (p-tosyl)butane** — 1g, 5g
(51064-65-4)
$C_{21}H_{26}O_8S_2$; FW: 470.56; white pwdr.; m.p. 89-91°
(store cold)

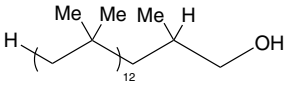


06-1040 **(4S,5S)-(+)-O-Isopropylidene-2,3-dihydroxy-1,4-bis (p-tosyl)butane** — 1g, 5g
(37002-45-2)
$C_{21}H_{26}O_8S_2$; FW: 470.56; white pwdr.; m.p. 89-91°
(store cold)

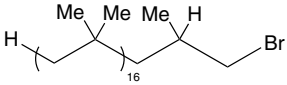
03-1150 **Lithium pentamethylcyclopentadienide, min. 98%** *(51905-34-1)*
See page 118

03-4750 **Lithium tetramethylcyclopentadienide, min. 95%** *(82061-21-0)*
See page 118

06-1037 amp HAZ **2-Methyl-3-[polyisobutyl(12)]propanol (50% in heptane/polyisobutylene)** — 1g, 5g
$C_{52}H_{106}O$; FW: 747; colorless liq.



06-1045 amp HAZ **2-Methyl-3-[polyisobutyl(12)]propyl bromide (50% in heptane/polyisobutylene)** — 1g, 5g
$C_{68}H_{137}Br$; FW: 1035; pale yellow liq.



96-7052 **Paracyclophane Kit**
See page 544

06-1290 amp HAZ **Pentamethylcyclopentadiene, min. 98%** *(4045-44-7)* — 1g, 5g, 25g
$C_{10}H_{16}$; FW: 136.24; pale yellow liq.; b.p. 58.3°/13.5 mm; f.p. 112°F; d. 0.870
(store cold)

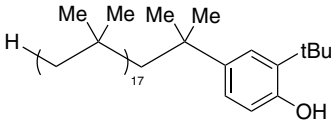
06-1296 **1,2,3,4,5-Pentaphenyl-1,3-cyclopentadiene, 99%** *(2519-10-0)* — 1g, 5g
$C_{35}H_{26}$; FW: 446.60; white pwdr.; m.p. 254-256°

06-1150 HAZ **neo-Pentylchloride, 98%** *(753-89-9)* — 5g, 25g, 100g
$(CH_3)_3CCH_2Cl$; FW: 106.59; colorless liq.; m.p. -20°; b.p. 84-85°; f.p. 16°F; d. 0.866

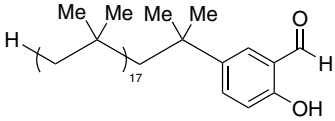
06-1060 **Polydiacetylene nanotube (PDNT-12-8-22Br)**
See page 149

06-5075 **Polyethylene glycol dodecyl ether (Brij™ 35)** *(9002-92-0)*
See page 168

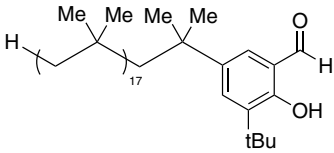
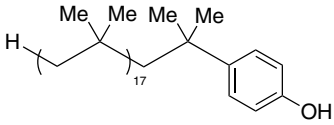
06-1055 amp HAZ **4-[Polyisobutyl(18)]-2-(t-butyl)phenol (50% in heptane/polyisobutylene)** — 1g, 5g
$C_{82}H_{158}O$; FW: 1160; yellow liq.



06-1032 amp HAZ **5-[Polyisobutyl(18)]-2-hydroxybenzaldehyde (50% in heptane/polyisobutylene)** — 1g, 5g
$C_{79}H_{150}O_2$; FW: 1132; yellow liq.



CARBON (Compounds)

06-1035 amp HAZ	**5-[Polyisobutyl(18)]-2-hydroxy-3-(t-butyl) benzaldehyde (50% in heptane/ polyisobutylene)** $C_{83}H_{158}O_2$; FW: 1188.00; yellow liq. 	1g 5g
06-1048 amp HAZ	**4-[Polyisobutyl(18)]phenol (50% in heptane/polyisobutylene)** $C_{78}H_{150}O$; FW: 1104; pale yellow liq. 	1g 5g
08-2040	**(S)-(+)-1,2-Propanediol, 99%** *(4254-15-3)* *See* page 220	
06-1850 amp HAZ	**i-Propylisocyanide, min. 97%** *(598-45-8)* i-$C_3H_7N{\equiv}C$; FW: 69.11; colorless liq.; b.p. 82-83°; d. 0.7596 *(store cold), STENCH*	1g 5g
06-2000	**Styrene-divinylbenzene copolymer (20% cross-linked)** *(9003-53-6)* white beads, 20-60 mesh	50g 250g
06-3050 amp HAZ	**Tetramethyl(n-propyl)cyclopentadiene, min. 97%** *(64417-12-5)* $C_{12}H_{20}$; FW: 164.30; yellow liq.	1g 5g 25g

CERIUM (Elemental Forms)

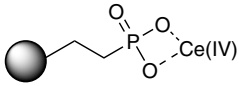
58-0040 HAZ	**Cerium chips (99.9% REO)** *(7440-45-1)* Ce; FW: 140.13; (packed in mineral oil); m.p. 815°; b.p. 3257°; d. 6.90 *air sensitive, moisture sensitive*	25g 100g
58-0050 HAZ	**Cerium foil (99.9% REO)** *(7440-45-1)* Ce; FW: 140.13; 1.0mm thick (~4.2g/25 x 25mm) (packed in mineral oil); m.p. 815°; b.p. 3257°; d. 6.90 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-5866 HAZ	**Cerium ingot (99.9% REO)** *(7440-45-1)* Ce; FW: 140.13; (packed in mineral oil); m.p. 815°; b.p. 3257°; d. 6.90 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	25g 100g

CERIUM (Compounds)

93-5803	**Ammonium cerium(IV) nitrate, 98.5+% (ACS)** *(16774-21-3)* *See* page 5	
93-5801	**Cerium(III) acetate hydrate (99.9%-Ce) (REO)** *(537-00-8)* $Ce(OOCCH_3)_3{\cdot}XH_2O$; FW: 317.26; white pwdr.	50g 250g
58-5801	**Cerium(III) acetate hydrate (99.999%-Ce) (REO) PURATREM** *(537-00-8)* $Ce(OOCCH_3)_3{\cdot}XH_2O$; FW: 317.26; white pwdr.	25g 100g
93-5802	**Cerium(III) acetylacetonate hydrate (99.9%-Ce) (REO)** *(15653-01-7)* $Ce(CH_3COCHCOCH_3)_3{\cdot}XH_2O$; FW: 437.44; tan pwdr.	25g 100g
93-5861	**Cerium(III) bromide, anhydrous (99.9%-Ce) (REO)** *(14457-87-5)* $CeBr_3$; FW: 379.85; orange pwdr. *hygroscopic*	5g 25g
93-5806	**Cerium(III) bromide hydrate (99.9%-Ce) (REO)** *(396654-07-2)* $CeBr_3{\cdot}XH_2O$; FW: 379.85; white xtl.	10g 50g
93-5800	**Cerium(III) carbonate hydrate (96%-Ce) (REO)** *(54451-25-1)* $Ce_2(CO_3)_3{\cdot}XH_2O$; FW: 460.29; off-white pwdr.	250g 1kg 5kg
93-5807	**Cerium(III) carbonate hydrate (99+%-Ce) (REO)** *(54451-25-1)* $Ce_2(CO_3)_3{\cdot}XH_2O$; FW: 460.29; white xtl.	50g 250g
93-5862	**Cerium(III) chloride, anhydrous (H_2O < 0.5%) (99.9%-Ce) (REO)** *(7790-86-5)* $CeCl_3$; FW: 246.48; white pwdr.; m.p. 848°; b.p. 1727°; d. 3.92 *hygroscopic*	5g 25g 100g

CERIUM (Compounds)

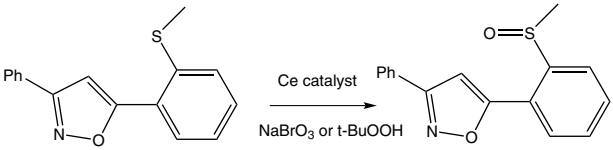
93-5808	**Cerium(III) chloride hydrate (99.9%-Ce) (REO)** *(19423-76-8)* $CeCl_3 \cdot XH_2O$; FW: 246.48; white to pale yellow xtl.	100g 500g
58-0200	**Cerium(III) chloride hydrate (99.99%-Ce) (REO) PURATREM** *(19423-76-8)* $CeCl_3 \cdot XH_2O$; FW: 246.48; white to pale yellow xtl.	25g 100g
58-5100	**Cerium(IV) ethyl/butyl phosphonate Silica (PhosphonicS POCe)** yellow solid; SA: >350 m^2/g Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metal Oxidation Catalyst Kit component.	5g 25g



Technical Note:

1. Catalyst used for the oxidation of a range of sulfides to sulfoxides.

Particle size range: 70-200 microns
Average pore size: 60Å
Effective loadings: 0.3 to 0.5 mmol/g



References:

1. *Tetrahedron Lett.*, **2005**, *46*, 4365

93-5833	**Cerium(III) 2-ethylhexanoate, 49% in 2-ethylhexanoic acid (12% Ce)** *(56797-01-4)* $Ce[OOCCH(C_2H_5)C_4H_9]_3$; FW: 569.74; viscous liq.; f.p. 230°F; d. 1.08	500g 2kg
93-5825	**Cerium(III) fluoride (99.9%-Ce) (REO)** *(7758-88-5)* CeF_3; FW: 197.12; white to off-white pwdr.; m.p. 1460°; b.p. ~2300°; d. 6.16 *hygroscopic*	25g 100g
58-0500	**Cerium(IV) fluoride, anhydrous, 99%** *(10060-10-3)* CeF_4; FW: 216.13; white pwdr.; m.p. 650° dec. *hygroscopic*	10g 50g
58-0505	**Cerium(IV) fluoride, hydrate** *(60627-09-0)* $CeF_4 \cdot XH_2O$; FW: 216.13; white pwdr.; m.p. $-H_2O$ @ 100°, 650° dec.	10g 50g
93-5810	**Cerium(IV) hydroxide, min. 85%** *(12014-56-1)* $Ce(OH)_4$; FW: 208.15; white to yellow pwdr.	25g 100g
93-5812	**Cerium(III) iodide hydrate** *(7790-87-6)* $CeI_3 \cdot XH_2O$; FW: 520.82; yellow xtl.	5g 25g
58-0870	**Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in octanoic acid and Kensol 50H (CEF-KE02)** *See* page 149	
58-0865	**Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in water at pH 4.75 +-0.25 (CEF-W420)** *See* page 149	
93-5831 HAZ	**Cerium(III) nitrate hexahydrate (99.9%-Ce) (REO)** *(10294-41-4)* $Ce(NO_3)_3 \cdot 6H_2O$; FW: 326.17 (434.23); white xtl.	100g 500g
93-5814 HAZ	**Cerium(III) nitrate hexahydrate (99.99%-Ce) (REO) PURATREM** *(10294-41-4)* $Ce(NO_3)_3 \cdot 6H_2O$; FW: 326.17 (434.23); white xtl.	10g 50g
58-5845	**Cerium nitride (99.9%-Ce)** *(25764-08-3)* CeN; FW: 154.12; -60 mesh pwdr.	250mg 1g
93-5832	**Cerium(III) oxalate nonahydrate (99.9%-Ce) (REO)** *(13266-83-6)* $Ce_2(C_2O_4)_3 \cdot 9H_2O$; FW: 544.30 (706.44); white xtl.; m.p. dec.	25g 100g
93-5816	**Cerium(IV) oxide (99.9%-Ce) (REO)** *(1306-38-3)* CeO_2; FW: 172.12; yellow pwdr.; m.p. ~2600°; d. 7.132	50g 250g 1kg
58-0800	**Cerium(IV) oxide (99.995%-Ce) PURATREM** *(1306-38-3)* CeO_2; FW: 172.12; yellow pwdr.; m.p. ~2600°; d. 7.132	5g 25g

CERIUM (Compounds)

58-0850	**Cerium(IV) oxide [contains some Ce(III)] in water at pH = 9.0 +-0.5 (CEO-W290)** *(1306-38-3)* *See* page 149	
58-0860	**Cerium(IV) oxide [contains some Ce(III)] in water at pH = 3.5 +-0.75 (CEO-W320)** *(1306-38-3)* *See* page 150	
58-1400	**Cerium(IV) oxide nanopowder** *(1306-38-3)* *See* page 150	
93-5860 HAZ	**Cerium(III) perchlorate hexahydrate, reagent** *(14017-47-1)* $Ce(ClO_4)_3 \cdot 6H_2O$; FW: 438.47 (546.56); white xtl.	50g 250g
93-5818	**Cerium(III) phosphate (99.9%-Ce) (REO)** *(721880-19-9)* $CePO_4$; FW: 235.09; off-white pwdr.	25g 100g
58-1000	**Cerium(III) stearate, tech. gr.** *(10119-53-6)* $Ce(O_2C_{18}H_{35})_3$; FW: 990.49; white pwdr.; m.p. 120-124°	500g 2500g
93-5835	**Cerium(III) sulfate octahydrate (99%-Ce) (REO)** *(10450-59-6)* $Ce_2(SO_4)_3 \cdot 8H_2O$; FW: 568.42 (712.42); white xtl.	25g 100g
93-5836	**Cerium(III) trifluoroacetylacetonate hydrate** *(63356-25-2)* $Ce(CF_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 599.36; yellow xtl.	5g 25g
58-6000	**Cerium(III) trifluoromethanesulfonate, min. 98% (Cerium triflate)** *(76089-77-5)* $Ce(CF_3SO_3)_3$; FW: 587.33; white pwdr. *hygroscopic*	5g 25g
93-7401	**Cerium(III) tungstate (99.9%-Ce) (REO)** *(13454-74-5)* $Ce_2(WO_4)_3$; FW: 1023.79; off-white pwdr.	5g 25g
96-6770	**PhosphonicS Metal Oxidation Catalyst Kit** *See* page 488	
58-5000	**Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato)cerium(IV), min. 97% (99.9%-Ce) (REO) [Ce(TMHD)$_4$]** *(18960-54-8)* $Ce(C_{11}H_{19}O_2)_4$; FW: 873.20; red pwdr.; m.p. 275-280°; b.p. dec. 295° (subl. 140°/0.05mm)	1g 5g 25g
58-7500 amp	**Tris(cyclopentadienyl)cerium(III) (99.9%-Ce) (REO)** *(1298-53-9)* $(C_5H_5)_3Ce$; FW: 335.41; yellow pwdr.; m.p. 452° dec.; b.p. subl. 230°/0.01 mm *air sensitive, moisture sensitive*	1g 5g
58-7750	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)cerium(III), 99% [Ce(FOD)$_3$]** *(172424-98-5)* $Ce(C_3F_7COCHCOC_4H_9)_3$; FW: 1025.64; yellow pwdr.	250mg 1g
58-8000 amp	**Tris(i-propylcyclopentadienyl)cerium(III) (99.9%-Ce) (REO)** *(122528-16-9)* $[(C_3H_7)C_5H_4]_3Ce$; FW: 461.64; violet-blue xtl. *air sensitive*	1g 5g
58-9000	**Tris(1,2,3,4-tetramethyl-2,4-cyclopentadienyl)cerium(III) (99.9%-Ce) (REO)** *(251984-08-4)* $[(CH_3)_4C_5H]_3Ce$; FW: 503.73; green pwdr. *air sensitive*	1g 5g

CESIUM (Elemental Forms)

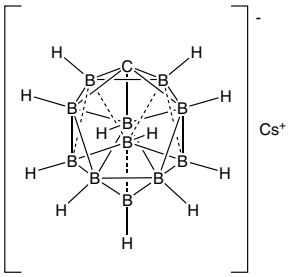
93-5550 amp HAZ	**Cesium (99.5%) (prescored ampoule)** *(7440-46-2)* Cs; FW: 132.91; under argon; m.p. 28.64; b.p. 690°; d. 1.892 *moisture sensitive, pyrophoric*	1g 5g
55-5551 amp HAZ	**Cesium (99.9+%) (prescored ampoule)** *(7440-46-2)* Cs; FW: 132.91; under argon; m.p. 28.64°; b.p. 690°; d. 1.892 *moisture sensitive, pyrophoric*	1g 5g 25g

CESIUM (Compounds)

93-5510	**Cesium acetate (99.9%-Cs)** *(3396-11-0)* $CsOOCCH_3$; FW: 191.95; lump; m.p. 194° *hygroscopic*	10g 50g
93-5513	**Cesium bromide (99%-Cs)** *(7787-69-1)* CsBr; FW: 212.81; white xtl.; m.p. 636°; b.p. 1300°; d. 4.44 *hygroscopic*	25g 100g

CESIUM (Compounds)

93-5541	**Cesium bromide (99.9%-Cs)** *(7787-69-1)* CsBr; FW: 212.81; white xtl.; m.p. 636°; b.p. 1300°; d. 4.44 *hygroscopic*	10g 50g
93-5514	**Cesium carbonate (99+%-Cs)** *(534-17-8)* Cs_2CO_3; FW: 325.82; white pwdr.; m.p. 610° dec. *hygroscopic*	25g 100g 500g
55-5525	**Cesium carborane** *(12539-26-3)* $Cs^+CB_{11}H_{12}^-$; FW: 275.93; white pwdr.	250mg 1g



Technical Note:

1. A class of “super weak” coordinating anions. These materials are useful as counterions to cationic catalysts and strong one-electron oxidants.

References:

1. *Acc. Chem. Res.,* **1998**, *31*, 133

93-5536	**Cesium chloride (99+%-Cs)** *(7647-17-8)* CsCl; FW: 168.36; white xtl.; m.p. 646°; b.p. 1290°; d. 3.988 *hygroscopic*	25g 100g
93-5535	**Cesium chloride (99.9%-Cs)** *(7647-17-8)* CsCl; FW: 168.36; white xtl.; m.p. 646°; b.p. 1290°; d. 3.988 *hygroscopic*	10g 50g
93-5542	**Cesium chloride (99.999%-Cs) PURATREM** *(7647-17-8)* CsCl; FW: 168.36; white xtl.; m.p. 646°; b.p. 1290°; d. 3.988 *hygroscopic*	10g 50g
55-1800 HAZ	**Cesium dodecahydrododecaborate, min. 98%** *(12008-75-2)* $Cs_2B_{12}H_{12}$; FW: 407.64; white pwdr. *hygroscopic*	5g 25g 100g
55-2000 HAZ	**Cesium 2-ethylhexoxide (0.8-1.0M in octane/toluene)** $CH_3CH_2CH_2CH_2CH(C_2H_5)CH_2OCs$; FW: 262.12; light-yellow liq.; f.p. 60°F (octane) *moisture sensitive*	5g 25g
93-5519 HAZ	**Cesium fluoride (99+%-Cs)** *(13400-13-0)* CsF; FW: 151.90; white pwdr.; m.p. 682°; b.p. 1251°; d. 4.115 *hygroscopic*	25g 100g
93-5518 HAZ	**Cesium fluoride (99.9%-Cs)** *(13400-13-0)* CsF; FW: 151.90; white pwdr.; m.p. 682°; b.p. 1251°; d. 4.115 *hygroscopic*	10g 50g
93-5520 HAZ	**Cesium hydroxide, 50% aqueous solution (99.9%-Cs)** *(21351-79-1)* CsOH; FW: 149.91; colorless liq. *hygroscopic*	25g 100g
93-5521 HAZ	**Cesium hydroxide, hydrate (99.9%-Cs)** *(12260-45-6)* $CsOH{\cdot}XH_2O$; FW: 149.91; xtl. (15-20% H_2O); m.p. 272°; d. 3.675 *hygroscopic*	10g 50g
93-5524	**Cesium iodide (99%-Cs)** *(7789-17-5)* CsI; FW: 259.81; white xtl.; m.p. 621°; b.p. 1280°; d. 4.510 *hygroscopic*	25g 100g 500g
93-5543	**Cesium iodide (99.9%-Cs)** *(7789-17-5)* CsI; FW: 259.81; white xtl.; m.p. 621°; b.p. 1280°; d. 4.510 *hygroscopic*	25g 100g 500g
93-5544	**Cesium iodide (99.999%-Cs) PURATREM** *(7789-17-5)* CsI; FW: 259.81; white xtl.; m.p. 621°; b.p. 1280°; d. 4.510 *hygroscopic*	10g 50g

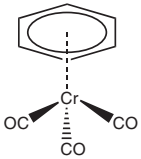
CESIUM (Compounds)

93-5527 HAZ	**Cesium nitrate (99.9%-Cs)** *(7789-18-6)* $CsNO_3$; FW: 194.91; white xtl.; m.p. 414°; d. 3.685 *hygroscopic*	10g 50g
93-5545 HAZ	**Cesium nitrate (99.99%-Cs) PURATREM** *(7789-18-6)* $CsNO_3$; FW: 194.91; white xtl.; m.p. 414°; d. 3.685 *hygroscopic*	10g 50g
93-5528 HAZ	**Cesium perchlorate (99.9%-Cs)** *(13454-84-7)* $CsClO_4$; FW: 232.36; white xtl.; m.p. 250°; d. 3.327 *hygroscopic*	10g 50g
93-5547	**Cesium sulfate (99.9%-Cs)** *(10294-54-9)* Cs_2SO_4; FW: 361.87; white xtl.; m.p. 1010°; d. 4.243 *hygroscopic*	10g 50g
55-5000	**2,2,6,6-Tetramethyl-3,5-heptanedionato cesium [Cs(TMHD)]** *(61346-75-6)* $CsC_{11}H_{19}O_2$; FW: 316.18; pale yellow pwdr.	1g 5g

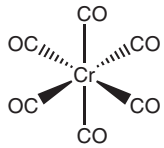
CHROMIUM (Elemental Forms)

93-2457	**Chromium chips (99.8%)** *(7440-47-3)* Cr; FW: 52.01; random pieces; m.p. 1890°; b.p. 2200°; d. 7.20	50g 250g
24-0025	**Chromium crystallites (99.996%)** *(7440-47-3)* Cr; FW: 52.01; 2-15 mm; m.p. 1890°; b.p. 2200°; d. 7.20	10g 50g
93-2456	**Chromium flakes (99.3%)** *(7440-47-3)* Cr; FW: 52.01; 19 mm and down; m.p. 1890°; b.p. 2200°; d. 7.20	100g 500g
24-0040	**Chromium pellets (99.997%)** *(7440-47-3)* Cr; FW: 52.01; 3-5.4 mm; m.p. 1890°; b.p. 2200°; d. 7.20	5g 25g 100g
93-2458 HAZ	**Chromium powder (99%)** *(7440-47-3)* Cr; FW: 52.01; -100 mesh; m.p. 1890°; b.p. 2200°; d. 7.20	100g 500g

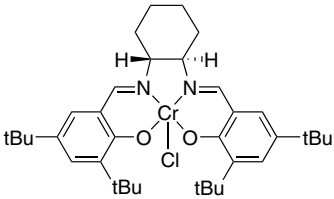
CHROMIUM (Compounds)

24-0120	**Benzene chromium tricarbonyl, 98%** *(12082-08-5)* $C_6H_6Cr(CO)_3$; FW: 214.14; yellow xtl.; m.p. 165-166° 	1g 5g
24-0130 amp HAZ	**Bis(benzene)chromium, min. 97%** *(1271-54-1)* $(C_6H_6)_2Cr$; FW: 208.22; brown to black xtl.; m.p. 284-285° *air sensitive*	1g 5g
24-0135 amp HAZ	**Bis(cyclopentadienyl)chromium, min. 95%, sublimed (Chromocene)** *(1271-24-5)* $(C_5H_5)_2Cr$; FW: 182.18; scarlet xtl.; m.p. 172-173° *air sensitive*	1g 5g
24-0145 amp HAZ	**Bis(ethylbenzene)chromium [mixture of $(C_2H_5)xC_6H_6\eta x$ where x = 0-4]** *(12212-68-9)* $[(C_2H_5)\cdot C_6H_6\cdot\cdot]_2Cr$; dark brown liq.; b.p. 140-160°/1mm; d. 1.14-1.18 *air sensitive*	1g 5g 25g
24-0147 amp HAZ	**Bis(ethylcyclopentadienyl)chromium, min. 98%** *(55940-03-9)* $[(C_2H_5)C_5H_4]_2Cr$; FW: 238.29; red liq.; b.p. 95-98°/1.0mm; d. 1.15 *air sensitive*	1g 5g
24-0150 amp HAZ	**Bis(pentamethylcyclopentadienyl)chromium, min. 95% (Decamethylchromo-cene)** *(74507-61-2)* $[(CH_3)_5C_5]_2Cr$; FW: 322.45; brown pwdr. *air sensitive*	1g 5g
24-0153 amp HAZ	**Bis(i-propylcyclopentadienyl)chromium, min. 98%** *(329735-69-5)* $[(C_3H_7)C_5H_4]_2Cr$; FW: 266.35; red liq. *air sensitive*	1g 5g

CHROMIUM (Compounds)

24-0154 amp HAZ	**Bis(tetramethylcyclopentadienyl)chromium, min. 98%** *(82066-37-3)* $[(CH_3)_4C_5H]_2Cr$; FW: 294.40; red xtl. *air sensitive*	1g 5g
24-0000 NEW	**Chromium(III) acetate, 97%** *(1066-30-4)* $Cr(CH_3CO_2)_3$; FW: 229.13; green pwdr.	100g 500g
93-2401	**Chromium(III) acetate, basic** *(39430-51-8)* $Cr_3(OH)_2(OOCCH_3)_7$; FW: 603.32; blue to green pwdr.	250g 1kg
24-0155	**Chromium(III) acetate solution, 11.2-11.8% Cr** *(1066-30-4)* $Cr(OOCCH_3)_3$; FW: 229.13; liq.; d. 1.28	1kg 4kg
24-0160	**Chromium(III) acetylacetonate, 97.5%** *(21679-31-2)* $Cr(CH_3COCHCOCH_3)_3$; FW: 349.33; maroon xtl.; m.p. 214°; b.p. subl. 100°/0.2mm	50g 250g 1kg
24-0185 HAZ	**Chromium arsenide (99%-Cr)** *(12254-85-2)* Cr_2Ad; FW: 178.98; black pwdr.	5g 25g
24-0190 NEW HAZ	**Chromium(III) bromide, anhydrous flakes, 99%** *(10031-25-1)* $CrBr_3$; FW: 291.71; dark-green flakes *hygroscopic* **For detailed technical note visit strem.com.**	1g 5g
93-2415 HAZ	**Chromium(III) bromide hexahydrate** *(13478-06-3)* $CrBr_3{\cdot}6H_2O$; FW: 291.69 (399.81); green xtl.; d. 5.4	5g 25g
93-2432	**Chromium carbide, 99.7%** *(12012-35-0)* Cr_3C_2; FW: 180.02; gray pwdr.; m.p. 1890°; b.p. 3800°; d. 6.68	50g 250g
24-0183 NEW HAZ	**Chromium carbonyl, 98+%** *(13007-92-6)* $Cr(CO)_6$; FW: 220.06; white to off-white solid	5g 25g 100g
24-0180 HAZ	**Chromium carbonyl, sublimed, 99%** *(13007-92-6)* $Cr(CO)_6$; FW: 220.06; white xtl.; m.p. 154-155°; d. 1.77 **For detailed technical note visit strem.com.** 	5g 25g 100g 500g
93-2405	**Chromium(II) chloride, anhydrous (99.9%-Cr)** *(10049-05-5)* $CrCl_2$; FW: 122.90; off-white to pale green pwdr.; m.p. 824°; d. 2.878 *air sensitive, hygroscopic*	1g 5g 25g
24-0270 HAZ	**Chromium(III) chloride, anhydrous, 99%** *(10025-73-7)* $CrCl_3$; FW: 158.35; purple xtl.; m.p. ~1150°; b.p. subl. 1300°; d. 2.76 *hygroscopic*	50g 250g
93-2442 HAZ	**Chromium(III) chloride, anhydrous (99.9%-Cr)** *(10025-73-7)* $CrCl_3$; FW: 158.35; purple flakes (< 1/8'); m.p. ~1150°; b.p. subl. 1300°; d. 2.76 *hygroscopic*	10g 50g
93-2417 HAZ	**Chromium(III) chloride hexahydrate** *(10060-12-5)* $CrCl_3{\cdot}6H_2O$; FW: 158.35 (266.48); green xtl.; m.p. 83°; d. 1.76	100g 500g
24-0280 HAZ	**Chromium(III) chloride tetrahydrofuran adduct, 98%** *(10170-68-0)* $CrCl_3(C_4H_8O)_3$; FW: 374.67; purple pwdr. *moisture sensitive*	5g 25g
93-2426	**Chromium(III) 2-ethylhexanoate, 70% in mineral spirits (8-10% Cr)** *(3444-17-5)* $Cr[OOCCH(C_2H_5)C_4H_9]_3$; FW: 481.62; green, viscous liq.; f.p. 230°F; d. 1.01	25g 100g
93-2433 HAZ	**Chromium(II) fluoride, anhydrous, 95%** *(10049-10-2)* CrF_2; FW: 89.99; green pwdr.; m.p. 1100°; b.p. > 1300°; d. 4.11 *moisture sensitive*	2g 10g
93-2434 HAZ	**Chromium(III) fluoride, anhydrous, 98%** *(7788-97-8)* CrF_3; FW: 108.99; green pwdr.; m.p. > 1000° *moisture sensitive*	1g 5g 25g
24-0400	**Chromium(III) hexafluoroacetylacetonate, min. 98%** *(14592-80-4)* $Cr(CF_3COCHCOCF_3)_3$; FW: 673.14; green xtl.; m.p. 83-85°	1g 5g

CHROMIUM (Compounds)

24-2427 NEW HAZ	**Chromium (III) naphthenate, 30-40% in heavy naphtha (2% Chromium)** *(61788-69-0)* green liq.	100g 500g
93-2424 HAZ	**Chromium(III) naphthenate, ~30% in mineral spirits (2% Cr)** *(61788-69-0)* dark green to brown liq.; f.p. 104°F; d. 0.87	100g 500g
93-2407 HAZ	**Chromium(III) nitrate nonahydrate, 99%** *(7789-02-8)* $Cr(NO_3)_3 \cdot 9H_2O$; FW: 238.06 (400.15); greenish-black xtl.; m.p. 60°; b.p. 100° dec. *hygroscopic*	100g 500g
93-2437	**Chromium(III) oxide, 98%** *(1308-38-9)* Cr_2O_3; FW: 151.99; green pwdr.; m.p. 2435°; b.p. 4000°; d. 5.21	250g 1kg
93-2438	**Chromium(III) oxide, 99%** *(1308-38-9)* Cr_2O_3; FW: 151.99; green pwdr.; m.p. 2435°; b.p. 4000°; d. 5.21	50g 250g
93-2413	**Chromium(III) oxide hydrate, 98%** *(12182-82-0)* $Cr_2O_3 \cdot XH_2O$; FW: 151.99; green pwdr.	250g 1kg
93-2443 HAZ	**Chromium(VI) oxide, 99.5%** *(1333-82-0)* CrO_3; FW: 99.99; red xtl.; m.p. 196°; d. 2.70 *moisture sensitive*	500g 2kg
93-2414	**Chromium(III) sulfate hydrate** *(15244-38-9)* $Cr_2(SO_4)_3 \cdot XH_2O$; FW: 392.18; greenish-black pwdr.	50g 250g
24-0800	**Chromium(III) tetraphenylporphine chloride** *(28110-70-5)* $(C_{44}H_{28}N_4)CrCl$; FW: 700.18; purple pwdr.	250mg 1g
93-2409 amp HAZ	**Chromyl chloride, 99.5%** *(14977-61-8)* CrO_2Cl_2; FW: 154.90; red liq.; b.p. 117°; d. 1.911 *moisture sensitive*	5g 25g
24-0850	**(1R,2R)-(-)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)] chromium(III) chloride** *(164931-83-3)* $[C_{36}H_{52}N_2O_2]CrCl$; FW: 632.28; brown pwdr.; m.p. >350° **For detailed technical note visit strem.com.** 	1g 5g
24-0851	**(1S,2S)-(+)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)] chromium(III) chloride** *(219143-92-7)* $[C_{36}H_{52}N_2O_2]CrCl$; FW: 632.28; brown pwdr.; m.p. >350°	1g 5g

Technical Note:
1. See 24-0850 (page 46)

24-0900	**Pentamethylcyclopentadienylchromium dicarbonyl dimer, 99%** *(37299-12-0)* $[(CH_3)_5C_5Cr(CO)_2]_2$; FW: 486.49; deep green xtl.; m.p. 200° dec. *air sensitive*	1g 5g
93-2444	**Tris(ethylenediamine)chromium(III) chloride hemiheptahydrate, min. 98%** *(16165-32-5)* $Cr(H_2NCH_2CH_2NH_2)_3Cl_3 \cdot 3.5H_2O$; FW: 338.65 (401.71); yellow pwdr.	5g 25g
24-1500	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)chromium(III), 99% [Cr(TMHD)$_3$]** *(14434-47-0)* $Cr(C_{11}H_{19}O_2)_3$; FW: 601.82; purple xtl.; m.p. 230-232°; b.p. dec. 270°	1g 5g

COBALT (Elemental Forms)

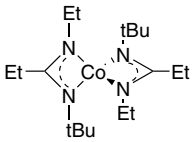
27-0200	**Cobalt foil (99.9%)** *(7440-48-4)* Co; FW: 58.90; 0.127mm thick, 50mm x 50mm; m.p. 1495°; b.p. 2870°; d. 8.9	1pc 5pcs
27-0300	**Cobalt pieces (99.9+%)** *(7440-48-4)* Co; FW: 58.90; 1"-2" square plates; m.p. 1495°; b.p. 2870°; d. 8.9	100g 500g
27-0040 HAZ	**Cobalt powder (99.8%)** *(7440-48-4)* Co; FW: 58.90; 0.5-1.5 micron; m.p. 1495°; b.p. 2870°; d. 8.9	50g 250g
93-2761 HAZ	**Cobalt powder (99.8%)** *(7440-48-4)* Co; FW: 58.90; -100 mesh; m.p. 1495°; b.p. 2870°; d. 8.9	25g 100g 500g

COBALT (Elemental Forms)

93-2760 HAZ	**Cobalt powder (99.8%)** *(7440-48-4)* Co; FW: 58.90; -400 mesh; m.p. 1495°; b.p. 2870°; d. 8.9	50g 250g
27-0045 HAZ	**Cobalt powder (99.99%)** *(7440-48-4)* Co; FW: 58.90; -100 mesh; m.p. 1495°; b.p. 2870°; d. 8.9	10g 50g

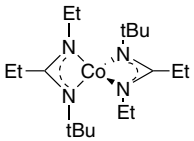
COBALT (Compounds)

27-0468 NEW
Bis(N-t-butyl-N'-ethylpropanimidamidato)cobalt(II), min. 98% *(1011477-51-2)*
$C_{18}H_{38}CoN_4$; FW: 369.45; blue-green liq.
air sensitive, moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2
For detailed technical note visit strem.com.



1g
5g

27-0469 NEW
Bis(N-t-butyl-N'-ethylpropanimidamidato)cobalt(II), min. 98% (99.99%-Co) PURATREM *(1011477-51-2)*
$C_{18}H_{38}CoN_4$; FW: 369.45; blue-green liq.
air sensitive, moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2
For detailed technical note visit strem.com.

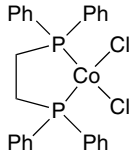


1g
5g

27-0475
amp
HAZ
Bis(cyclopentadienyl)cobalt(II), min. 98% (Cobaltocene) *(1277-43-6)*
$(C_5H_5)_2Co$; FW: 189.12; purplish-black xtl.; m.p. 173°
air sensitive, light sensitive, (store cold)

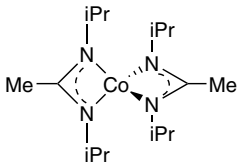
1g
5g
25g

27-0478
1,2-Bis(diphenylphosphino)ethanedichlorocobalt(II), min. 97% *(18498-01-6)*
$CoCl_2(C_{26}H_{24}P_2)$; FW: 528.26; green pwdr.
moisture sensitive
For detailed technical note visit strem.com.



1g
5g

27-0485
amp
Bis(N,N'-di-i-propylacetamidinato)cobalt(II), min. 98% Co(iPr-MeAMD)2 *(635680-58-9)*
$(C_8H_{17}N_2)_2Co$; FW: 341.40; green xtl.; m.p. 84°; b.p. sublimes 50°C (50 mTorr)
air sensitive, moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2.



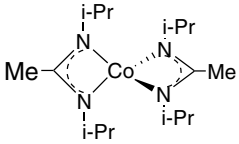
250mg
1g
5g

Technical Notes:
1. Precursor with metal nitrogen bonds used for the atomic layer deposition of metals, nitrides, and oxides. See WO 2004/046417A2.
2. Copper complex used in the vapor phase, atomic layer deposition of Co_9S_8 and its application for super conductors.
3. Complex used in the atomic layer deposition of cobalt sulfide.

References:

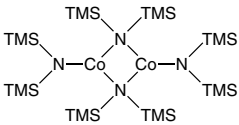
1. *Nano Letters,* **2015**, *15*, 6689
2. *ACS Nano,* **2015**, *9*, 8484

27-0486 NEW
amp
HAZ
Bis(N,N'-di-i-propylacetamidinato)cobalt(II), min. 98% (99.99%-Co) PURATREM (Co(iPr-MeAMD)$_2$ *(635680-58-9)*
$C_{16}H_{34}CoN_4$; FW: 341.40; green xtl.
air sensitive, moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2.



250mg
1g
5g

27-0515 NEW
Bis{[μ-[di(trimethylsilyl)amide]}bis{[di(trimethylsilyl)amide]}dicobalt(II), 98% *(93280-44-5)*
$C_{24}H_{72}Co_2N_4Si_8$; FW: 759.41; brown solid
air sensitive, moisture sensitive
For detailed technical note visit strem.com.

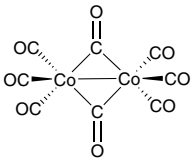
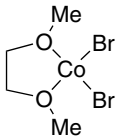


250mg
1g
5g

27-1000
Bis(pentamethylcyclopentadienyl)cobalticinium hexafluorophosphate, 98% *(79973-42-5)*
$[(CH_3)_5C_5]_2Co^+PF_6^-$; FW: 474.35; yellow to orange pwdr.

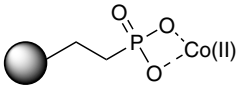
1g
5g

COBALT (Compounds)

27-1050	**Chlorotris(triphenylphosphine)cobalt(I), min. 98%** *(26305-75-9)* $CoCl(P(C_6H_5)_3)_3$; FW: 881.24; brown pwdr. *air sensitive, (store cold)* **For detailed technical note visit strem.com.**	1g 5g
93-2701	**Cobalt(II) acetate tetrahydrate, 98+%** *(6147-53-1)* $Co(OOCCH_3)_2 \cdot 4H_2O$; FW: 177.00 (249.08); pink xtl.; d. 1.705	100g 500g 2kg
93-2703	**Cobalt(II) acetylacetonate hydrate** *(123334-29-2)* $Co(CH_3COCHCOCH_3)_2 \cdot XH_2O$; FW: 257.18; pink pwdr.	50g 250g
93-2702	**Cobalt(III) acetylacetonate, 98+%** *(21679-46-9)* $Co(CH_3COCHCOCH_3)_3$; FW: 356.30; green xtl.; m.p. 216°; b.p. subl. 150°/1mm	10g 50g 250g
93-2731	**Cobalt(II) bromide hydrate** *(85017-77-2)* $CoBr_2 \cdot XH_2O$; FW: 218.75; violet xtl.; d. ~2.462	50g 250g
93-2733	**Cobalt(II) carbonate hydrate (99%-Co) (Co min. 45.5%)** *(513-79-1)* $CoCO_3 \cdot XH_2O$; FW: 118.94; pink pwdr.; d. 4.13	50g 250g 1kg
27-0400 HAZ	**Cobalt carbonyl (Dicobalt octacarbonyl) (Stabilized with 1-5% hexanes)** *(10210-68-1)* $Co_2(CO)_8$; FW: 341.95; dark orange xtl.; m.p. 51-52° dec.; f.p. -9°F (hexane); d. 1.73 *air sensitive, (store cold)* **For detailed technical note visit strem.com.** 	5g 25g 100g 500g
93-2721 HAZ	**Cobalt(II) chloride, anhydrous, 99+%** *(7646-79-9)* $CoCl_2$; FW: 129.84; blue pwdr.; m.p. 724°; b.p. 1049°; d. 3.356 *hygroscopic*	25g 100g
27-0405 NEW HAZ	**Cobalt(II) chloride, anhydrous (99.999%-Co) PURATREM** *(7646-79-9)* $CoCl_2$; FW: 129.84; blue pwdr. *hygroscopic*	1g 5g 25g
93-2734	**Cobalt(II) chloride hexahydrate, 98+%** *(7791-13-1)* $CoCl_2 \cdot 6H_2O$; FW: 129.84 (237.93); red xtl.; m.p. 86°; d. 1.924	250g 1kg
93-2735	**Cobalt(II) chloride hexahydrate (99.999%-Co) PURATREM** *(7791-13-1)* $CoCl_2 \cdot 6H_2O$; FW: 129.84 (237.93); red xtl.; m.p. 86°; d. 1.924	5g 25g
93-2707	**Cobalt(II) citrate hydrate** *(866-81-9)* $Co_3(C_6H_5O_7)_2 \cdot XH_2O$; FW: 555.01; light purple pwdr.	250g 1kg
27-0350 NEW	**Cobalt(II) dibromo(1,2-dimethoxyethane), min. 98%** *(18346-57-1)* $CoBr_2 \cdot CH_3O(CH_2)_2OCH_3$; FW: 308.86; blue pwdr. *moisture sensitive* **For detailed technical note visit strem.com.** 	1g 5g

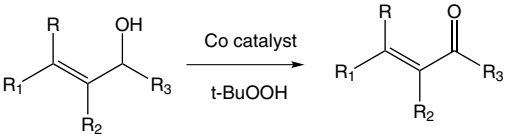
COBALT (Compounds)

27-0900 **Cobalt(II) ethyl/butyl phosphonate Silica (PhosphonicS POCo)** 5g 25g
blue solid; SA: >350 m²/g
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metal Oxidation Catalyst Kit component.

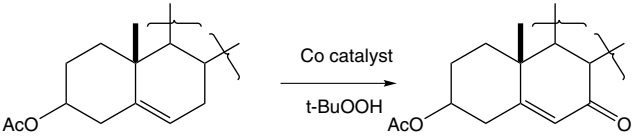


Technical Note:
1. Catalyst used for oxidation of a wide variety allylic alcohols and alkene substrates, including complex steroids.

Particle size range: 70-200 microns
Average pore size: 60Å
Effective loadings: 0.3 to 0.5 mmol/g



Tech. Note (1)
Ref. (1)



Tech. Note (1)
Ref. (2)

References:
1. *Tetrahedron Lett.,* **2004**, *45*, 4465
2. *Tetrahedron Lett.,* **2003**, *44*, 4283

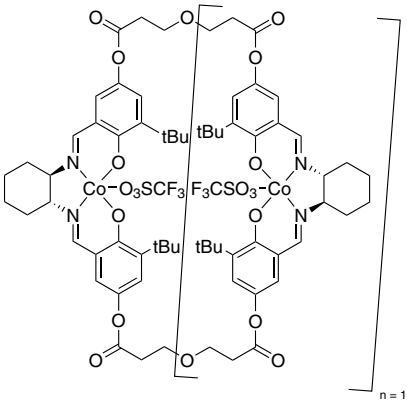
27-0449 HAZ	**Cobalt 2-ethylhexanoate, ~65% in mineral spirits (12% Co)** *(136-52-7)* $Co[OOCCH(C_2H_5)C_4H_9]_2$; FW: 345.42; purple liq.; f.p. 104°F; d. 1.01	50g 250g 1kg
93-2738 HAZ	**Cobalt(II) fluoride, anhydrous, 99%** *(10026-17-2)* CoF_2; FW: 96.93; pink pwdr.; m.p. ~1200°; b.p. 1400°; d. 4.46 *hygroscopic*	10g 50g
93-2740 HAZ	**Cobalt(III) fluoride, 99%** *(10026-18-3)* CoF_3; FW: 115.93; tan pwdr.; d. 3.88 *hygroscopic*	10g 50g
93-2741	**Cobalt(II) hydroxide (97%-Co)** *(21041-93-0)* $Co(OH)_2$; FW: 92.96; pink pwdr.; m.p. dec.; d. 3.597	50g 250g
93-2743	**Cobalt(II) iodide, anhydrous, min. 95% (99.5%-Co)** *(15238-00-3)* CoI_2; FW: 312.74; -60 mesh black pwdr.; m.p. 515° (vac.); b.p. 570° (vac.); d. 5.68 *hygroscopic*	10g 50g
93-2744	**Cobalt(II) molybdate, anhydrous (99.9%-Co)** *(13762-14-6)* $CoMoO_4$; FW: 218.87; -325 mesh green pwdr.	2g 10g
93-2710 HAZ	**Cobalt naphthenate, ~53% in mineral spirits (6% Co)** *(61789-51-3)* dark liq.; f.p. 104°F; d. 0.93	500g 2kg
93-2730 HAZ	**Cobalt(II) nitrate hexahydrate, 99%** *(10026-22-9)* $Co(NO_3)_2 \cdot 6H_2O$; FW: 182.99 (291.05); red xtl.; m.p. 55-56°; d. 1.87	100g 500g
93-2746 HAZ	**Cobalt(II) nitrate hexahydrate (99.999%-Co) PURATREM** *(10026-22-9)* $Co(NO_3)_2 \cdot 6H_2O$; FW: 182.99 (291.05); red to purple xtl.; m.p. 55-56°; d. 1.87	5g 25g
93-2712	**Cobalt(II,III) oxide, 99.5%** *(1308-06-1)* Co_3O_4; FW: 240.80; black pwdr.	25g 100g 500g
27-0490	**Cobalt(II,III) oxide (99.9985%-Co) PURATREM** *(1308-06-1)* Co_3O_4; FW: 240.80; gray to black pwdr.	5g 25g
27-0480	**Cobalt oxide-molybdenum oxide on alumina (3.5% CoO, 14% MoO_3)** *(1308-06-1)* 1/8" extrusions; SA: ~244m²/g	100g 500g
93-2747 HAZ	**Cobalt(II) perchlorate hexahydrate, 98+%** *(13478-33-6)* $Co(ClO_4)_2 \cdot 6H_2O$; FW: 257.84 (365.93); red xtl. *hygroscopic*	50g 250g

COBALT (Compounds)

93-2713	**Cobalt(II) phosphate hydrate** *(10294-50-5)* $Co_3(PO_4)_2 \cdot XH_2O$; FW: 366.74; purple pwdr.; d. 2.769	50g 250g
27-0488	**Cobalt(II) phthalocyanine** *(3317-67-7)* $(C_{32}H_{16}N_8)Co$; FW: 571.47; purple xtl.	1g 5g
93-2714	**Cobalt stearate (9-10% Co)** *(1002-88-6)* $Co(O_2C_{18}H_{35})_2$; FW: 625.89; purple pellets	500g 2kg
93-2749	**Cobalt(II) sulfate heptahydrate, 98+%** *(10026-24-1)* $CoSO_4 \cdot 7H_2O$; FW: 155.00 (281.10); pink to red xtl.; m.p. 96.8°; d. 1.948	100g 500g
93-2750	**Cobalt(II) sulfate heptahydrate (99.999%-Co) PURATREM** *(10026-24-1)* $CoSO_4 \cdot 7H_2O$; FW: 155.00 (281.10); pink to red xtl.; m.p. 96.8°; d. 1.948	10g 50g
93-2751	**Cobalt(II) sulfide (99.5%-Co)** *(1317-42-6)* CoS; FW: 91.00; -200 mesh black pwdr.; d. 5.45 *moisture sensitive*	5g 25g
27-0465	**Cobalt(II) meso-tetra(4-methoxyphenyl)porphine, min. 96%** *(28903-71-1)* $(C_{48}H_{36}N_4O_4)Co$; FW: 791.74; purple pwdr.	1g 5g
27-0470	**Cobalt(II) meso-tetraphenylporphine** *(14172-90-8)* $(C_{44}H_{28}N_4)Co$; FW: 671.66; rust colored xtl.	250mg 1g 5g
93-2753	**Cobalt(II) thiocyanate, min. 95%** *(3017-60-5)* $Co(SCN)_2$; FW: 175.09; brown pwdr.	10g 50g
27-0500 amp HAZ	**Cobalt tricarbonyl nitrosyl** *(14096-82-3)* $Co(CO)_3NO$; FW: 172.97; dark red liq.; b.p. 50°; d. 1.47 *air sensitive, (store cold)* Note: Volatile cobalt precursor for the molecular layer deposition of cobalt metal.	1g 5g 25g
93-2754	**Cobalt(II) tungstate (99.9%-Co)** *(10101-58-3)* $CoWO_4$; FW: 306.78; -100 mesh gray pwdr.; d. 8.42	10g 50g
27-0477 NEW	**Cobalt-dppe heterogeneous water oxidation catalyst (~17% Co)** $Co_4(dppe)_2(CO)(OH)_9(H_2O)_9$; light-brown pwdr. Note: Sold under license from Catalytic Innovations, LLC for research purposes only. US Patent Publication No. US20150065339 A1.	100mg 500mg
27-0410	**Cobalticinium hexafluorophosphate, 98%** *(12427-42-8)* $(C_5H_5)_2Co^+PF_6^-$; FW: 334.09; yellow xtl.	1g 5g

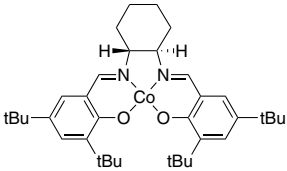
COBALT (Compounds)

27-0495 **Cyclic-Oligo Bis[(1R,2R)-(+)-1,2-cyclohexanediamino-N,N'-bis(3,3'-di-t-butyl-salicylidene) cobalt(III)triflate]-5,5'-bis(2-carboxyethyl)ether** *(647036-07-5)* — 100mg, 500mg
$C_{70}H_{84}Co_2F_6N_4O_{20}S_2$; FW: 1597.42; black xtl.
For detailed technical note visit strem.com.



27-0496 **Cyclic-Oligo Bis[(1S,2S)-(-)-1,2-cyclohexanediamino-N,N'-bis(3,3'-di-t-butylsal-icylidene) cobalt(III)triflate]-5,5'-bis(2-carboxyethyl)ether** *(1252661-94-1)* — 100mg, 500mg
$C_{70}H_{84}Co_2F_6N_4O_{20}S_2$; FW: 1597.42; black xtl.
For detailed technical note visit strem.com.

27-0525 **(1R,2R)-(-)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)cobalt(II)** *(176763-62-5)* — 1g, 5g, 25g
$C_{36}H_{52}CoN_2O_2$; FW: 603.76; red-brown pwdr.; m.p. 406-412°
For detailed technical note visit strem.com.

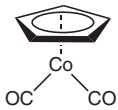


27-0526 **(1S,2S)-(+)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene) cobalt(II)** *(188264-84-8)* — 1g, 5g, 25g
$C_{36}H_{52}CoN_2O_2$; FW: 603.76; red-brown pwdr.; m.p. 409-412°

Technical Note:
1. See 27-0525 (page 51)

27-0528 **(1S,2S)-(+)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)co-balt(III) p-toluenesulfonate monohydrate** *(672306-06-8)* — 1g, 5g
$C_{43}H_{59}CoN_2O_5S{\cdot}H_2O$; FW: 774.94; green solid
For detailed technical note visit strem.com.

27-0550 amp HAZ **Cyclopentadienylcobalt dicarbonyl, min. 95%** *(12078-25-0)* — 2g, 10g
$C_5H_5Co(CO)_2$; FW: 180.05; dark red liq.; b.p. 37-38.5°/2 mm; f.p. 80°F; d. 1.35
air sensitive, (store cold)
For detailed technical note visit strem.com.



27-0554 **Dichloro[1,1'-bis(diphenylphosphino)ferrocene]cobalt(II), 99%** *(67292-36-8)* — 1g, 5g
$[(C_5H_4P(C_6H_5)_2)_2Fe]CoCl_2$; FW: 684.22; green microxtls.
For detailed technical note visit strem.com.

27-0575 NEW **Dichlorobis(triphenylphosphine)cobalt(II), 98%** *(14126-40-0)* — 1g, 5g, 25g
$CoCl_2[P(C_6H_5)_3]_2$; FW: 654.41; blue pwdr.
air sensitive
For detailed technical note visit strem.com.

27-0770 HAZ **(3,3-Dimethyl-1-butyne)dicobalt hexacarbonyl, 98%** *(56792-69-9)* — 250mg, 1g
$Co_2(CO)_6[HC{\equiv}C(C(CH_3)_3)$; FW: 368.07; dark red liq.
air sensitive

93-2708 **Hexaamminecobalt(III) chloride (99.999%-Co) PURATREM** *(10534-89-1)* — 10g, 50g
$[Co(NH_3)_6]Cl_3$; FW: 267.46; orange pwdr.; m.p. 217°; d. 1.710

93-0386 **Lithium cobalt(III) oxide, min. 98%** *(12190-79-3)*
See page 116

COBALT (Compounds)

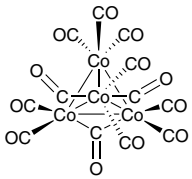
96-6770 **PhosphonicS Metal Oxidation Catalyst Kit**
See page 488

05-2500 **Sodium cobalticarborane** *(99492-72-5)*
See page 417

11-2700 **Sodium(cyclopentadienyl)tris(dimethylphosphito)cobaltate(I), 98%**
(82149-18-6)
See page 422

27-1950
HAZ

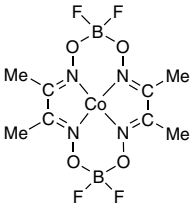
Tetracobalt dodecacarbonyl, min. 98% *(17786-31-1)*
$Co_4(CO)_{12}$; FW: 571.85; black xtl.; m.p. 60° dec.; d. 2.09
air sensitive, (store cold)
For detailed technical note visit strem.com.



1g
5g
25g

27-1965

N,N',N'',N'''-(Tetrafluorodiborato) bis[μ-(2,3-butanedionedioximato)]cobalt(II), min. 98% *(26220-72-4)*
$C_8H_{12}B_2CoF_4N_4O_4$; FW: 384.75; brown solid
Note: Limited quantities available.



100mg
500mg

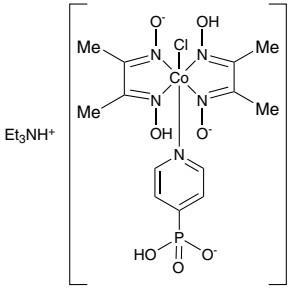
Technical Note:
1. Effective catalyst for high conversion, chain transfer polymerization of methyl methacrylate.

References:

1. *Macromolecular Engineering,* **2011**, *5*, 9, 10, 404
2. *Polymer Chemistry,* **2011**, *2*, 815
3. *J. Applied Polymer Science,* **2004**, *91*, 1375

27-3015
NEW

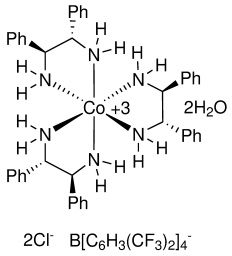
Triethylammonium {chlorobis(dimethylglyoximato)(4-hydrogenphosphonatepyridinyl) cobaltate(III)} *(1280199-86-1)*
$C_{19}H_{35}ClCoN_6O_7P$; FW: 584.88; light-brown solid
For detailed technical note visit strem.com.



5mg
25mg

27-4010
NEW

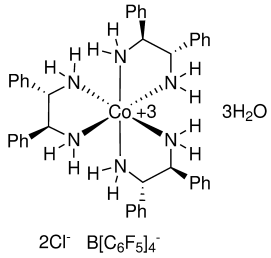
lambda-Tris[(1S,2S)-1,2-diphenyl-1,2-ethanediamine]cobalt(III) chloride tetrakis[3,5-bis(trifluoromethyl)phenyl] borate dihydrate SKJ-1 *(1542135-29-4)*
$C_{74}H_{60}BCl_2CoF_{24}N_6$; FW: 1629.92(1665.92); orange pwdr.
Note: U.S. Patent 14/417655



50mg
250mg

COBALT (Compounds)

27-4011 NEW	**delta-Tris[(1S,2S)-1,2-diphenyl-1,2-ethanediamine]cobalt(III) chloride tetrakis[3,5-bis(trifluoromethyl)phenyl]borate trihydrate SKJ-3** *(1867120-15-7)* $C_{66}H_{48}BCl_2CoF_{20}N_6$; FW: 1445.74(1501.80); orange solid Note: U.S. Patent 14/417655	50mg 250mg



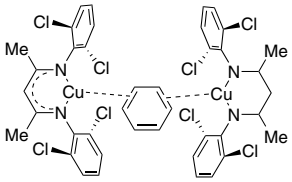
27-3000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)cobalt(III), 99% (99.9+%-Co) [Co(TMHD)$_3$]** *(14877-41-9)* $Co(C_{11}H_{19}O_2)_3$; FW: 608.74; green pwdr.; m.p. 254-256°; b.p. 250° dec. (subl. 120°/0.5mm)	1g 5g 25g

COPPER (Elemental Forms)

93-2992	**Copper foil (99%)** *(7440-50-8)* Cu; FW: 63.54; 0.127 mm thick x 200 mm wide; m.p. 1083°; d. 8.92	200 x 200mm 1000 x 200mm
93-2994	**Copper foil (99.9%)** *(7440-50-8)* Cu; FW: 63.54; 0.05 mm thick x 300 mm wide; m.p. 1083°; d. 8.92	50 x 300mm 250 x 300mm
93-2970	**Copper foil (99.9%)** *(7440-50-8)* Cu; FW: 63.54; 0.025 mm thick x 150 mm wide; m.p. 1083°; d. 8.92	50 x 150mm 250 x 150mm
93-2991	**Copper foil (99.9985%)** *(7440-50-8)* Cu; FW: 63.54; 0.5 mm thick; m.p. 1083°; d. 8.92	50 x 50mm 100 x 100mm
29-0092	**Copper nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-50-8)* *See* page 150	
29-0050 HAZ	**Copper powder (99%)** *(7440-50-8)* Cu; FW: 63.54; -325 mesh; m.p. 1083°; d. 8.92	500g 2kg
93-2999 HAZ	**Copper powder (99.5%)** *(7440-50-8)* Cu; FW: 63.54; -100 mesh; m.p. 1083°; d. 8.92	100g 500g 2kg
29-0075 HAZ	**Copper powder, spherical (99.9%)** *(7440-50-8)* Cu; FW: 63.54; -100 mesh; m.p. 1083°; d. 8.92	250g 1kg
93-2971 HAZ	**Copper powder (99.999%)** *(7440-50-8)* Cu; FW: 63.54; -100 mesh (under argon); m.p. 1083°; d. 8.92	5g 25g
29-0080	**Copper rod (99.999%)** *(7440-50-8)* Cu; FW: 63.54; 9.5mm dia. (~6.3g/cm); m.p. 1083°; d. 8.92	25g 100g 500g
93-2997	**Copper shot (99.9%)** *(7440-50-8)* Cu; FW: 63.54; 1-10 mm; m.p. 1083°; d. 8.92	250g 1kg
93-2998	**Copper shot (99.999%)** *(7440-50-8)* Cu; FW: 63.54; 2-8 mm; m.p. 1083°; d. 8.92	50g 250g
29-0085	**Copper shot (99.9999%)** *(7440-50-8)* Cu; FW: 63.54; 6 mm dia.; m.p. 1083°; d. 8.92	10g 50g
29-0090	**Copper turnings (99+%)** *(7440-50-8)* Cu; FW: 63.54; metal turnings; m.p. 1083°; d. 8.92	100g 500g
93-2972	**Copper wire (99.99%)** *(7440-50-8)* Cu; FW: 63.54; 0.25 mm dia.; m.p. 1083°; d. 8.92	5m 25m
93-2973	**Copper wire (99.999+%)** *(7440-50-8)* Cu; FW: 63.54; 0.76 mm dia.; m.p. 1083°; d. 8.92	1m 5m
93-2974	**Copper wire cloth, 40 mesh** *(7440-50-8)* Cu; FW: 63.54; 900mm wide (0.25mm wire dia.); m.p. 1083°; d. 8.92	100 x 900mm 500 x 900mm
29-2760 HAZ	**Sponge copper catalyst (Raney®-type)** *(7440-50-8)* 50% aqueous slurry *air sensitive*	25g 100g 500g

COPPER (Compounds)

29-7050 **μ-Benzenebis[N,N'-(1,3-dimethyl-1,3-propanediylidene)bis(2,6-dichlorobenzenaminato)] dicopper(I), benzene adduct, min. 98%** *(1119821-62-3)*
$C_{34}H_{26}Cl_8Cu_2N_4 \cdot 0.8C_6H_6$; FW: 963.80; pale yellow solid
air sensitive, moisture sensitive, (store cold)
Note: Sold under license from Georgetown University for noncommercial research use only. Patent pending.



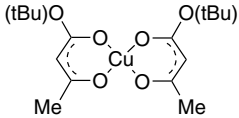
250mg
1g

Technical Note:
1. High yield C-H amination of unactivated C-H bonds with 1-adamantylazide.

References:

1. *Angew. Chem. Int. Ed.,* **2008**, *47*, 9961
2. *Inorg.Chem.,* **2004**, *43*, 6537

29-7110 **Bis(t-butylacetoacetato)copper(II), 99%** *(23670-45-3)*
$C_{16}H_{26}CuO_6$; FW: 377.92; green xtls.



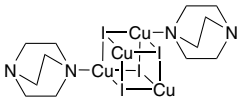
1g
5g
25g

Technical Notes:
1. A new, non-fluorinated, copper CVD precursor exhibiting a higher sublimation rate and lower decomposition rate than-Cu(dpm)2
2. Copper CVD precursor used in the deposition of copper films with low carbon content (Ref. 2).

References:

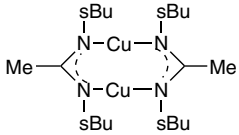
1. *J. Mater. Res.,* **1998**, *13*, 687
2. *Surface and Coating Technology,* **2002**, *150*, 205

29-3015 **Bis(1,4-diazabicyclo [2.2.2]octane)tetra (copper(I) iodide) $(CuI)_4(DABCO)_2$** *(928170-42-7)*
$C_{12}H_{24}Cu_4I_4N_4$; FW: 986.15; yellow pwdr.
air sensitive



500mg
2g

29-7100 amp **Bis(N,N'-di-sec-butylacetamidinato)dicopper(I), 99%** *(695188-31-9)*
$(C_{10}H_{21}N_2)_2Cu_2$; FW: 465.67; white to off-white xtl.
air sensitive, moisture sensitive, (store cold)
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2.



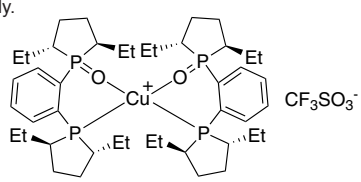
250mg
1g
5g

Technical Note:
1. Precursor with metal nitrogen bonds used for the atomic layer deposition of metals, metal nitrides, and oxides. See WO 2004/046417A2.

References:

1. *Chem. Mater.,* **2011**, *23*, 4411
2. *J. Am. Chem. Soc.,* **2009**, *131*, 18159
3. *Appl. Phys. Lett.,* **2009**, *94*, 123107, 1
4. *Inorg. Chem.,* **2005**, *44*, 1728

29-3007 **Bis{[1-(2R,5R)-2,5-diethylphospholanyl]-[2-(2R,5R)-2,5-diethylphospholanyl-1-oxide]benzene}copper(I) trifluoromethanesulfonate, min. 97%**
$C_{45}H_{72}CuF_3O_5P_4S$; FW: 969.55; white to beige solid
air sensitive
Note: Sold under license from Kanata for research purposes only.



100mg
500mg

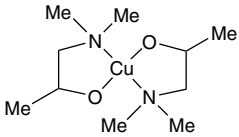
29-3008 **Bis{[1-(2S,5S)-2,5-diethylphospholanyl]-[2-(2S,5S)-2,5-diethylphospholanyl-1-oxide]benzene}copper(I) trifluoromethanesulfonate, min. 97%**
$C_{45}H_{72}CuF_3O_5P_4S$; FW: 969.55; white to beige solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg

COPPER (Compounds)

29-7120 amp

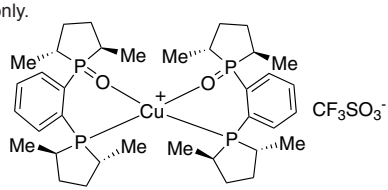
Bis(dimethylamino-2-propoxy)copper(II), min. 97% Cu(dmap)$_2$ *(185827-91-2)*
$Cu(C_5H_{12}NO)_2$; FW: 267.86; purple xtl.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



250mg
1g

29-3002

Bis{[1-(2R,5R)-2,5-dimethylphospholanyl]-[2-(2R,5R)-2,5-dimethylphospholanyl-1-oxide]benzene}copper(I) trifluoromethanesulfonate, min. 97% *(874013-62-4)*
$C_{37}H_{56}CuF_3O_5P_4S$; FW: 857.34; white to beige solid
air sensitive
Note: Sold under license from Kanata for research purposes only.



100mg
500mg

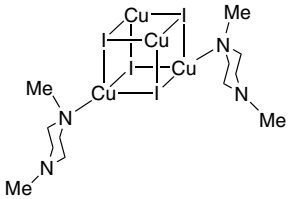
29-3003

Bis{[1-(2S,5S)-2,5-dimethylphospholanyl]-[2-(2S,5S)-2,5-dimethylphospholanyl-1-oxide]benzene}copper(I) trifluoromethanesulfonate, min. 97%
$C_{37}H_{56}CuF_3O_5P_4S$; FW: 857.34; white to beige solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg

29-0550

Bis(N,N'-dimethylpiperazine)tetra[copper(I) iodide], 98% MOF *(1401708-91-5)*
$(CuI)_4(C_6H_{14}N_2)_2$; FW: 990.18; white pwdr.
moisture sensitive, (store cold)



500mg
2g

Technical Note:

1. The copper iodide, N,N'dimethylpiperazine complex is a 3D photoluminescent, fairly open network, with a lamda max excitation of 321 nm and a lamda max emission of 525nm.

References:

1. *Dalton Trans.*, **2012**, *41*, 11663

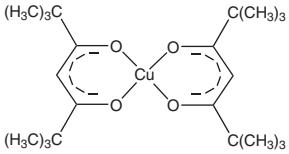
29-8400

Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)copper(II) [Cu(FOD)$_2$] *(80289-21-0)*
$Cu(C_{10}H_{10}F_7O_2)_2$; FW: 653.92; blue to purple pwdr.; m.p. 68-69°; b.p. dec. 280° (subl. 100°/0.1mm)
moisture sensitive

1g
5g

29-3000

Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) copper(II), 99% [Cu(TMHD)$_2$] *(14040-05-2)*
$Cu(C_{11}H_{19}O_2)_2$; FW: 430.05; blue xtl.; m.p. 198°; b.p. dec. 315° (subl. 88°/0.05mm)



1g
5g
25g

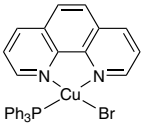
29-3100 HAZ

Bis(triphenylphosphine)copper(I) nitrate, 99% *(106678-35-7)*
$[(C_6H_5)_3P]_2Cu^+NO_3^-$; FW: 650.12; white pwdr.

5g
25g

29-4000

Bromo(1,10-phenanthroline)(triphenylphosphine)copper(I), min. 97% *(25753-84-8)*
$CuBr(C_{12}H_8N_2)P(C_6H_5)_3$; FW: 585.94; yellow pwdr.
For detailed technical note visit strem.com.

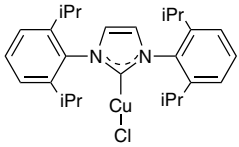


1g
5g

25-2900

Carulite® Catalyst *(185036-38-8)*
See page 125

COPPER (Compounds)

29-4050	**Chloro[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]copper(I), 98%** *(578743-87-0)* $C_{27}H_{36}ClCuN_2$; FW: 487.59; white pwdr. *air sensitive* **For detailed technical note visit strem.com.** 	500mg 2g
93-2989	**Copper(I) acetate, 97%** *(598-54-9)* $CuOOCCH_3$; FW: 122.59; beige to light green pwdr. *moisture sensitive*	2g 10g 50g
93-2988	**Copper(II) acetate, anhydrous, min. 97%** *(142-71-2)* $Cu(OOCCH_3)_2$; FW: 181.64; green to blue pwdr. *hygroscopic*	25g 100g
93-2901 HAZ	**Copper(II) acetate monohydrate, 98+% (ACS)** *(6046-93-1)* $Cu(OOCCH_3)_2 \cdot H_2O$; FW: 181.64 (199.65); green to blue pwdr.; m.p. 115°; b.p. 240° dec.; d. 1.822	50g 250g 1kg
93-2968	**Copper(II) acetylacetonate, 98+%** *(13395-16-9)* $Cu(CH_3COCHCOCH_3)_2$; FW: 261.77; blue pwdr.; m.p. 284-285° dec.; b.p. dec. 284° (subl. 78°/0.05mm)	50g 250g
93-2907	**Copper(I) bromide, min. 98%** *(7787-70-4)* CuBr; FW: 143.45; off-white to pale-green pwdr.; m.p. 492°; b.p. 1345°; d. 4.98 *hygroscopic*	50g 250g 1kg
29-0225 NEW	**Copper(I) bromide, dimethyl sulfide complex, 99%** *(54678-23-8)* BrC_2CuH_6S; FW: 205.59; light-green pwdr. *moisture sensitive*	5g 25g
93-2908	**Copper(II) bromide, 99%** *(7789-45-9)* $CuBr_2$; FW: 223.37; gray pwdr.; m.p. 498°; d. 4.77 *hygroscopic*	50g 250g
93-2909	**Copper(II) i-butyrate, 99%** *(15432-56-1)* $Cu(OOCC_3H_7)_2$; FW: 237.74; blue pwdr.	10g 50g
93-2911	**Copper(II) carbonate, basic** *(12069-69-1)* $CuCO_3 \cdot Cu(OH)_2$; FW: 221.11; green to blue pwdr.; m.p. 200° dec.; d. 4.0	500g 2kg
93-2914 HAZ	**Copper(I) chloride, anhydrous, 97+%** *(7758-89-6)* CuCl; FW: 98.99; light brown pwdr.; m.p. 430°; b.p. 1490°; d. 4.14 *air sensitive, light sensitive*	250g 1kg
29-0360 HAZ	**Copper(I) chloride (99.99%-Cu) PURATREM** *(7758-89-6)* CuCl; FW: 98.99; light-gray to pale green solid; m.p. 430°; b.p. 1490°; d. 4.14 *air sensitive, light sensitive*	10g 50g
93-2912 HAZ	**Copper(II) chloride, anhydrous, min. 98%** *(7447-39-4)* $CuCl_2$; FW: 134.44; reddish-brown pwdr.; m.p. 620°; d. 3.386 *hygroscopic*	100g 500g
93-2913 HAZ	**Copper(II) chloride dihydrate, 99+% (ACS)** *(10125-13-0)* $CuCl_2 \cdot 2H_2O$; FW: 134.44 (170.48); green xtl.; d. 2.54	250g 1kg
93-2985 HAZ	**Copper(II) chloride dihydrate (99.999%-Cu) PURATREM** *(10125-13-0)* $CuCl_2 \cdot 2H_2O$; FW: 134.44 (170.48); green xtl.; d. 2.54	10g 50g
29-0410	**Copper chromite, barium promoted (62-64% Cr_2CuO_4, 22-24% CuO, 6%BaO, 0-4% Graphite, 1% CrO_3, 1% Cr_2O_3)** *(12018-10-9)* CuO/Cr_2CuO_4; FW: 79.55/231.53; black pellets; SA: 45-50 m^2/g	100g 500g
93-2916 HAZ	**Copper(I) cyanide, 99%** *(544-92-3)* CuCN; FW: 89.56; off-white to pale green pwdr.; m.p. 473° (N_2); b.p. dec.; d. 2.92 *air sensitive*	100g 500g
93-2920	**Copper(II) ethylacetoacetate, 99%** *(14284-06-1)* $Cu(CH_3COCHCOC_2H_5)_2$; FW: 321.82; green to blue pwdr.	5g 25g
29-2941	**Copper(II) 2-ethylhexanoate (solvent free - 16-19% Cu)** *(149-11-1)* $Cu[OOCCH(C_2H_5)C_4H_9]_2$; FW: 349.96; blue pwdr.	5g 25g 100g
93-2923 HAZ	**Copper(II) fluoride, anhydrous, 99%** *(7789-19-7)* CuF_2; FW: 101.54; off-white pwdr.; m.p. 780°; b.p. 950° dec.; d. 4.23 *hygroscopic*	5g 25g

COPPER (Compounds)

93-2925	**Copper(II) formate hydrate** *(544-19-4)* $Cu(OOCH)_2 \cdot XH_2O$; FW: 153.55; green to blue pwdr.; d. 1.831	10g 50g
93-2927	**Copper(II) gluconate, min. 98%** *(13005-35-1)* $Cu[OOC(CHOH)_4CH_2OH]_2$; FW: 453.85; blue pwdr.	100g 500g
29-2928	**Copper(II) hexafluoroacetylacetonate, anhydrous, elec. gr. (99.99+%-Cu) PURATREM** *(14781-45-4)* $Cu(CF_3COCHCOCF_3)_2$; FW: 477.64; blue xtl. *moisture sensitive*	1g 5g
93-2929	**Copper(II) hexafluoroacetylacetonate hydrate** *(14781-45-4)* $Cu(CF_3COCHCOCF_3)_2 \cdot XH_2O$; FW: 477.64; green to blue xtl.; m.p. 97-99°; b.p. dec. 220° (subl. 100°/0.5mm)	1g 5g 25g
29-2929	**Copper(II) hexafluoroacetylacetonate hydrate, elec. gr. (99.99+%-Cu) PURATREM** *(14781-45-4)* $Cu(CF_3COCHCOCF_3)_2 \cdot XH_2O$; FW: 477.64; green to blue xtl.; m.p. 85-89°; b.p. dec. 220° (subl. 70°/0.05mm) *hygroscopic*	1g 5g 25g
93-2936	**Copper(I) iodide, 98%** *(7681-65-4)* CuI; FW: 190.45; off-white to pale brown pwdr.; m.p. 605°; b.p. 1290°; d. 5.62	100g 500g
29-0485	**Copper(I) iodide (99.999%-Cu) PURATREM** *(7681-65-4)* CuI; FW: 190.45; off-white to pale brown pwdr.; m.p. 605°; b.p. 1290°; d. 5.62	10g 50g
29-0490	**Copper(I) iodide/cesium carbonate admixture [5.50 wt% CuI]** *(7681-65-4)* CuI/Cs_2CO_3; off-white pwdr.	5g 25g

Technical Note:

1. Copper catalyst/base admixture useful for screening reactions involving the N-arylation of nitrogen-containing heterocycles.

Weight-percent of components:

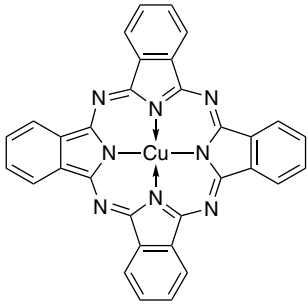
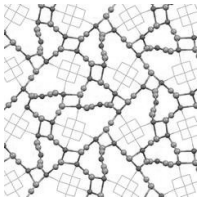
5.50 wt% copper(I) iodide
94.50 wt% cesium carbonate

References:

1. *J. Org. Chem.,* **2007**, *72*, 8535

29-0500	**Copper(II) methoxide, 99%** *(1184-54-9)* $Cu(OCH_3)_2$; FW: 125.61; blue pwdr. *moisture sensitive, (store cold)*	5g 25g
29-6750 HAZ	**Copper(II) naphthenate, 77% in mineral spirits (8% Cu)** *(1338-02-9)* dark green liq.; f.p. 104°F	250g 1kg
29-7000 HAZ	**Copper(II) neodecanoate, superconductor grade, ~60% in toluene (6-12% Cu)** *(50315-14-5)* $Cu(OOC_{10}H_{19})_2$; FW: 406.03; dark green liq.	10g 50g
93-2939 HAZ	**Copper(II) nitrate trihydrate, 99.5%** *(10031-43-3)* $Cu(NO_3)_2 \cdot 3H_2O$; FW: 187.56 (241.60); blue xtl.; m.p. 114.5°; d. 2.32	250g 1kg
93-2940 HAZ	**Copper(II) nitrate trihydrate (99.999%-Cu) PURATREM** *(10031-43-3)* $Cu(NO_3)_2 \cdot 3H_2O$; FW: 187.56 (241.60); blue xtl.; m.p. 114.5°; d. 2.32	5g 25g 100g
93-2942	**Copper(II) oxalate hemihydrate** *(814-91-5)* $CuC_2O_4 \cdot 0.5H_2O$; FW: 151.57 (160.57); blue pwdr.	25g 100g
93-2944	**Copper(I) oxide, min. 95%** *(1317-39-1)* Cu_2O; FW: 143.08; red-brown pwdr.; m.p. 1235°; d. 6.0	250g 1kg
93-2981	**Copper(I) oxide (99.9%-Cu)** *(1317-39-1)* Cu_2O; FW: 143.08; red-brown pwdr.; m.p. 1235°; d. 6.0	25g 100g
93-2943	**Copper(II) oxide, min. 97% (99+%-Cu)** *(1317-38-0)* CuO; FW: 79.54; black pwdr.; m.p. 1362°; d. 6.3-6.49	100g 500g
29-2945	**Copper(II) oxide (99.5+%-Cu)** *(1317-38-0)* CuO; FW: 79.54; black pwdr.; m.p. 1362°; d. 6.3-6.49	100g 500g
29-0590	**Copper(II) oxide (99.995%-Cu) PURATREM** *(1317-38-0)* CuO; FW: 79.55; 80-100 mesh black pwdr.; m.p. 1362°; d. 6.3-6.49	10g 50g
93-2947 HAZ	**Copper(II) perchlorate hexahydrate, 98+%** *(10294-46-9)* $Cu(ClO_4)_2 \cdot 6H_2O$; FW: 262.43 (370.53); blue xtl.; m.p. 82°; b.p. 120° dec.; d. 2.225 *hygroscopic*	25g 100g

COPPER (Compounds)

29-0595	**Copper(I) phenylacetylide, min. 97%** *(13146-23-1)* $C_6H_5C{\equiv}CCu$; FW: 164.67; yellow xtl. *air sensitive, moisture sensitive*	1g 5g
93-2948	**Copper(II) phthalocyanine** *(147-14-8)* $(C_{32}H_{16}N_8)Cu$; FW: 576.08; purple pwdr. 	10g 50g
93-2957	**Copper(II) sulfate, anhydrous, 98%** *(7758-98-7)* $CuSO_4$; FW: 159.60; green pwdr.; m.p. 200° dec.; d. 3.603 *hygroscopic*	50g 250g
93-2958	**Copper(II) sulfate pentahydrate, 98+% (ACS)** *(7758-99-8)* $CuSO_4{\cdot}5H_2O$; FW: 159.60 (249.68); blue xtl.; m.p. 110° dec.; d. 2.284	250g 1kg
93-2959	**Copper(II) sulfate pentahydrate (99.999%-Cu) PURATREM** *(7758-99-8)* $CuSO_4{\cdot}5H_2O$; FW: 159.60 (249.68); blue xtl.; m.p. 110° dec.; d. 2.284	5g 25g 100g
93-2960	**Copper(I) sulfide (99.5%-Cu)** *(22205-45-4)* Cu_2S; FW: 159.14; black pwdr.; m.p. 1100°; d. 5.6	50g 250g
29-2969	**Copper(II) sulfide (99.5%-Cu)** *(1317-40-4)* CuS; FW: 95.61; -200 mesh black pwdr.; d. 4.6	50g 250g
93-2961	**Copper(II) tartrate hydrate** *(815-82-7)* $CuC_4H_4O_6{\cdot}XH_2O$; FW: 211.61; green to blue xtl.	50g 250g
93-2963	**Copper(II) tetrafluoroborate hydrate, 99%** *(207121-39-9)* $Cu(BF_4)_2{\cdot}XH_2O$; FW: 237.15; blue xtl.	50g 250g
93-2964	**Copper(I) thiocyanate, 99%** *(1111-67-7)* CuSCN; FW: 121.62; off-white pwdr.; m.p. 1084°; d. 2.843	50g 250g
93-2966	**Copper(II) trifluoroacetylacetonate, 97+%** *(14324-82-4)* $Cu(CF_3COCHCOCH_3)_2$; FW: 369.70; purple pwdr.; m.p. 194-196°; b.p. dec. 260° (subl. 140°/0.1mm)	5g 25g
29-5000 HAZ	**Copper(II) trifluoromethanesulfonate, 98% (Copper triflate)** *(34946-82-2)* $Cu(CF_3SO_3)_2$; FW: 361.68; light green solid *hygroscopic* **For detailed technical note visit strem.com.**	5g 25g 100g
29-5500	**Cyclopentadienyl(triethylphosphine)copper(I), min. 98%** *(12261-30-2)* $(C_5H_5)CuP(C_2H_5)_3$; FW: 246.80; white to off-white xtl.; b.p. subl. 60°/0.01mm *air sensitive, moisture sensitive*	1g 5g
29-0565	**(Hexamethylenetetramine)penta[copper(I) cyanide], 98% MOF** *(1042093-98-0)* $C_6H_{12}N_4(CuCN)_5$; FW: 588.00; white pwdr. *hygroscopic, (store cold)* 	500mg 2g

Technical Note:

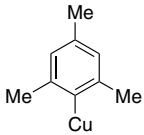
1. The copper cyanide hexamethylenetetramine complex is a 3D photoluminescent, very densely-packed, network of tetradentate ligands with a lamda max excitation of 282 and 304nm, and a lamda max emission of 417 and 522nm.

References:

1. *Inorg. Chem.,* **2007**, *46*, 8897
2. *Inorg. Chem.,* **2008**, *47*, 6947
3. *Inorg. Chim. Acta.,* **2010**, *364*, 102
4. *Dalton Trans.,* **2012**, *41*, 11663

COPPER (Compounds)

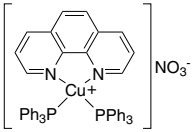
29-5550 **Mesitylcopper(I), min. 95%** *(75732-01-3)*
$C_9H_{11}Cu$; FW: 182.73; yellow to orange pwdr.
air sensitive, light sensitive, moisture sensitive, (store cold)



1g
5g

Technical Note:
1. Starting material for a variety of copper(I) complexes.

29-6000 HAZ **(1,10-Phenanthroline)bis (triphenylphosphine)copper(I) nitrate dichloromethane adduct, 98%** *(33989-10-5)*
$[Cu(C_{12}H_8N_2)[P(C_6H_5)_3]_2]^+NO_3^- \cdot 1/2CH_2Cl_2$; FW: 830.33 (872.80); yellow pwdr.
For detailed technical note visit strem.com.



5g
25g

19-3025 **Potassium dicyanocuprate** *(13682-73-0)*
See page 341

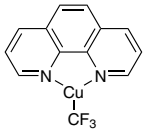
29-6600 **Tetraamminecopper(II) sulfate hydrate** *(14283-05-7)*
$[Cu(NH_3)_4]SO_4 \cdot XH_2O$; FW: 227.72; blue xtl.

2g
10g
50g

29-6700 **Tetrakis(acetonitrile)copper(I) hexafluorophosphate, 98+%** *(64443-05-6)*
$(CH_3CN)_4CuPF_6$; FW: 372.72; white to light blue solid
air sensitive, moisture sensitive
For detailed technical note visit strem.com.

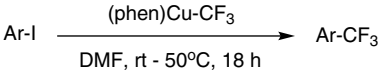
5g
25g

29-6720 **Trifluoromethyl(1,10-phenanthroline) copper(I), 95% Trifluoromethylator®** *(1300746-79-5)*
$(C_{12}H_8N_2)CuCF_3$; FW: 312.76; brown solid
air sensitive, moisture sensitive, (store cold)
Note: Sold under license from CATYLIX.

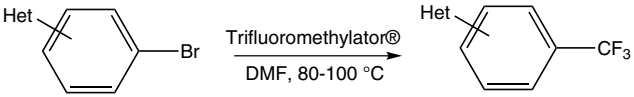


250mg
1g
5g
25g

Technical Notes:
1. Reagent used for the perfluoromethylation of arenes and aryl bromides and iodides.
2. Catalyst used in the copper-mediated perfluoroalkylation of heteroaryl bromides.



Tech. Note (1)
Ref. (1,2)



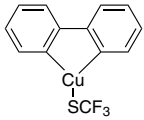
69 examples
up to 99%

Tech. Note (2)
Ref. (3)

References:

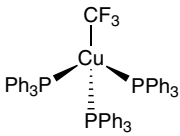
1. *Angew. Chem. Int .Ed.,* **2011**, *50*, 3793
2. *Angew. Chem. Int .Ed.,* **2012**, *51*, 536
3. *Org. Lett.,* **2014**, *16*, 1744

29-5515 **Trifluoromethylthiolato(2,2-bipyridine)copper(I), 97%** *(1413732-47-4)*
$C_{11}H_8CuF_3N_2S$; FW: 320.80; red xtl.
air sensitive, moisture sensitive



250mg
1g

29-2955 **Tris(triphenylphosphine)(trifluoromethyl)copper(I), 99%** *(325810-07-9)*
$C_{55}H_{45}CuF_3P_3$; FW: 919.41; white xtl.
air sensitive
For detailed technical note visit strem.com.



1g
5g

DYSPROSIUM (Elemental Forms)

93-6636 HAZ	**Dysprosium chips (99.9% REO)** *(7429-91-6)* Dy; FW: 162.50; (~1mm); m.p. 1409°; b.p. 2335°; d. 8.54 *air sensitive*	5g 25g
93-6638	**Dysprosium foil (99.9% REO)** *(7429-91-6)* Dy; FW: 162.50; 0.25 mm thick (~1.33g/25x 25 mm); m.p. 1409°; b.p. 2335°; d. 8.54 *air sensitive*	25 x 25mm 50 x 50mm
93-6637	**Dysprosium ingot (99.9% REO)** *(7429-91-6)* Dy; FW: 162.50; ingot; m.p. 1409°; b.p. 2335°; d. 8.54 *air sensitive* **For detailed technical note visit strem.com.**	25g 100g
93-6635 HAZ	**Dysprosium powder (99.9% REO)** *(7429-91-6)* Dy; FW: 162.5; -40 mesh; m.p. 1409°; b.p. 2335°; d. 8.54 *air sensitive*	5g 25g

DYSPROSIUM (Compounds)

93-6601	**Dysprosium(III) acetate hydrate (99.9%-Dy) (REO)** *(15280-55-4)* $Dy(OOCCH_3)_3 \cdot XH_2O$; FW: 339.60; white pwdr.; m.p. 120° dec.	25g 100g
66-2002	**Dysprosium(III) acetylacetonate hydrate (99.9%-Dy) (REO)** *(14637-88-8)* $Dy(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 459.83; yellow pwdr.	5g 25g 100g
93-6627	**Dysprosium(III) carbonate tetrahydrate (99.9%-Dy) (REO)** *(38245-35-1)* $Dy_2(CO_3)_3 \cdot 4H_2O$; FW: 505.00 (577.06); white pwdr.	25g 100g
93-6607	**Dysprosium(III) chloride, anhydrous (99.9%-Dy) (REO)** *(10025-74-8)* $DyCl_3$; FW: 268.86; white pwdr.; m.p. 718°; d. 3.67	2g 10g 50g
93-6628	**Dysprosium(III) chloride hexahydrate (99.9%-Dy) (REO)** *(15059-52-6)* $DyCl_3 \cdot 6H_2O$; FW: 268.86 (376.96); light yellow xtl. *hygroscopic*	25g 100g
93-6609	**Dysprosium(III) fluoride, anhydrous (99.9%-Dy) (REO)** *(13569-80-7)* DyF_3; FW: 219.50; white pwdr.; m.p. 1360°; b.p. > 2200° *hygroscopic*	25g 100g
93-6613 HAZ	**Dysprosium(III) nitrate hexahydrate (99.9%-Dy) (REO)** *(35725-30-5)* $Dy(NO_3)_3 \cdot 6H_2O$; FW: 348.50 (456.60); yellow xtl. *hygroscopic*	25g 100g
93-6615	**Dysprosium(III) oxide (99.9%-Dy) (REO)** *(1308-87-8)* Dy_2O_3; FW: 372.99; white pwdr.; m.p. 2330-2350°; d. 7.81	25g 100g
93-6616	**Dysprosium(III) oxide (99.998%-Dy) (REO) PURATREM** *(1308-87-8)* Dy_2O_3; FW: 372.99; white pwdr.; m.p. 2330-2350°; d. 7.81	5g 25g
93-6617 HAZ	**Dysprosium(III) perchlorate, 50% aqueous solution (99.9%-Dy) (REO)** *(14692-17-2)* $Dy(ClO_4)_3$; FW: 460.85; colorless liq.	10g 50g
93-6619 HAZ	**Dysprosium(III) i-propoxide (99.9%-Dy) (REO)** *(6742-68-3)* $Dy(OC_3H_7)_3$; FW: 339.77; tan pwdr. *moisture sensitive*	1g 5g
66-4000	**Dysprosium(III) trifluoromethanesulfonate, min. 98% (Dysprosium triflate)** *(139177-62-1)* $Dy(CF_3SO_3)_3$; FW: 609.71; white solid *hygroscopic*	5g 25g
66-3000 amp	**Tris(i-propylcyclopentadienyl)dysprosium(III) (99.9%-Dy) (REO)** *(952518-08-0)* $(C_3H_7C_5H_4)_3Dy$; FW: 484.02; yellow solid *air sensitive, moisture sensitive*	1g 5g
66-8500	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)dysprosium(III), 98+% (99.9%-Dy) (REO) [Dy(TMHD)$_3$]** *(15522-69-7)* $Dy(C_{11}H_{19}O_2)_3$; FW: 712.31; off-white xtl.; m.p. 182-185°; b.p. dec. 265° *hygroscopic*	1g 5g

ERBIUM (Elemental Forms)

93-6831	**Erbium chips (99.9% REO)** *(7440-52-0)* Er; FW: 167.28; m.p. 1529°; b.p. 2863°; d. 9.006 *air sensitive*	5g 25g

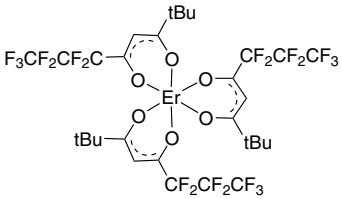
ERBIUM (Elemental Forms)

93-6834	**Erbium foil (99.9% REO)** *(7440-52-0)* Er; FW: 167.28; 0.62 mm thick (~3.5g/25 x 25 mm); m.p. 1529°; b.p. 2863°; d. 9.006 *air sensitive*	25 x 25mm 50 x 50mm
93-6833	**Erbium foil (99.9% REO)** *(7440-52-0)* Er; FW: 167.28; 0.25 mm thick (~1.4g/25 x 25 mm); m.p. 1529°; b.p. 2863°; d. 9.006 *air sensitive*	25 x 25mm
93-6832	**Erbium ingot (99.9% REO)** *(7440-52-0)* Er; FW: 167.28; ingot; m.p. 1529°; b.p. 2863°; d. 9.006 *air sensitive* **For detailed technical note visit strem.com.**	10g 50g
93-6830 HAZ	**Erbium powder (99.9% REO)** *(7440-52-0)* Er; FW: 167.28; -40 mesh; m.p. 1529°; b.p. 2863°; d. 9.006 *air sensitive*	5g 25g

ERBIUM (Compounds)

93-6824	**Erbium(III) acetate hydrate (99.9%-Er) (REO)** *(15280-57-6)* $Er(OOCCH_3)_3 \cdot XH_2O$; FW: 344.44; pink xtl.; d. 2.114	10g 50g
93-6801	**Erbium(III) acetylacetonate hydrate (99.9%-Er) (REO)** *(14553-08-3)* $Er(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 464.59; off-white pwdr.	5g 25g
93-6822	**Erbium(III) carbonate hydrate (99.9%-Er) (REO)** *(22992-83-2)* $Er_2(CO_3)_3 \cdot XH_2O$; FW: 514.54; pink pwdr.	10g 50g
93-6803	**Erbium(III) chloride, anhydrous (99.9%-Er) (REO)** *(10138-41-7)* $ErCl_3$; FW: 273.64; pink pwdr.; m.p. 774°; b.p. 1500° *hygroscopic*	5g 25g
93-6804	**Erbium(III) chloride hydrate (99.9%-Er) (REO)** *(10025-75-9)* $ErCl_3 \cdot XH_2O$; FW: 273.64; pink xtl. *hygroscopic*	25g 100g
68-6804	**Erbium(III) chloride hydrate (99.999%-Er) (REO) PURATREM** *(10025-75-9)* $ErCl_3 \cdot XH_2O$; FW: 273.64; pink xtl. *hygroscopic*	10g 50g
68-6805	**Erbium(III) chloride hydrate (99.999+%-Er) (low Ca, Fe, Mg) PURATREM** *(10025-75-9)* $ErCl_3 \cdot XH_2O$; FW: 273.64; pink xtl. *hygroscopic*	10g 50g
68-6900	**Erbium(III) hexafluoroacetylacetonate hydrate (99.9%-Er) (REO)** *(18923-92-7)* $Er(CF_3COCHCOCF_3)_3 \cdot XH_2O$; FW: 788.45; pink xtl.	1g 5g
93-6823	**Erbium(III) iodide, anhydrous (99.9%-Er) (REO)** *(13813-42-8)* ErI_3; FW: 547.99; red pwdr.; m.p. 1020°; b.p. 1280° *hygroscopic*	1g 5g
93-6808 HAZ	**Erbium(III) nitrate hydrate (99.9%-Er) (REO)** *(10031-51-3)* $Er(NO_3)_3 \cdot XH_2O$; FW: 353.29; pink xtl. *hygroscopic*	25g 100g
93-6810	**Erbium(III) oxide (99.9%-Er) (REO)** *(12061-16-4)* Er_2O_3; FW: 382.51; rose pwdr.; m.p. 2400°; d. 8.640	5g 25g 100g
93-6820	**Erbium(III) oxide (99.995%-Er) (REO) PURATREM** *(12061-16-4)* Er_2O_3; FW: 382.51; rose pwdr.; m.p. 2400°; d. 8.640	5g 25g
93-6821 HAZ	**Erbium(III) perchlorate, 50% aqueous solution (99.9%-Er) (REO)** *(61565-07-9)* $Er(ClO_4)_3$; FW: 465.61; rose colored liq.	2g 10g
68-5000 amp HAZ	**Erbium(III) i-propoxide (99.9%-Er) (REO)** *(14814-07-4)* $Er(OC_3H_7)_3$; FW: 344.52; pink pwdr. *moisture sensitive*	1g 5g
68-6000	**Erbium(III) trifluoromethanesulfonate, min. 98% (Erbium triflate)** *(139177-64-3)* $Er(CF_3SO_3)_3$; FW: 614.47; pink pwdr. *hygroscopic*	5g 25g
68-7000 amp	**Tris(n-butylcyclopentadienyl)erbium(III) (99.9%-Er) (REO)** *(153608-51-6)* $(C_4H_9C_5H_4)_3Er$; FW: 530.87; yellow to orange liq.; b.p. 240°/0.1mm; d. 1.309 *air sensitive, moisture sensitive*	1g 5g

ERBIUM (Compounds)

68-8000 amp HAZ	**Tris(cyclopentadienyl)erbium(III) (99.9%-Er) (REO)** *(39330-74-0)* $(C_5H_5)_3Er$; FW: 362.55; pink pwdr.; m.p. 285°; b.p. subl. 200°/0.01mm *air sensitive, moisture sensitive*	1g 5g
68-8700	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)erbium(III) (99.9%-Er) (REO) [Er(FOD)$_3$]** *(17978-75-5)* $Er(C_3F_7COCHCOC_4H_9)_3$; FW: 1052.80; pink pwdr.; m.p. 157-163° 	1g 5g
68-8740 amp	**Tris(methylcyclopentadienyl)erbium(III) (99.9%-Er) (REO)** *(39470-10-5)* $(CH_3C_5H_4)_3Er$; FW: 404.62; yellow pwdr. *air sensitive*	1g 5g
68-7200 amp	**Tris(i-propylcyclopentadienyl)erbium(III) (99.9%-Er) (REO)** *(130521-76-5)* $(C_3H_7C_5H_4)_3Er$; FW: 488.79; yellow to orange xtl.; m.p. 222° (subl.); b.p. subl. 222°/10mm *air sensitive, moisture sensitive*	1g 5g
68-8750	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)erbium(III), 99% (99.9%-Er) (REO) [Er(TMHD)$_3$]** *(35733-23-4)* $Er(C_{11}H_{19}O_2)_3$; FW: 717.08; pink xtl.; m.p. 179-180°; b.p. dec. 345° (subl. 160°/0.1mm)	1g 5g 25g

EUROPIUM (Elemental Forms)

93-6335 HAZ	**Europium ingot (99.9% REO)** *(7440-53-1)* Eu (under oil); FW: 151.96; packed in mineral oil; m.p. 822°; d. 5.24 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	1g 5g

EUROPIUM (Compounds)

93-6301	**Europium(III) acetate hydrate (99.9%-Eu) (REO)** *(62667-64-5)* $Eu(OOCCH_3)_3{\cdot}XH_2O$; FW: 329.10; white xtl.	1g 5g
93-6304	**Europium(III) carbonate hydrate (99.9%-Eu) (REO)** *(5895-48-7)* $Eu_2(CO_3)_3{\cdot}XH_2O$; FW: 483.95; white pwdr.	1g 5g
93-6305	**Europium(III) chloride, anhydrous (99.9%-Eu) (REO)** *(10025-76-0)* $EuCl_3$; FW: 258.32; white to yellow pwdr.; m.p. 850°; d. 4.89 *hygroscopic*	2g 10g
93-6306	**Europium(III) chloride hexahydrate (99.9%-Eu) (REO)** *(13759-92-7)* $EuCl_3{\cdot}6H_2O$; FW: 258.32 (366.41); white to off-white xtl. *hygroscopic*	5g 25g
93-6311	**Europium(III) 2-ethylhexanoate (99.9%-Eu) (REO)** *(84573-73-9)* $Eu[OOCCH(C_2H_5)C_4H_9]_3$; FW: 581.58; white pwdr.	1g 5g
93-6322	**Europium(III) fluoride, anhydrous (99.99%-Eu) (REO) PURATREM** *(13765-25-8)* EuF_3; FW: 208.96; white pwdr.; m.p. 1390°; b.p. 2280° *hygroscopic*	1g 5g
93-6310 HAZ	**Europium(III) nitrate hexahydrate (99.9%-Eu) (REO)** *(10031-53-5)* $Eu(NO_3)_3{\cdot}6H_2O$; FW: 337.98 (446.07); white xtl. *hygroscopic*	1g 5g 25g
63-1200	**Europium nitride (99.9%-Eu)** *(12020-58-5)* EuN; FW: 165.97; 60 mesh black pwdr.	100mg 500mg
93-6325	**Europium(III) oxalate hydrate (99.9%-Eu) (REO)** *(14175-02-1)* $Eu_2(C_2O_4)_3{\cdot}XH_2O$; FW: 567.99; white pwdr.	2g 10g
93-6312	**Europium(III) oxide (99.99%-Eu) (REO) PURATREM** *(1308-96-9)* Eu_2O_3; FW: 351.92; white pwdr.; d. 7.42	5g 25g 100g
93-6323 HAZ	**Europium(III) perchlorate, 50% aqueous solution (99.9%-Eu) (REO)** *(36907-40-1)* $Eu(ClO_4)_3$; FW: 450.31; colorless liq.	2g 10g
93-6324	**Europium(III) sulfate octahydrate (99.9%-Eu) (REO)** *(10031-55-7)* $Eu_2(SO_4)_3{\cdot}8H_2O$; FW: 592.11 (736.23); white xtl.	1g 5g

EUROPIUM (Compounds)

93-6330	**Europium(III) sulfate octahydrate (99.99%-Eu) (REO) PURATREM** *(10031-55-7)* $Eu_2(SO_4)_3 \cdot 8H_2O$; FW: 592.11 (736.23); white xtl.	1g 5g
63-1000	**Europium(III) trifluoromethanesulfonate, min. 98% (Europium triflate)** *(52093-25-1)* $Eu(CF_3SO_3)_3$; FW: 599.17; white to off-white pwdr. *hygroscopic*	1g 5g
93-6326	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)europium(III) hydrate (99.9%-Eu) (REO) [Eu(FOD)$_3$]** *(13537-22-9)* $Eu(C_3F_7COCHCOC_4H_9)_3 \cdot XH_2O$; FW: 1037.49; white to light-yellow pwdr.	1g 5g
93-6328	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)europium(III), 99% (99.9%-Eu) (REO) [Eu(TMHD)$_3$]** *(15522-71-1)* $Eu(C_{11}H_{19}O_2)_3$; FW: 701.78; yellow pwdr.; m.p. 188-189°; b.p. dec. 275°	1g 5g

FLUORINE (Compounds)

09-1070	**5-Amino-2-chlorobenzotrifluoride, min. 97%** *(320-51-4)* $(NH_2)ClC_6H_3CF_3$; FW: 195.56; brown waxy solid; m.p. 36-37°; f.p. >230°F	5g 25g
09-1210	**Benzoyl-1,1,1-trifluoroacetone, 98%** *(326-06-7)* $C_6H_5COCH_2COCF_3$; FW: 216.02; white xtl.; m.p. 38-40°; b.p. 224°	10g 50g
09-1520	**Bromopentafluorobenzene, 99%** *(344-04-7)* C_6F_5Br; FW: 246.97; colorless liq.; m.p. -31°; b.p. 137°; f.p. 190°F; d. 1.981	10g 50g
09-1600 HAZ	**3-Bromo-1,1,1-trifluoroacetone, min. 97%** *(431-35-6)* CF_3COCH_2Br; FW: 191.02; colorless liq.; b.p. 85-87°; d. 1.839	5g 25g
09-1722	**2-Chloro-1,2-dibromo-1,1,2-trifluoroethane, min. 97%** *(354-51-8)* $CF_2BrCFClBr$; FW: 276.29; colorless liq.; b.p. 93-94°; d. 2.2478	25g
09-1863	**3-Chloro-4-fluorobenzotrifluoride, 98%** *(78068-85-6)* $ClFC_6H_3CF_3$; FW: 198.55; liq.; d. 1.490	10g 50g
09-1881	**2-Chloro-5-fluorophenol, min. 97%** *(3827-49-4)* $ClFC_6H_3OH$; FW: 146.54; liq.; b.p. 183-185°	5g 25g
09-2010	**Chloropentafluorobenzene, 99%** *(344-07-0)* ClC_6F_5; FW: 202.51; colorless liq.; b.p. 122-123°/750mm; d. 1.568	25g 100g
09-2360 HAZ	**1,1-Dichloro-2,2-difluoroethylene, min. 97%** *(79-35-6)* $CCl_2{=}CF_2$; FW: 133.00; colorless liq.; m.p. -116°; b.p. 19°; d. 1.439	25g 100g
93-1571	**Difluorophosphoric acid hemihydrate, tech. gr.** *(13779-41-4)* *See* page 297	
09-3270 HAZ	**Ethyltrifluoroacetate, 99%** *(383-63-1)* $CF_3CO_2C_2H_5$; FW: 142.08; colorless liq.; b.p. 62°; f.p. 30°F; d. 1.194	25g 100g 500g
09-3480 HAZ	**Fluorobenzene, 99%** *(462-06-6)* C_6H_5F; FW: 96.10; colorless liq.; m.p. -42°; b.p. 84-85°; f.p. 9°F; d. 1.024	25g 100g 500g
09-3500	**o-Fluorobenzoic acid, min. 97%** *(445-29-4)* FC_6H_4COOH; FW: 140.11; white pwdr.; m.p. 123-125°	25g 100g
09-3890	**o-Fluoronitrobenzene** *(1493-27-2)* $FC_6H_4NO_2$; FW: 141.10; colorless liq.; m.p. -8°; b.p. 214-216°; f.p. 202°F; d. 1.338	10g 50g
09-4070 HAZ	**o-Fluorophenol, min. 98%** *(367-12-4)* FC_6H_4OH; FW: 112.10; colorless liq.; m.p. 16.1°; b.p. 171-172°/741 mm; f.p. 116°F; d. 1.256	10g 50g
09-4090	**p-Fluorophenol, 99%** *(371-41-5)* FC_6H_4OH; FW: 112.10; off-white flakes; m.p. 48-51°; b.p. 185°; f.p. 155°F	25g 100g
93-1529	**Fluorophosphoric acid, 60-70%** *(13537-32-1)* *See* page 313	
09-4310 HAZ	**o-Fluorotoluene, 99%** *(95-52-3)* $FC_6H_4CH_3$; FW: 110.13; colorless liq.; m.p. -62°; b.p. 113-115°; f.p. 55°F; d. 1.001	50g 250g
09-4396	**2,2,3,3,4,4,4-Heptafluorobutylamine, min. 97%** *(374-99-2)* $CF_3CF_2CF_2CH_2NH_2$; FW: 197.05; colorless liq.; b.p. 70-71°; d. 1.493	1g 5g

FLUORINE (Compounds)

09-4496 HAZ	**6,6,7,7,8,8,8-Heptafluoro-2,2-dimethyl-3,5-octanedione, 98+% HFOD** *(17587-22-3)* $C_3F_7C(O)CH_2C(O)C(CH_3)_3$; FW: 296.19; colorless to pale yellow liq.; b.p. 56-57°/10 mm; f.p. 101°F; d. 1.273	5g 25g
09-4530	**1H,1H,9H-Hexadecafluoro-1-nonanol, 95%** *(376-18-1)* $HCF_2(CF_2)_7CH_2OH$; FW: 432.10; waxy flakes	10g 50g
09-4568 HAZ	**Hexafluoroacetone, anhydrous, 97%** *(684-16-2)* CF_3COCF_3; FW: 166.02; gas; b.p. -28° **For detailed technical note visit strem.com.**	25g
09-4571 HAZ	**Hexafluoroacetone trihydrate, min. 97%** *(34202-69-2)* $CF_3COCF_3 \cdot 3H_2O$; FW: 166.02 (220.07); colorless liq.; m.p. 18-21°; d. 1.579	5g 25g
08-0750 HAZ	**Hexafluoroacetylacetone, min. 98% HFAA** *(1522-22-1)* $CF_3C(O)CH_2C(O)CF_3$; FW: 208.06; colorless liq.; b.p. 70°; d. 1.470 *moisture sensitive*	5g 25g 100g
09-4630 amp HAZ	**Hexafluorobenzene, min. 99%** *(392-56-3)* C_6F_6; FW: 186.05; colorless liq.; m.p. 4°; b.p. 81-82°; f.p. 50°F; d. 1.612	5g 25g
09-4700	**Hexafluoroglutaric acid, min. 97%** *(376-73-8)* $HO_2C(CF_2)_3CO_2H$; FW: 240.06; off-white lumps; m.p. 92-97°; b.p. 134-138°/3 mm *hygroscopic*	5g 25g
09-4750 HAZ	**Hexafluoroisopropanol, 99+%** *(920-66-1)* $(CF_3)_2CHOH$; FW: 168.04; colorless liq.; m.p. -4°; b.p. 58°; d. 1.596	5g 25g
09-4765	**Hexafluoro-2-methylisopropanol, min. 97%** *(1515-14-6)* $(CF_3)_2C(CH_3)OH$; FW: 182.07; pale yellow liq.; b.p. 60°; d. 1.484	5g 25g
93-1531	**Hexafluorophosphoric acid, 60-70% in water** *(16940-81-1)* *See* page 313	
93-2230	**Hexafluorotitanic acid, 60% aqueous solution** *(17439-11-1)* *See* page 440	
09-4950	**Iodopentafluorobenzene, 97%** *(827-15-6)* C_6F_5I; FW: 293.96; colorless liq.; b.p. 161°; d. 2.204	5g 25g
09-5350	**1H,1H,5H-Octafluoro-1-pentanol, min. 98%** *(355-80-6)* $H(CF_2)_4CH_2OH$; FW: 232.07; colorless liq.; b.p. 140-141°; f.p. 168°F; d. 1.667	25g 100g
09-5380	**Pentadecafluorooctanoic acid, min. 98%** *(335-67-1)* $n\text{-}C_7F_{15}COOH$; FW: 414.06; white pwdr.; m.p. 59-60°; b.p. 189°/736 mm	5g 25g
09-5420	**Pentafluoroaniline, 99%** *(771-60-8)* $C_6F_5NH_2$; FW: 183.08; white pwdr.; m.p. 34°; b.p. 153°; f.p. 165°F	5g 25g
09-5440	**Pentafluorobenzaldehyde, 98%** *(653-37-2)* C_6F_5CHO; FW: 196.07; colorless to pale yellow solid; m.p. 20°; b.p. 164-166°; d. 1.588	1g 5g 25g
09-5450 amp HAZ	**Pentafluorobenzene, 99%** *(363-72-4)* C_6F_5H; FW: 168.06; colorless liq.; m.p. -48°; b.p. 85°; f.p. 57°F; d. 1.514	5g 25g
09-5500	**Pentafluorobenzoic acid, 99%** *(602-94-8)* C_6F_5COOH; FW: 212.07; white xtl.; m.p. 103°; b.p. 220°	1g 5g 25g
09-5550 HAZ	**Pentafluorobenzylbromide, 98+%** *(1765-40-8)* $C_6F_5CH_2Br$; FW: 260.99; colorless liq.; b.p. 174-175°; f.p. 181°F; d. 1.728	1g 5g 25g
09-5600 HAZ	**Pentafluoroethyliodide, min. 97%** *(354-64-3)* C_2F_5I; FW: 245.93; gas; b.p. 12-13°	25g 100g
09-5630	**Pentafluorophenol, 99%** *(771-61-9)* C_6F_5OH; FW: 184.06; colorless solid; m.p. 26-29°; b.p. 143°; f.p. 162°F	5g 25g
09-5740 HAZ	**Pentafluoropropionic acid, min. 97%** *(422-64-0)* C_2F_5COOH; FW: 164.03; colorless liq.; b.p. 96-98°; d. 1.561 *hygroscopic*	10g 50g

FLUORINE (Compounds)

09-5750 HAZ	**Pentafluoropropionic anhydride, min. 97%** *(356-42-3)* $(C_2F_5CO)_2O$; FW: 310.05; colorless liq.; b.p. 73-74°; d. 1.571 *moisture sensitive*	5g 25g
09-5800 amp HAZ	**Pentafluoropyridine, 99%** *(700-16-3)* C_5F_5N; FW: 169.05; colorless liq.; b.p. 83-85°; f.p. 75°F; d. 1.540	5g 25g
09-5820 HAZ	**Pentafluorothiophenol, 97%** *(771-62-0)* C_6F_5SH; FW: 200.13; colorless liq.; m.p. -24°; b.p. 143°; f.p. 125°F; d. 1.501 *STENCH*	5g 25g
09-5902	**Perfluoro-t-butanol, min. 97%** *(2378-02-1)* $(CF)_3C(OH)$; FW: 236.05; colorless liq.; b.p. 44-45°; d. 1.693	5g
09-5910	**Perfluoro-2-butyltetrahydrofuran, min. 95%** *(335-36-4)* $C_8F_{16}O$; FW: 416.09; colorless liq.; b.p. 99-107°; d. 1.77	25g 100g
09-5960 HAZ	**Perfluorodecalin, min. 95%** *(306-94-5)* $C_{10}F_{18}$; FW: 462.07; colorless liq.; m.p. -10°; b.p. 141°; f.p. 105°F; d. 1.908	5g 25g
09-5969	**1H,1H,2H,2H-Perfluorodecan-1-ol, min. 97%** *(678-39-7)* $CF_3(CF_2)_7CH_2CH_2OH$; FW: 464.12; tan waxy solid; m.p. 40-43°	25g 100g
09-5972	**1H,1H,2H,2H-Perfluorodecyliodide, 97%** *(2043-53-0)* $C_8F_{17}CH_2CH_2I$; FW: 573.91; white solid; b.p. 178-180°	5g 25g
09-6034 HAZ	**Perfluoroheptanoic acid, min. 97%** *(375-85-9)* $C_6F_{13}COOH$; FW: 383.06; colorless liq. to waxy solid; b.p. 78-80°/14 mm	5g 25g
09-6072	**Perfluorohexane, 98+% (85% n-isomer)** *(355-42-0)* C_6F_{14}; FW: 338.04; colorless liq.; b.p. 57°; d. 1.669	10g 50g 250g
09-6085	**1H,1H,2H,2H-Perfluorohexan-1-ol, 99%** *(2043-47-2)* $F(CF_2)_4CH_2CH_2OH$; FW: 264.09; colorless liq.; b.p. 140-143°; d. 1.59	10g
09-6147	**1H,1H,2H,2H-Perfluorooctan-1-ol, min. 97%** *(647-42-7)* $F(CF_2CF_2)_3CH_2CH_2OH$; FW: 364.10; colorless liq.; b.p. 91-93°/36 mm; d. 1.651	5g 25g
09-6146 HAZ	**Perfluorooctanesulfonyl fluoride, min. 95%** *(307-35-7)* $CF_3(CF_2)_7SO_2F$; FW: 502.12; colorless to yellow liq.; m.p. -18° to -30°; b.p. 154°; d. 1.81 *moisture sensitive*	25g 100g
09-6144	**Perfluorooctanesulphonic acid, potassium salt, 97%** *(2795-39-3)* $C_8F_{17}SO_3K$; FW: 538.21; white pwdr.	5g 25g
93-1010	**Perfluorooctanoic acid, sodium salt** *(335-95-5)* $NaOOC(CF_2)_6CF_3$; FW: 436.05; off-white pwdr.	5g 25g
09-6182	**Perfluoro-n-pentane, min. 98%** *(678-26-2)* C_5F_{12}; FW: 288.03; colorless liq.; m.p. -120°; b.p. 29°; d. 1.63^{8}0.06@25°C *(store cold)*	50g 250g
09-5950	**Perfluorotetradecanoic acid, min. 97%** *(376-06-7)* *See* page 168	
09-6220 HAZ	**Perfluorotri-n-butylamine, min. 85%** *(311-89-7)* $(C_4F_9)_3N$; FW: 671.02; colorless liq.; b.p. 170-180°; d. 1.88	25g 100g
09-6920 HAZ	**2,3,5,6-Tetrafluorothiophenol, min. 98%** *(769-40-4)* HC_6F_4SH; FW: 182.14; colorless liq.; b.p. 152-153°; f.p. 119°F *STENCH*	5g 25g
09-6950	**2-Thenoyltrifluoroacetone, 99% (TTA)** *(326-91-0)* $CF_3COCH_2COC_4H_3S$; FW: 222.18; white pwdr.; m.p. 42-43°; b.p. 96-98°/8 mm	25g 100g
09-7170 HAZ	**Trifluoracetic anhydride, min. 98%** *(407-25-0)* $(CF_3CO)_2O$; FW: 210.03; colorless liq.; m.p. -65°; b.p. 39-40°; d. 1.487 *moisture sensitive*	50g 250g
09-7160 HAZ	**Trifluoroacetic acid, 99%** *(76-05-1)* CF_3COOH; FW: 114.02; colorless liq.; m.p. -15.4°; b.p. 74°; d. 1.480	100g 500g
09-7210 HAZ	**1,1,1-Trifluoroacetylacetone, min. 98%** *(367-57-7)* $CF_3COCH_2COCH_3$; FW: 154.09; colorless liq.; b.p. 107°; f.p. 79°F; d. 1.270	10g 50g
09-7304 HAZ	**2,2,2-Trifluoroethanesulphonylchloride, 97+%** *(1648-99-3)* $CF_3CH_2SO_2Cl$; FW: 182.55; colorless liq.; b.p. 140-141°; f.p. 162°F; d. 1.651 *moisture sensitive*	250mg 1g 5g

FLUORINE (Compounds)

09-7310 HAZ	**2,2,2-Trifluoroethanol, 99%** *(75-89-8)* CF_3CH_2OH; FW: 100.04; colorless liq.; m.p. -44°; b.p. 74-75°; f.p. 85°F; d. 1.373	50g 250g
09-7370	**2,2,2-Trifluoroethyliodide, 99%** *(353-83-3)* CF_3CH_2I; FW: 209.94; colorless liq.; b.p. 55-56°; d. 2.130	5g 25g
09-7410 amp HAZ	**Trifluoromethanesulfonic acid, 99+%** *(1493-13-6)* CF_3SO_3H; FW: 150.07; colorless fuming liq.; b.p. 162°; d. 1.696 *hygroscopic*	10g 50g
09-7420 amp HAZ	**Trifluoromethanesulphonic anhydride, min. 97%** *(358-23-6)* $(CF_3SO_2)_2O$; FW: 282.13; colorless liq.; b.p. 81-83°; d. 1.677 *moisture sensitive*	5g 25g
09-7502	**p-Trifluoromethylbenzaldehyde, 98+%** *(455-19-6)* $CF_3C_6H_4CHO$; FW: 174.12; colorless liq.; b.p. 80-81°/25 mm; f.p. 150°F; d. 1.275	5g 25g
09-7680 HAZ	**Trifluoromethyliodide, min. 97%** *(2314-97-8)* CF_3I; FW: 195.9; gas; b.p. -22°	100g
09-7731 HAZ	**p-Trifluoromethylphenylisocyanate, 99%** *(1548-13-6)* $CF_3C_6H_4NCO$; FW: 187.12; colorless liq.; b.p. 58-59°/10 mm; f.p. 158°F; d. 1.310 *moisture sensitive*	1g 5g
09-7760 HAZ	**2-Trifluoromethylpropene, min. 97%** *(374-00-5)* $CH_3C(CF_3)=CH_2$; FW: 110.08; gas; b.p. 6-7°	10g
14-7990	**Trifluoromethyltrimethylsilane, min. 97%** *(81290-20-2)* *See* page 411	

GADOLINIUM (Elemental Forms)

93-6431	**Gadolinium chips (99.9% REO)** *(7440-54-2)* Gd; FW: 157.25; gray pieces; m.p. 1311°; b.p. 3233°; d. 7.898 *air sensitive*	5g 25g
93-6435	**Gadolinium foil (99.9% REO)** *(7440-54-2)* Gd; FW: 157.25; 0.62 mm thick (~3.06g/25x 25 mm); m.p. 1311°; b.p. 3233°; d. 7.898 *air sensitive*	25 x 25mm 50 x 50mm
93-6434	**Gadolinium foil (99.9% REO)** *(7440-54-2)* Gd; FW: 157.25; 0.25 mm thick (~1.23g/25x 25 mm); m.p. 1311°; b.p. 3233°; d. 7.898 *air sensitive*	25 x 25mm 50 x 50mm
93-6433	**Gadolinium foil (99.9% REO)** *(7440-54-2)* Gd; FW: 157.25; 0.127 mm thick (~0.63g/25 x 25mm); m.p. 1311°; b.p. 3233°; d. 7.898 *air sensitive*	25 x 25mm 50 x 50mm
93-6432	**Gadolinium ingot (99.9% REO)** *(7440-54-2)* Gd; FW: 157.25; ingot; m.p. 1311°; b.p. 3233°; d. 7.898 *air sensitive* **For detailed technical note visit strem.com.**	10g 50g
93-6430 HAZ	**Gadolinium powder (99.9% REO)** *(7440-54-2)* Gd; FW: 157.25; -40 mesh; m.p. 1311°; b.p. 3233°; d. 7.898 *air sensitive*	5g 25g

GADOLINIUM (Compounds)

93-6424	**Gadolinium(III) acetate tetrahydrate (99.9%-Gd) (REO)** *(15280-53-2)* $Gd(OOCCH_3)_3 \cdot 4H_2O$; FW: 334.38 (406.45); white xtl.; d. 1.611	25g 100g
93-6401	**Gadolinium(III) acetylacetonate hydrate (99.9%-Gd) (REO)** *(14284-87-8)* $Gd(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 454.58; off-white pwdr.	5g 25g
64-3000	**Gadolinium(III) carbonate hydrate (99.99%-Gd) (REO) PURATREM** *(38245-36-2)* $Gd_2(CO_3)_3 \cdot XH_2O$; FW: 494.53; white pwdr.	10g 50g
93-6416	**Gadolinium(III) chloride, anhydrous (99.9%-Gd) (REO)** *(10138-52-0)* $GdCl_3$; FW: 263.61; white pwdr.; m.p. 609°; d. 4.52 *hygroscopic*	10g 50g
93-6421	**Gadolinium(III) chloride hydrate (99.9%-Gd) (REO)** *(19423-81-5)* $GdCl_3 \cdot XH_2O$; FW: 263.61; white pwdr.; d. 2.424	25g 100g

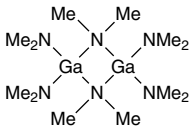
GADOLINIUM (Compounds)

64-3500 HAZ	**Gadolinium(III) 2-ethylhexanoate (~25% in toluene)** *(19189-19-6)* $Gd[OOCCH(C_2H_5)C_4H_9]_3$; FW: 586.87; viscous liq.	10g 50g
93-6422	**Gadolinium(III) fluoride, anhydrous (99.9%-Gd) (REO)** *(13765-26-9)* GdF_3; FW: 214.25; white pwdr.	10g 50g
64-3600	**Gadolinium(III) hydroxide hydrate (99.9%-Gd) (REO)** *(16469-18-4)* $Gd(OH)_3 \cdot XH_2O$; FW: 208.27; white pwdr.	10g 50g
93-6417 HAZ	**Gadolinium(III) nitrate hexahydrate (99.9%-Gd) (REO)** *(19598-90-4)* $Gd(NO_3)_3 \cdot 6H_2O$; FW: 343.27 (451.36); white xtl. *hygroscopic*	25g 100g
93-6406	**Gadolinium(III) oxide (99.99%-Gd) (REO) PURATREM** *(12064-62-9)* Gd_2O_3; FW: 362.50; white pwdr.; m.p. 2310°; d. 7.407	100g 500g
93-6420 HAZ	**Gadolinium(III) perchlorate, 40-50% aqueous solution (99.9%-Gd) (REO)** *(14017-52-8)* $Gd(ClO_4)_3$; FW: 455.60; colorless liq.	10g 50g
64-3700	**Gadolinium(III) i-propoxide (99.9%-Gd) (REO)** *(14532-05-9)* $Gd(OC_3H_7)_3$; FW: 334.51; white to off-white pwdr. *moisture sensitive*	1g 5g
93-6407	**Gadolinium(III) sulfate octahydrate (99.9%-Gd) (REO)** *(13450-87-8)* $Gd_2(SO_4)_3 \cdot 8H_2O$; FW: 602.68 (746.81); white xtl.; d. 3.010	25g 100g
64-3800	**Gadolinium(III) trifluoromethanesulfonate, min. 98% (Gadolinium triflate)** *(52093-29-5)* $Gd(CF_3SO_3)_3$; FW: 604.46; white pwdr. *hygroscopic*	5g 25g
64-4000 amp HAZ	**Tris(cyclopentadienyl)gadolinium(III) (99.9%-Gd) (REO)** *(1272-21-5)* $(C_5H_5)_3Gd$; FW: 352.54; off-white pwdr. *air sensitive, moisture sensitive*	1g 5g
64-4500 amp HAZ	**Tris(tetramethylcyclopentadienyl)gadolinium(III), min. 98%** *(308847-85-0)* $[(CH_3)_4C_5H]_3Gd$; FW: 520.86; orange pwdr. *air sensitive, moisture sensitive*	1g 5g
64-5000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) gadolinium(III), 99% (99.9%-Gd) (REO) [Gd(TMHD)$_3$]** *(14768-15-1)* $Gd(C_{11}H_{19}O_2)_3$; FW: 707.07; off-white xtl.; m.p. 178-183°; b.p. dec. 295°	1g 5g

GALLIUM (Elemental Forms)

93-3145 HAZ	**Gallium metal (99.99%)** *(7440-55-3)* Ga; FW: 69.72; m.p. 29.78°; b.p. 2403°; d. 5.904 *air sensitive, moisture sensitive*	10g 50g
93-3146 HAZ	**Gallium metal (99.9999%)** *(7440-55-3)* Ga; FW: 69.72; m.p. 29.78°; b.p. 2403°; d. 5.904 *air sensitive, moisture sensitive*	10g 50g

GALLIUM (Compounds)

31-2030 amp HAZ	**Bis(μ-dimethylamino)tetrakis (dimethylamino) digallium, 98%** *(57731-40-5)* $C_{12}H_{36}Ga_2N_6$; FW: 403.90; white xtl. *moisture sensitive* 	1g 5g 25g
93-3130	**Gallium(III) acetylacetonate (99.99+%-Ga) PURATREM** *(14405-43-7)* $Ga(CH_3COCHCOCH_3)_3$; FW: 367.05; white to pale yellow pwdr.; m.p. 192-194° dec. >280°; b.p. 140°/10 mm subl.; d. 1.42	5g 25g
93-3103 HAZ	**Gallium arsenide (99.9999%-Ga) PURATREM** *(1303-00-0)* GaAs; FW: 144.64; 25mm and down polycrystalline pieces; m.p. 1238°; d. 5.31	1g 5g
93-3109 HAZ	**Gallium(III) bromide, anhydrous, granular (99.999%-Ga) PURATREM** *(13450-88-9)* $GaBr_3$; FW: 309.45; white granules; m.p. 121.5°; b.p. 278.8°; d. 3.69 *moisture sensitive*	1g 5g
93-3104 amp HAZ	**Gallium(II) chloride, anhydrous (99.999%-Ga) PURATREM** *(13498-12-9)* Ga_2Cl_4; FW: 281.26; white xtl.; m.p. 164°; b.p. 535° *moisture sensitive*	1g 5g

GALLIUM (Compounds)

93-3141 amp HAZ	**Gallium(III) chloride, anhydrous, fused lump (99.999%-Ga) PURATREM** *(13450-90-3)* $GaCl_3$; FW: 176.03; white fused lump; m.p. 77.9°; b.p. 201.3°; d. 2.47 *moisture sensitive*	5g 25g 100g
93-3140 HAZ	**Gallium(III) chloride, anhydrous, granular (99.999%-Ga) PURATREM** *(13450-90-3)* $GaCl_3$; FW: 176.03; white crystalline pwdr.; m.p. 77.9°; b.p. 201.3°; d. 2.47 *moisture sensitive* Note: Packaged in PFA/FET bottle.	5g 25g 100g
93-3117	**Gallium(III) fluoride trihydrate, 99.5%** *(7783-51-9)* $GaF_3 \cdot 3H_2O$; FW: 126.72 (180.76); white xtl.	1g 5g
31-1370 NEW	**Gallium (III) fluoride trihydrate (99.99%-Ga) PURATREM** *(7783-51-9)* $GaF_3 \cdot 3H_2O$; FW: 126.72 (180.76); white xtl. *hygroscopic*	1g 5g
93-3110	**Gallium(III) iodide, anhydrous, 99%** *(13450-91-4)* GaI_3; FW: 450.44; yellow pwdr.; m.p. 212° *moisture sensitive*	5g 25g
93-3105 HAZ	**Gallium(III) nitrate hydrate (99.99%-Ga) PURATREM** *(69365-72-6)* $Ga(NO_3)_3 \cdot XH_2O$; FW: 255.73; white xtl.; m.p. 110° dec. *hygroscopic*	5g 25g
93-3106	**Gallium(III) oxide (99.998%-Ga) PURATREM** *(12024-21-4)* Ga_2O_3; FW: 187.44; white pwdr.; m.p. 1900°; d. 5.88	5g 25g 100g
93-3123	**Gallium phosphide (99.999%-Ga) PURATREM** *(12063-98-8)* GaP; FW: 100.69; amber xtl.; m.p. 1348°; d. 4.1	2g 10g
93-3126	**Gallium(III) sulfate hydrate (99.999%-Ga) PURATREM** *(13780-42-2)* $Ga_2(SO_4)_3 \cdot XH_2O$; FW: 427.62; white xtl.; d. 3.86 *hygroscopic*	5g
31-1300 HAZ	**Gallium(III) trifluoromethanesulfonate, 98% (Gallium triflate)** *(74974-60-0)* $Ga(CF_3SO_3)_3$; FW: 516.93; white pwdr. *hygroscopic*	1g 5g
98-1862 HAZ	**Triethylgallium, elec. gr. (99.9999%-Ga) PURATREM** *(1115-99-7)* $(C_2H_5)_3Ga$; FW: 156.91; colorless liq.; m.p. -82.3°; b.p. 143°; f.p. 69.8°F; d. 1.0586 *moisture sensitive, pyrophoric*	50g 100g
31-2000 HAZ	**Trimethylgallium, 99+%** *(1445-79-0)* $(CH_3)_3Ga$; FW: 114.83; colorless liq.; m.p. -15.8°; b.p. 55.7°; f.p. -1°F; d. 1.151 *moisture sensitive, pyrophoric* Note: Available prepacked in ALD cylinder- see 98-4068.	25g 100g
98-4068 HAZ	**Trimethylgallium, 99+%, 31-2000, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(1445-79-0)* $(CH_3)_3Ga$; FW: 114.83; colorless liq.; m.p. -15.8°; b.p. 55.7°; f.p. -1°F; d. 1.151 *moisture sensitive, pyrophoric*	10g 25g
98-2000 HAZ	**Trimethylgallium, elec. gr. (99.9999%-Ga) PURATREM** *(1445-79-0)* $(CH_3)_3Ga$; FW: 114.83; colorless liq.; m.p. -15.8°; b.p. 55.7°; f.p. -1°F; d. 1.151 *moisture sensitive, pyrophoric* Note: Available prepacked in ALD cylinder- see 98-4047.	50g 100g
98-4047 HAZ	**Trimethylgallium, elec. gr. (99.9999%-Ga) PURATREM, 98-2000, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD** *(1445-79-0)* $(CH_3)_3Ga$; FW: 114.83; colorless liq.; m.p. -15.8°; b.p. 55.7°; f.p. -1°F; d. 1.151 *moisture sensitive, pyrophoric*	10g 25g
31-5000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)gallium(III), 99% (99.999%-Ga) [Ga(TMHD)$_3$] PURATREM** *(34228-15-4)* $Ga(C_{11}H_{19}O_2)_3$; FW: 619.54; white xtl.; m.p. 219-220°; b.p. dec. 360° (subl. 170°/0.2mm)	1g 5g 25g

GERMANIUM (Elemental Forms)

93-3232	**Germanium pieces (99.999%)** *(7440-56-4)* Ge; FW: 72.59; irregular pieces (5-10mm); m.p. 937.4°; b.p. 2830°; d. 5.323	10g 50g
93-3231 HAZ	**Germanium powder (99.999%)** *(7440-56-4)* Ge; FW: 72.59; -100 mesh; m.p. 937.4°; b.p. 2830°; d. 5.323	5g 25g
93-3230 HAZ	**Germanium powder (99.9999%)** *(7440-56-4)* Ge; FW: 72.59; pwdr.; m.p. 937.4°; b.p. 2830°; d. 5.323	5g 25g

GERMANIUM (Compounds)

93-3220 HAZ	**Diethylgermanium dichloride, min. 97%** *(13314-52-8)* $(C_2H_5)_2GeCl_2$; FW: 201.64; colorless liq.; b.p. 175°; d. 1.372 *moisture sensitive*	1g 5g
93-3202 amp HAZ	**Dimethylgermanium dichloride, 99%** *(1529-48-2)* $(CH_3)_2GeCl_2$; FW: 173.57; colorless liq.; m.p. -22°; b.p. 124°; f.p. 90°F; d. 1.488 (26°) *moisture sensitive*	1g 5g
93-3203 amp HAZ	**Ethylgermanium trichloride, min. 97%** *(993-42-0)* $C_2H_5GeCl_3$; FW: 208.03; colorless liq.; m.p. -33°; b.p. 144°; d. 1.604 *moisture sensitive*	1g 5g
93-3225 amp HAZ	**Germanium(IV) bromide (99.99+%-Ge) PURATREM** *(13450-92-5)* $GeBr_4$; FW: 392.23; white xtl.; m.p. 26.1°; b.p. 186.5°; d. 3.132 *moisture sensitive*	10g
32-0650 amp HAZ	**Germanium(IV) chloride (99.99%-Ge) PURATREM** *(10038-98-9)* $GeCl_4$; FW: 214.40; colorless liq.; m.p. -49.5°; b.p. 83.1°; d. 1.880 *moisture sensitive*	10g 50g
32-0700 amp HAZ	**Germanium(IV) chloride (99.9999%-Ge) PURATREM** *(10038-98-9)* $GeCl_4$; FW: 214.40; colorless liq.; m.p. -49.5°; b.p. 83.1°; d. 1.880 *moisture sensitive*	25g 100g 5 x 100g
93-3206 HAZ	**Germanium(IV) ethoxide (99.99+%-Ge) PURATREM** *(14165-55-0)* $Ge(OC_2H_5)_4$; FW: 252.85; colorless liq.; m.p. -81°; b.p. 185.5°; d. 1.14 *moisture sensitive*	1g 5g 25g
93-3205	**Germanium(II) iodide (99.99+%-Ge) PURATREM** *(13573-08-5)* GeI_2; FW: 326.40; -10 mesh yellow pwdr.; m.p. dec.; d. 5.73 *moisture sensitive*	1g 5g
93-3226 amp HAZ	**Germanium(IV) iodide (99.999%-Ge) PURATREM** *(13450-95-8)* GeI_4; FW: 580.21; orange to red xtl.; m.p. 146°; b.p. 350°; d. 4.416 *moisture sensitive*	5g 25g
93-3221	**Germanium(IV) oxide (99.999%-Ge) PURATREM** *(1310-53-8)* GeO_2; FW: 104.59; white pwdr., hexagonal (soluble) form; m.p. 1111-1119°; d. 4.228	5g 25g
97-3222	**Germanium(IV) oxide, elec. gr. (99.9999%-Ge) PURATREM** *(1310-53-8)* GeO_2; FW: 104.59; white pwdr.; m.p. 1111-1119°; d. 4.228	10g 50g
93-3224	**Germanium(IV) selenide (99.999%-Ge) PURATREM** *(12065-11-1)* $GeSe_2$; FW: 230.51; orange xtl.; m.p. 707°; d. 4.56	1g 5g
93-3209	**Germanium(II) sulfide (99.99+%-Ge) (contains 1-5% germanium metal) PURATREM** *(12025-32-0)* GeS; FW: 104.65; black xtl.; m.p. 530°	2g 10g
32-3215	**Germanium(II) chloride dioxane adduct** *(28595-67-7)* $C_4H_8Cl_2GeO_2$; FW: 231.65 *moisture sensitive*	2g 10g
32-2050	**Tetra-n-butylgermane, min. 98%** *(1067-42-1)* $(n\text{-}C_4H_9)_4Ge$; FW: 301.05; colorless liq.; b.p. 130-133°/5 mm; d. 0.934	5g 25g
93-3227 HAZ	**Tetraethylgermane, 99%** *(597-63-7)* $(C_2H_5)_4Ge$; FW: 188.84; colorless liq.; m.p. -90°; b.p. 165.5°; f.p. 85°F; d. 1.1989	2g 10g
32-2125 HAZ	**Tetramethylgermane, 99%** *(865-52-1)* $(CH_3)_4Ge$; FW: 132.73; colorless liq.; m.p. -88°; b.p. 43.4°; f.p. -35°F; d. 0.978	1g 5g 25g
32-2340 HAZ	**Triethylgermanium chloride, 98%** *(994-28-5)* $(C_2H_5)_3GeCl$; FW: 195.23; colorless liq.; b.p. 179-180°; d. 1.175 *moisture sensitive*	1g 5g 25g

GERMANIUM (Compounds)

93-3214 HAZ	**Trimethylgermanium bromide, 98+%** *(1066-37-1)* $(CH_3)_3GeBr$; FW: 197.60; colorless liq.; m.p. -25°; b.p. 113.7°; f.p. 99°F; d. 1.540 *moisture sensitive*	1g 5g
32-2410 amp HAZ	**Trimethylgermanium chloride, min. 98%** *(1529-47-1)* $(CH_3)_3GeCl$; FW: 153.15; colorless liq.; m.p. -14°; b.p. 99-101°; f.p. 35°F; d. 1.2382 (22°) *moisture sensitive*	1g 5g
32-2550	**Triphenylgermanium chloride, 99%** *(1626-24-0)* $(C_6H_5)_3GeCl$; FW: 339.36; white xtl.; m.p. 112-114°; b.p. 285°/12 mm *moisture sensitive*	1g 5g

GOLD (Elemental Forms)

79-0160	**Gold 1% on aluminum oxide extrudates (AUROlite™ Au/Al_2O_3)** *(7440-57-5)* *See* page 150	
79-0165	**Gold 1% on titanium dioxide extrudates (AUROlite™ Au/TiO_2)** *(7440-57-5)* *See* page 150	
79-0170	**Gold 1% on zinc oxide granulate (AUROlite™ Au/ZnO)** *(7440-57-5)* *See* page 151	
79-0050	**Gold foil (99.9%)** *(7440-57-5)* Au; FW: 197.20; 0.01mm thick (~0.12g/25mm x 25mm); m.p. 1064°; b.p. 2067°; d. 19.3	25 x 25mm 50 x 50mm
79-0060	**Gold foil (99.95%)** *(7440-57-5)* Au; FW: 197.20; 0.1mm thick (~1.2g/25mm x 25mm); m.p. 1064°; b.p. 2067°; d. 19.3	25 x 25mm 50 x 50mm
	Gold Gemini Nanorods, CTAB Free *(7440-57-5)* *See* page 157	
96-1549	**Gold Gemini Nanorods Kit, CTAB Free (Wavelength 650-850 nm)** *See* page 534	
79-0134	**Gold Nanochain [AuNP-Chain: 1-2 µm (Gum Arabic)]** *(7440-57-5)* *See* page 151	
79-0921 NEW	**Gold nanoparticles, 1% on carbon black (surfactant and reactant-free)** *(7440-57-5)* Au; FW: 196.70; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
79-0916 NEW	**Gold nanoparticles, 1% on Titania (anatase) (surfactant and reactant-free)** *(7440-57-5)* Au; FW: 196.70; dark purple pwdr. *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
79-0905 NEW	**Gold nanoparticles, 1% on Titania (rutile) (surfactant and reactant-free)** *(7440-57-5)* Au; FW: 196.70; purple solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
79-0926 NEW	**Gold nanoparticles, 5% on carbon black (surfactant and reactant-free)** *(7440-57-5)* Au; FW: 196.70; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
79-0935 NEW	**Gold nanoparticles, 10% on Titania (anatase) (surfactant and reactant-free)** *(7440-57-5)* Au; FW: 196.70; purple solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g

GOLD (Elemental Forms)

79-0930 NEW	**Gold nanoparticles, 10% on Titania (rutile) (surfactant and reactant-free)** *(7440-57-5)* Au; FW: 196.70; dark purple solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g
	Gold Nanoparticles (1 OD, stabilized suspension in phosphate-buffered saline) reactant free *(7440-57-5)* *See* page 152	
96-1545	**Gold Nanoparticles Kit, Reactant-Free (5nm-40nm diameter, OD 1, suspension in phosphate-buffered saline, 515-530nm abs. max.)** *(7440-57-5)* *See* page 535	
	Gold Nanoparticles (1 OD, supplied in 0.1mM stabilizing surfactant) *(7440-57-5)* *See* page 153	
96-1547	**Gold Nanoparticles Kit (5nm-40nm diameter, OD 1, stabilized suspension citrate buffer)** *(7440-57-5)* *See* page 534	
79-0235	**Gold nanoparticles powder, 6nm, organic solvent-dispersible** *(7440-57-5)* *See* page 151	
	Gold nanoparticles - surfactant and reactant-free (pure), manufactured via laser ablation *(7440-57-5)* *See* page 154	
	Spherical Gold Nanoparticles *(7440-57-5)* *See* page 154	
96-1540	**Gold Nanospheres Kit (30-90 nm)** *(7440-57-5)* *See* page 535	
	Sugar Coated Gold Nanoparticles *(7440-57-5)* *See* page 154	
79-0238	**Gold nanoparticles with amine surface functional group, 6nm, in water** *(7440-57-5)* *See* page 151	
79-0240	**Gold nanoparticles with carboxylic acid surface functional group, 6nm, in water** *(7440-57-5)* *See* page 152	
79-0136	**Gold Nanorods [AuNP-Rod: Aspect Ratio: 3-3.5 (CTAB)]** *(7440-57-5)* *See* page 156	
	Gold Nanorods (Axial Diameter - 10 nm) *(7440-57-5)* *See* page 156	
96-1535	**Gold Nanorods Kit (Axial Diameter - 10 nm, wavelength 700-808 nm)** *(7440-57-5)* *See* page 535	
	Gold Nanorods (Axial Diameter - 25 nm) *(7440-57-5)* *See* page 156	
96-1530	**Gold Nanorods Kit (Axial Diameter - 25 nm, wavelength 550-700 nm)** *(7440-57-5)* *See* page 535	
	Gold NanoUrchins (1 OD, 0.1 mM in phosphate-buffered saline) >95.0% reactant free *See* page 158	
	Water Soluble Gold Nanoparticles *(7440-57-5)* *See* page 155	
93-7912	**Gold powder (99.9+%)** *(7440-57-5)* Au; FW: 197.20; 1.5-3.0 micron spherical; m.p. 1064°; b.p. 2067°; d. 19.3	500mg 2g
93-7915	**Gold powder (99.95%)** *(7440-57-5)* Au; FW: 197.20; 2-5 micron; m.p. 1064°; b.p. 2067°; d. 19.3	500mg 2g
93-7902	**Gold powder (99.999%)** *(7440-57-5)* Au; FW: 197.20; -20 mesh; m.p. 1064°; b.p. 2067°; d. 19.3	500mg 2g
93-7913	**Gold shot (99.95%)** *(7440-57-5)* Au; FW: 197.20; 6.35 mm and down, semi-spherical; m.p. 1064°; b.p. 2067°; d. 19.3	500mg 2g

GOLD (Elemental Forms)

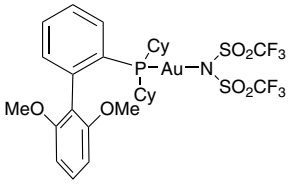
79-0075	**Gold shot (99.999%)** *(7440-57-5)* Au; FW: 197.20; 0.8-6 mm; m.p. 1064°; b.p. 2067°; d. 19.3	500mg 2.5g
79-0095	**Gold wire (99.99%)** *(7440-57-5)* Au; FW: 196.97; 1.4 mm dia.; b.p. 2067°; d. 19.3	2cm 10cm
79-0085	**Gold wire (99.999%)** *(7440-57-5)* Au; FW: 196.97; 1.4mm dia. (~0.6g/2cm); b.p. 2067°; d. 19.3	2cm 10cm
79-0080	**Gold/tetra-n-octylammonium chloride colloid** *(7440-57-5)* *See* page 151	

GOLD (Compounds)

02-1000	**Ammonium tetrachloroaurate(III) hydrate (99.9985%-Au) PURATREM** *(13874-04-9)* *See* page 6	
79-0125	**Bis{1,3-bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2H-imidazol-2-ylidene}-μ-hydroxydigold(I) tetrafluoroborate, 99%** *(1262545-44-7)* $C_{54}H_{73}Au_2BF_4N_4O$; FW: 1274.92; white solid **For detailed technical note visit strem.com.**	100mg 500mg
79-0200	**1,3-Bis(2,6-di-isopropylphenyl)imidazol-2-ylidenegold(I) chloride, 95%** *(852445-83-1)* $C_{27}H_{36}AuClN_2$; FW: 621.01; white pwdr. *(store cold)* **For detailed technical note visit strem.com.**	250mg 1g
79-0115	**[μ-Bis(diphenylphosphino) methane]dichlorodigold(I), 99%** *(37095-27-5)* $C_{25}H_{22}Au_2Cl_2P_2$; FW: 849.23; white pwdr. **For detailed technical note visit strem.com.**	250mg 1g
79-0300	**1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene(acetonitrile)gold(I) tetrafluoroborate, 95%** *(896733-61-2)* $C_{29}H_{29}AuBF_4N_3$; FW: 713.41; white solid *air sensitive* Note: US Patent 7,767,841 **For detailed technical note visit strem.com.**	100mg 500mg
79-0245 NEW	**[1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene][bis(trifluoromethanesulfonyl)imide]gold(I), min. 95%** *(951776-24-2)* $C_{29}H_{36}AuF_6O_4S_2$; FW: 865.7; white to pale yellow solid *air sensitive* **For detailed technical note visit strem.com.**	100mg 500mg
79-0205	**1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidenegold(I) hydroxide, min. 97%** *(1240328-73-7)* $C_{27}H_{37}AuN_2O$; FW: 602.56; white microxtl. **For detailed technical note visit strem.com.**	100mg 500mg

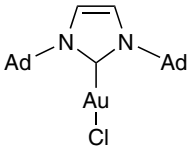
GOLD (Compounds)

79-0230 **Bis(trifluoromethanesulfonyl)imide(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)gold(I), 98%** *(1121960-90-4)*
$C_{28}H_{35}AuF_6NO_6PS_2$; FW: 887.64; white to off-white solid
For detailed technical note visit strem.com.



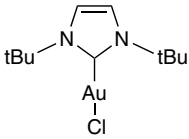
100mg
500mg

79-1225 NEW **Chloro[1,3-bis(adamantyl)2H-imidazol-2-ylidene] gold(I), 98%** *(852445-88-6)*
$C_{23}H_{32}AuClN_2$; FW: 568.93; white to light-gray pwdr.
air sensitive
For detailed technical note visit strem.com.



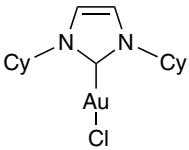
100mg
500mg

79-1215 NEW **Chloro[1,3-bis(t-butyl)-2H-imidazol-2-ylidene]gold(I), 98%** *(839722-07-5)*
$C_{11}H_{20}AuClN_2$; FW: 412.71; white pwdr.
air sensitive
For detailed technical note visit strem.com.



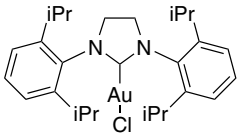
100mg
500mg

79-1220 NEW **Chloro[1,3-bis(cyclohexyl)2H-imidazol-2-ylidene] gold(I), 98%** *(852445-87-5)*
$C_{15}H_{24}AuClN_2$; FW: 464.78; white to light-gray pwdr.
air sensitive



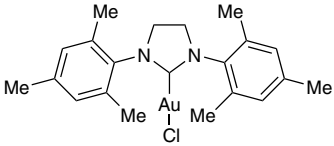
100mg
500mg

79-1210 NEW **Chloro{1,3-bis[2,6-di-i-propylphenyl]-4,5-dihydroimidazol-2-ylidene}gold(I), 98% SIPrAuCl** *(852445-84-2)*
$C_{27}H_{38}AuClN_2$; FW: 623.02; white pwdr.
air sensitive
For detailed technical note visit strem.com.



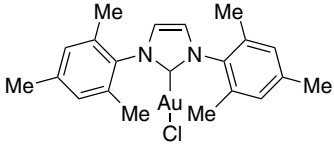
100mg
500mg

79-1205 NEW **Chloro[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene] gold(I), 98%** *(852445-82-0)*
$C_{21}H_{26}AuClN_2$; FW: 538.86; white pwdr.
air sensitive
For detailed technical note visit strem.com.



100mg
500mg

79-1200 NEW **Chloro[1,3-bis(2,4,6-trimethylphenyl)2H-imidazol-2-ylidene]gold(I), 98%** *(852445-81-9)*
$C_{21}H_{24}AuClN_2$; FW: 536.85; white pwdr.
air sensitive
For detailed technical note visit strem.com.

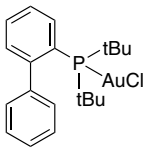


100mg
500mg

79-0350 **Chlorocarbonylgold(I), min. 97%** *(50960-82-2)*
Au(CO)Cl; FW: 260.43; off-white pwdr.
air sensitive, moisture sensitive, (store cold)

250mg
1g

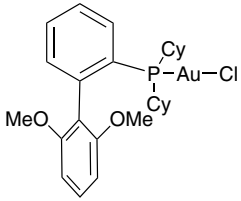
79-0340 **Chloro[2-(di-t-butylphosphino))-1,1'-biphenyl]gold(I), 99%** *(854045-93-5)*
$C_{20}H_{27}AuClP$; FW: 530.82; white pwdr.



250mg
1g

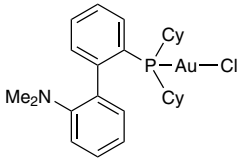
GOLD (Compounds)

79-0225 **Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)gold(I), 98%** *(854045-95-7)*
$C_{26}H_{35}AuClO_2P$; FW: 642.95; white pwdr.
For detailed technical note visit strem.com.



250mg
1g

79-0343 **Chloro[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl]gold(I), 98%**
(1196707-11-5)
$C_{26}H_{36}AuClNP$; FW: 625.96; white pwdr.
For detailed technical note visit strem.com.

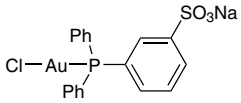


250mg
1g

79-0345 NEW **Chloro(dimethylsulfide)gold(I), min. 97%** *(29892-37-3)*
$(CH_3)_2SAuCl$; FW: 294.55; white to off-white solid
light sensitive, (store cold)
For detailed technical note visit strem.com.

250mg
1g
5g

79-1100 **Chloro[diphenyl(3-sulfonatophenyl)phosphine] gold(I), sodium salt hydrate, min. 98%**
$AuCl[(C_6H_5)_2P(C_6H_4SO_3Na)]\cdot XH_2O$; FW: 596.75; white to off-white pwdr.
light sensitive, (store cold)



250mg
1g

79-1122 NEW **Chloro(tetrahydrothiophene)gold(I), min. 98%** *(39929-21-0)*
$(C_4H_8S)AuCl$; FW: 320.59; white to off-white pwdr.
air sensitive, heat sensitive, light sensitive, (store cold)
For detailed technical note visit strem.com.

100mg
500mg

79-0740 **Chlorotri-t-butylphosphinegold(I), 99%** *(69550-28-3)*
$AuClP(C_4H_9)_3$; FW: 434.74; white microxtl.
For detailed technical note visit strem.com.

250mg
1g

79-0750 HAZ **Chlorotriethylphosphinegold(I), 99%** *(15529-90-5)*
$AuClP(C_2H_5)_3$; FW: 350.57; white to pink xtl.; m.p. 85-87°

250mg
1g
5g

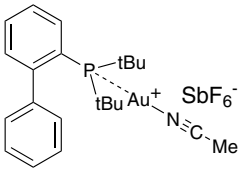
79-0850 **Chlorotrimethylphosphinegold(I), min. 98%** *(15278-97-4)*
$AuClP(CH_3)_3$; FW: 308.49; white xtl.; m.p. 225-228°

100mg
500mg
2g

79-1000 **Chlorotriphenylphosphinegold(I), 98+% (99.9+%-Au)** *(14243-64-2)*
$AuClP(C_6H_5)_3$; FW: 494.71; white xtl.

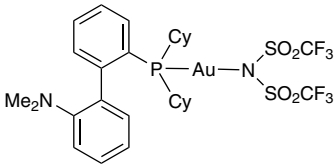
250mg
1g
5g

79-0352 **2-(Di-t-butylphosphino))-1,1'-biphenyl(acetonitrile)gold(I) hexafluoroantimonate, 99%**
(866641-66-9)
$C_{22}H_{30}F_6AuNPSb$; FW: 772.17; white to off-white pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



250mg
1g

79-0348 **[2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl][bis(trifluoromethyl) sulfonylimido]gold(I), 98%**
(1188507-66-5)
$C_{28}H_{36}AuF_6N_2O_4PS_2$; FW: 870.66; yellow pwdr.
For detailed technical note visit strem.com.



250mg
1g

79-1500 **Dimethyl(acetylacetonate)gold(III), 98% (99.9%-Au)** *(14951-50-9)*
$(CH_3)_2(C_5H_7O_2)Au$; FW: 326.60; white to off-white xtl.; m.p. 81-82°; b.p. subl. ~25°/0.01mm
(store cold)

500mg
2g

GOLD (Compounds)

Technical Notes:
1. Highly volatile gold source for MOCVD applications. Must ship overnight in dry ice.
2. Precursor for synthesis of gold nanoparticles. Au/ZrO2 and Au/Al2O3 prepared in this way were extremely efficient catalysts for the aerobic oxidation of glucose. (Ref. 1)

References:
1. *Angew. Chem. Int. Ed.,* **2008**, *47*, 9265

79-1600 HAZ	**Dimethyl(trifluoroacetylacetonate)gold(III), 98% (99.9%-Au)** *(63470-53-1)* $(CH_3)_2Au(CF_3COCHCOCH_3)$; FW: 380.12; white to off-white xtl. *air sensitive, heat sensitive, light sensitive, (store cold)*	500mg 2g

Technical Note:
1. Highly volatile gold source for MOCVD applications. Must ship overnight in dry ice.

79-2015	**Diphenyl(m-sulfonatophenyl)phosphine-gold nanocluster (water soluble) (1-3 nm)** *See* page 158	
93-7905 HAZ	**Gold(III) bromide, anhydrous, 99% (99.9+%-Au)** *(10294-28-7)* $AuBr_3$; FW: 436.69; orange to brown pwdr. *moisture sensitive*	1g 5g
79-1900	**Gold(I) chloride, 97% (99.99%-Au) PURATREM** *(10294-29-8)* AuCl; FW: 232.42; yellow pwdr.; m.p. 289° dec.; d. 7.4	250mg 1g 5g
93-7907	**Gold(III) chloride, 99% (99.9%-Au)** *(13453-07-1)* $AuCl_3$; FW: 303.33; red-brown solid; m.p. 254° dec. *light sensitive, moisture sensitive*	250mg 1g 5g
93-7901 HAZ	**Gold(I) cyanide (99.9%-Au)** *(506-65-0)* AuCN; FW: 222.98; yellow pwdr.; m.p. ~50° (dec.); d. 7.12	1g 5g
79-2000	**Gold(I) iodide, 99% (99.9+%-Au)** *(10294-31-2)* AuI; FW: 323.87; yellowish-green pwdr.; m.p. 120° dec.; d. 8.25 *(store cold)*	1g 5g
93-7903	**Gold(III) oxide, 99%** *(1303-58-8)* Au_2O_3; FW: 441.93; orange to brown pwdr.; m.p. 150° (dec.)	1g 5g
79-2035	**Hexachlorododecakis[diphenyl(m-sulfontophenyl)phosphine] pentapentacontagold, dodecasodium salt (water soluble) Schmid Au_{55} Cluster** *(115804-59-6)* *See* page 158	
79-2030	**Hexachlorododecakis(triphenylphosphine)pentapentacontagold Schmid Au_{55} Cluster** *(104619-10-5)* *See* page 158	
79-2150 HAZ	**Hydrogen tetrabromoaurate(III) hydrate (99.9%-Au)** *(17083-68-0)* $HAuBr_4 \cdot XH_2O$; FW: 517.61; black xtl. *moisture sensitive*	1g 5g
79-0500 HAZ	**Hydrogen tetrachloroaurate (III) hydrate (99.8%-Au) (min. 49% Au)(Chloroauric acid)** *(27988-77-8)* $HAuCl_4 \cdot XH_2O$; FW: 339.79; yellow to orange xtl. *light sensitive, hygroscopic, (store cold)*	1g 5g 25g
79-2200 HAZ	**Hydrogen tetrachloroaurate(III) hydrate (99.9985%-Au) (49% Au) PURATREM** *(27988-77-8)* $HAuCl_4 \cdot XH_2O$; FW: 339.79; yellow to orange xtl. *light sensitive, hygroscopic, (store cold)*	1g 5g
79-5000	**Methyl(triphenylphosphine)gold(I), 99%** *(23108-72-7)* $Au(CH_3)P(C_6H_5)_3$; FW: 474.29; white xtl.; m.p. ~150° (dec.) **For detailed technical note visit strem.com.**	250mg 1g
79-3000	**Potassium dicyanoaurate(I), 99%** *(13967-50-5)* *See* page 341	
79-3250	**Potassium tetrabromoaurate(III) dihydrate, 99%** *(14323-32-1)* *See* page 344	
93-7906	**Potassium tetrachloroaurate(III) hydrate (99.99%-Au) (51%-Au) PURA-TREM** *(13682-61-6)* *See* page 344	
79-3505	**Sodium tetrabromoaurate(III) hydrate (99.9+%-Au)** *(52495-41-7)* *See* page 421	

GOLD (Compounds)

79-0355	**Tri-t-butylphosphine[bis(trifluoromethyl)sulfonylimido]gold(I), 98%** *(1121960-93-7)* $C_{14}H_{27}AuF_6NO_4PS_2$; FW: 679.43; white solid **For detailed technical note visit strem.com.**	100mg 500mg
79-3590	**Trichloropyridinegold(III), min. 97%** *(14911-01-4)* $(C_5H_5N)AuCl_3$; FW: 382.43; pale yellow pwdr.	250mg 1g
79-3615	**Triphenylphosphinegold(I) bis(trifluoromethanesulfonyl)imidate, min. 98%** *(866395-16-6)* $[(C_6H_5)_3PAu]^+[N(CF_3SO_2)_2]^-$; FW: 739.4; white to off-white pwdr. *air sensitive, light sensitive, (store cold)* **For detailed technical note visit strem.com.**	250mg 1g
79-3600	**Tris[triphenylphosphinegold(I)]oxonium tetrafluoroborate, 98%** *(53317-87-6)* $[(C_6H_5)_3PAu]_3O^+BF_4^-$; FW: 1480.56; off-white pwdr.; m.p. 207° dec. *air sensitive* **For detailed technical note visit strem.com.**	250mg 1g

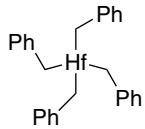
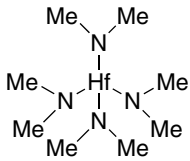
HAFNIUM (Elemental Forms)

72-0055	**Hafnium crystal bar chips (99.7%, Zr-~3%)** *(7440-58-6)* Hf; FW: 178.49; 5/8" x 1.5" pieces; m.p. 2227°; b.p. 4602°; d. 13.31	25g 100g
72-0070	**Hafnium foil (99.5%, Zr-2.9%)** *(7440-58-6)* Hf; FW: 178.49; 1.0mm thick; m.p. 2227°; b.p. 4602°; d. 13.31	50 x 50mm 100 x 100mm
72-0075	**Hafnium foil (99.5%, Zr-2.9%)** *(7440-58-6)* Hf; FW: 178.49; 0.254mm thick; m.p. 2227°; b.p. 4602°; d. 13.31	50 x 50mm 100 x 100mm
93-7225 HAZ	**Hafnium powder (99.6%, Zr-3.1%)** *(7440-58-6)* Hf; FW: 178.49; -80 + 200 mesh; m.p. 2227°; b.p. 4602°; d. 13.31 *pyrophoric*	2g 10g
93-7227 HAZ	**Hafnium powder (99.6%, Zr-2.2%)** *(7440-58-6)* Hf; FW: 178.49; -325 mesh; m.p. 2227°; b.p. 4602°; d. 13.31 *pyrophoric*	2g 10g 50g
72-0085	**Hafnium wire (99.97%, Zr-3.1%)** *(7440-58-6)* Hf; FW: 178.49; 1.0mm dia. (~2.6g/25cm); m.p. 2227°; b.p. 4602°; d. 13.31	25cm 100cm

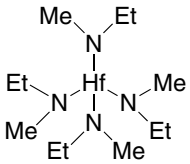
HAFNIUM (Compounds)

72-0700	**Bis(cyclopentadienyl)dimethylhafnium, min. 97%** *(37260-88-1)* $(C_5H_5)_2Hf(CH_3)_2$; FW: 338.75; white xtl.; b.p. subl. 90°/0.1mm *air sensitive, (store cold)*	500mg 2g
72-1000	**Bis(cyclopentadienyl)hafnium dichloride, min. 98% (Hafnocene dichloride)** *(12116-66-4)* $(C_5H_5)_2HfCl_2$; FW: 379.59; off-white xtl. *moisture sensitive*	1g 5g 25g
72-1250	**Bis(ethylcyclopentadienyl)hafnium dichloride, min. 98%** *(78205-93-3)* $[C_5H_4(C_2H_5)]_2HfCl_2$; FW: 435.69; white pwdr. *moisture sensitive*	1g 5g
72-1500	**Bis(pentamethylcyclopentadienyl)hafnium dichloride, min. 98%** *(85959-83-7)* $[(CH_3)_5C_5]_2HfCl_2$; FW: 519.86; white xtl. *moisture sensitive*	1g 5g
72-2000	**Bis(i-propylcyclopentadienyl)hafnium dichloride, min. 98%** *(66349-80-2)* $[C_5H_4(C_3H_7)]_2HfCl_2$; FW: 463.76; white xtl. *moisture sensitive*	1g 5g
72-1900	**Dimethylbis(t-butylcyclopentadienyl)hafnium(IV), min. 98%** *(68193-45-3)* $[(C_4H_9)C_5H_4]_2Hf(CH_3)_2$; FW: 450.96; white xtl. *air sensitive, moisture sensitive*	1g 5g 25g

HAFNIUM (Compounds)

72-2002	**Hafnium(IV) acetylacetonate, min. 96%** *(17475-67-1)* $Hf(CH_3COCHCOCH_3)_4$; FW: 574.93; white to off-white pwdr.	1g 5g 25g
93-7217 HAZ	**Hafnium(IV) bromide, anhydrous, 98% (99.7%-Hf)** *(13777-22-5)* $HfBr_4$; FW: 498.13; -20 mesh tan pwdr.; m.p. 220° subl. *moisture sensitive*	1g 5g
72-5800 amp	**Hafnium(IV) t-butoxide (99.9%-Hf, <1.5%-Zr)** *(2172-02-3)* $Hf[OC(CH_3)_3]_4$; FW: 470.65; liq. (may contain small amount of white sediment); b.p. 90°/5 mm; d. 1.166 *light sensitive, moisture sensitive*	2g 10g
72-0751 HAZ	**Hafnium(IV) chloride, sublimed grade (99.9+%-Hf, <1.0% Zr)** *(13499-05-3)* $HfCl_4$; FW: 320.30; white pwdr.; m.p. 320° subl. *moisture sensitive*	10g 50g 250g
72-0752 HAZ	**Hafnium(IV) chloride, sublimed grade (99.9+%-Hf, <0.05% Zr)** *(13499-05-3)* $HfCl_4$; FW: 320.30; white pwdr.; m.p. 320° subl. *moisture sensitive*	1g 5g 25g
93-7207	**Hafnium(IV) dichloride oxide octahydrate (98+%-Hf, 1.5% Zr)** *(14456-34-9)* $HfOCl_2 \cdot 8H_2O$; FW: 265.40 (409.52); white pwdr.	10g 50g
72-5900	**Hafnium(IV) ethoxide, 99%** *(13428-80-3)* $Hf(OC_2H_5)_4$; FW: 358.73; white to off-white xtl. *moisture sensitive*	5g 25g
93-7204	**Hafnium(IV) oxide, 98%** *(12055-23-1)* HfO_2; FW: 210.49; off-white pwdr.; m.p. 2812°; d. 9.68	10g 50g
72-5200	**Hafnium(IV) oxide (99.995%-Hf, <0.15% Zr) PURATREM** *(12055-23-1)* HfO_2; FW: 210.49; off-white pwdr.; m.p. 2812°; d. 9.68	1g 5g
72-5950	**Hafnium(IV) i-propoxide monoisopropylate, 99%** *(2171-99-5)* $Hf(OC_3H_7)_4 \cdot C_3H_7OH$; FW: 414.84 (474.94); white xtl. *moisture sensitive* **For detailed technical note visit strem.com.**	5g 25g
72-6000	**Pentamethylcyclopentadienylhafnium trichloride, min. 98%** *(75181-08-7)* $(CH_3)_5C_5HfCl_3$; FW: 420.08; off-white xtl. *moisture sensitive*	1g 5g
72-7000	**i-Propylcyclopentadienylhafnium trichloride, min. 98%** *(329736-06-3)* $C_5H_4(C_3H_7)HfCl_3$; FW: 392.03; off-white pwdr. *light sensitive, moisture sensitive*	1g 5g
72-7700 amp HAZ	**Tetrabenzylhafnium, min. 97%** *(31406-67-4)* $(C_6H_5CH_2)_4Hf$; FW: 543.01; yellow pwdr. *air sensitive, heat sensitive, moisture sensitive, (store cold)* 	100mg 500mg 2g 10g
72-7750 amp HAZ	**Tetrakis(diethylamino)hafnium, 99% (99.99+%-Hf, <0.2% Zr) PURATREM** *(19824-55-6)* $Hf[N(CH_2CH_3)_2]_4$; FW: 467.01; light yellow liq. *moisture sensitive*	1g 5g 25g
72-8000 HAZ	**Tetrakis(dimethylamino)hafnium, 98+% (99.99+%-Hf, <0.2% Zr) TDMAH, PURATREM** *(19782-68-4)* $Hf(N(CH_3)_2)_4$; FW: 354.79; colorless to pale yellow xtl.; m.p. 38-41°; b.p. 85°/0.1mm; d. 1.098 *moisture sensitive, (store cold)* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1. Available prepacked in ALD cylinder- see 98-4021, 98-4022. 	1g 5g 25g

HAFNIUM (Compounds)

98-4021 HAZ	**Tetrakis(dimethylamino)hafnium, 98+% (99.99+%-Hf, <0.2%-Zr) TDMAH, PURATREM, 72-8000, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(19782-68-4)* $Hf(N(CH_3)_2)_4$; FW: 354.79; colorless to pale yellow xtl.; m.p. 38-41°; b.p. 85°/0.1mm *moisture sensitive, (store cold)* Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4022. Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.	25g
98-4022 HAZ	**Tetrakis(dimethylamino)hafnium, 98+% (99.99+%-Hf, <0.2%-Zr) TDMAH, PURATREM, 72-8000, contained in 50ml Swagelok® cylinder (96-1071) for CVD/ALD** *(19782-68-4)* $Hf(N(CH_3)_2)_4$; FW: 354.79; colorless to pale yellow xtl. *moisture sensitive, (store cold)* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.	25g
72-7720 amp HAZ	**Tetrakis(ethylmethylamino)hafnium, 99% (99.99+%-Hf, <0.15% Zr) TEMAH PURATREM** *(352535-01-4)* $Hf[N(CH_3)(CH_2CH_3)]_4$; FW: 410.90; colorless to yellow liq.; d. 1.324 *moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4048. Volatile precursor for the ALD, CVD and MOCVD deposition of hafnium oxide. 	2g 10g
98-4048 HAZ	**Tetrakis(ethylmethylamino)hafnium, 99% (99.99+%-Hf, <0.15% Zr) TEMAH, PURATREM, 72-7720, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(352535-01-4)* $Hf[N(CH_3)(CH_2CH_3)]_4$; FW: 410.90; colorless to yellow liq.; f.p. 52°F *moisture sensitive* Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost.	10g
72-7580 NEW	**Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato)hafnium(IV), 99%** *(63370-90-1)* $C_{44}H_{76}HfO_8$; FW: 911.56; white xtl.	1g 5g 25g

HOLMIUM (Elemental Forms)

93-6731	**Holmium chips (99% REO)** *(7440-60-0)* Ho; FW: 164.93; silver metal; m.p. 1474°; b.p. 2695°; d. 8.795 *air sensitive, moisture sensitive*	2g 10g
93-6733	**Holmium foil (99.9% REO)** *(7440-60-0)* Ho; FW: 164.93; 0.127 mm thick (~0.7g/25x 25 mm); m.p. 1474°; b.p. 2695°; d. 8.795 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-6734	**Holmium foil (99.9% REO)** *(7440-60-0)* Ho; 0.25 mm thick (~1.38g/25x 25 mm); m.p. 1474°; b.p. 2695°; d. 8.795 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-6732	**Holmium ingot (99.9% REO)** *(7440-60-0)* Ho; FW: 164.93; ingot; m.p. 1474°; b.p. 2695°; d. 8.795 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	5g 25g
93-6730 HAZ	**Holmium powder (99.9% REO)** *(7440-60-0)* Ho; FW: 164.93; -40 mesh; m.p. 1474°; b.p. 2695°; d. 8.795 *air sensitive, moisture sensitive*	2g 10g

HOLMIUM (Compounds)

93-6726	**Holmium(III) acetate monohydrate (99.9%-Ho) (REO)** *(25519-09-9)* $Ho(OOCCH_3)_3 \cdot H_2O$; FW: 342.07 (360.09); peach pwdr.	10g 50g
93-6721	**Holmium(III) chloride, anhydrous (99.9%-Ho) (REO)** *(10138-62-2)* $HoCl_3$; FW: 271.29; off-white pwdr.; m.p. 718° *hygroscopic*	5g 25g
93-6722	**Holmium(III) chloride hexahydrate (99.9%-Ho) (REO)** *(14914-84-2)* $HoCl_3 \cdot 6H_2O$; FW: 271.29 (379.38); pink xtl.	2.5g 10g 50g

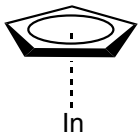
HOLMIUM (Compounds)

93-6712 HAZ	**Holmium(III) nitrate hydrate (99.9%-Ho) (REO)** *(14483-18-2)* $Ho(NO_3)_3 \cdot XH_2O$; FW: 350.95; orange xtl. *hygroscopic*	5g 25g
93-6713	**Holmium(III) oxide (99.9%-Ho) (REO)** *(12055-62-8)* Ho_2O_3; FW: 377.86; off-white to pink pwdr.; m.p. 2360°; d. 8.36	5g 25g
67-6000	**Holmium(III) trifluoromethanesulfonate, min. 98% (Holmium triflate)** *(139177-63-2)* $Ho(CF_3SO_3)_3$; FW: 612.14; white to off-white pwdr. *hygroscopic*	5g 25g
67-5000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)holmium(III), 99% (99.9%-Ho) (REO) [Ho(TMHD)$_3$]** *(15522-73-3)* $Ho(C_{11}H_{19}O_2)_3$; FW: 714.75; off-white xtl.; m.p. 179-181°; b.p. dec. 290°	1g 5g

INDIUM (Elemental Forms)

49-0050	**Indium foil (99.99%)** *(7440-74-6)* In; FW: 114.76; 0.127mm thick (~2.3g/50 x 50mm); m.p. 156.6°; b.p. 2080°; d. 7.31	50 x 50mm 100 x 100mm 150 x 300mm
93-4940 HAZ	**Indium powder (99.99%)** *(7440-74-6)* In; FW: 114.76; -325 mesh; m.p. 156.6°; b.p. 2080°; d. 7.31	5g 25g
93-4941 HAZ	**Indium powder (99.999%)** *(7440-74-6)* In; FW: 114.76; -325 mesh; m.p. 156.6°; b.p. 2080°; d. 7.31	5g 25g
93-4942	**Indium shot (99.9%)** *(7440-74-6)* In; FW: 114.76; 4 mm tear drops; m.p. 156.6°; b.p. 2080°; d. 7.31	5g 25g
93-4944	**Indium shot (99.99%)** *(7440-74-6)* In; FW: 114.76; 4 mm tear drops; m.p. 156.6°; b.p. 2080°; d. 7.31	5g 25g
93-4943	**Indium shot (99.9999%)** *(7440-74-6)* In; FW: 114.76; 4-8 mm; m.p. 156.6°; b.p. 2080°; d. 7.31	5g 25g
49-1000	**Indium wire (99.9985%)** *(7440-74-6)* In; FW: 114.76; 0.5mm dia. (~3.6g/2.5m); m.p. 156.6°; b.p. 2080°; d. 7.31	2.5m 10m

INDIUM (Compounds)

98-4057 HAZ	**Cyclopentadienylindium (I), elec. gr. (99.99+%-In) PURATREM, 97-3425, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(34822-89-4)* C_5H_5In; FW: 179.92; off-white to light yellow xtl.; b.p. subl. 50°/0.01mm *air sensitive, heat sensitive, light sensitive*	5g
97-3425 HAZ	**Cyclopentadienylindium(I), elec. gr. (99.99+%-In) PURATREM** *(34822-89-4)* C_5H_5In; FW: 179.92; off-white to light yellow xtl.; b.p. subl. 50°/0.01 mm *air sensitive, heat sensitive, light sensitive* Note: Available prepacked in ALD cylinder- see 98-4057, 98-4054.  	250mg 1g 5g

Technical Note:

1. ALD precursor for Indium oxide using cyclopentadienyl indium and mixture of water and oxygen.

References:

1. *ECS Transactions,* **2011**, *41*, 2, 147

98-4054 HAZ	**Cyclopentadienylindium(I), elec. gr. (99.99+%-In) PURATREM, 97-3425, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD** *(34822-89-4)* C5H5In; FW: 179.92; off-white to light yellow xtl.; b.p. subl. 50°/0.01 mm *air sensitive, heat sensitive, light sensitive*	5g
93-4936	**Indium(III) acetate (99.99%-In) PURATREM** *(25114-58-3)* $In(OOCCH_3)_3$; FW: 291.95; white xtl. *moisture sensitive*	5g 25g
93-4901	**Indium(III) acetylacetonate, 98%** *(14405-45-9)* $In(CH_3COCHCOCH_3)_3$; FW: 412.15; off-white pwdr.; m.p. 180-185°	5g 25g
93-4920	**Indium(III) antimonide (99.99%-In) PURATREM** *(1312-41-0)* InSb; FW: 236.57; black xtl.; m.p. 535°; d. 5.76	5g 25g

INDIUM (Compounds)

93-4929	**Indium(III) bromide, anhydrous (99.999%-In) PURATREM** *(13465-09-3)* $InBr_3$; FW: 354.55; white to light yellow pwdr.; m.p. ~436°; d. 4.74 *hygroscopic*	5g 25g
93-4930	**Indium(I) chloride, anhydrous (99.99%-In) PURATREM** *(13465-10-6)* InCl; FW: 150.27; golden yellow pwdr.; m.p. ~225°; b.p. 608°; d. 4.19 *air sensitive, moisture sensitive*	2g 10g
93-4932	**Indium(III) chloride, anhydrous (99.999%-In) PURATREM** *(10025-82-8)* $InCl_3$; FW: 221.18; white pwdr.; m.p. 586°; d. 3.46 *hygroscopic*	5g 25g 100g
93-4931	**Indium(III) chloride tetrahydrate (99.99%-In) PURATREM** *(22519-64-8)* $InCl_3 \cdot 4H_2O$; FW: 221.18 (293.26); white xtl.	5g 25g 100g
49-1500	**Indium(III) fluoride, anhydrous, 98%** *(7783-52-0)* InF_3; FW: 171.82; white pwdr.; m.p. ~1170°; b.p. > 1200° *hygroscopic*	5g 25g
93-4915	**Indium(III) iodide (99.999%-In) PURATREM** *(13510-35-5)* InI_3; FW: 495.53; yellow to red solid; m.p. 210°; d. 4.69 *hygroscopic*	1g 5g 25g
93-4923 HAZ	**Indium(III) nitrate hydrate (99.999%-In) PURATREM** *(13465-14-0)* $In(NO_3)_3 \cdot XH_2O$; FW: 300.83; white xtl. *hygroscopic*	10g 50g
93-4906	**Indium(III) oxide (99.998%-In) PURATREM** *(1312-43-2)* In_2O_3; FW: 277.64; yellow pwdr.; d. 7.179	5g 25g
93-4925 HAZ	**Indium(III) perchlorate octahydrate (99.9%-In)** *(13465-15-1)* $In(ClO_4)_3 \cdot 8H_2O$; FW: 413.17 (557.26); white xtl.; m.p. ~80°; b.p. 200° dec.	5g 25g
93-4926	**Indium(III) phosphide (99.999%-In) PURATREM** *(22398-80-7)* InP; FW: 145.79; black xtl.; 1/4" pieces and down; m.p. 1070°	1g 5g
93-4927	**Indium(III) sulfate hydrate (99.999%-In) PURATREM** *(13464-82-9)* $In_2(SO_4)_3 \cdot XH_2O$; FW: 517.83; white xtl.	10g 50g
93-4911	**Indium(III) sulfide (99.99%-In) PURATREM** *(12030-24-9)* In_2S_3; FW: 325.83; orange pwdr.; m.p. 1050°; d. 4.45	5g 25g
93-4904	**Indium(III) trifluoroacetate, 99%** *(36554-90-2)* $In(OOCCF_3)_3$; FW: 453.87; white pwdr. *hygroscopic*	5g
93-4905	**Indium(III) trifluoroacetylacetonate, 99%** *(15453-87-9)* $In(CF_3COCHCOCH_3)_3$; FW: 574.06; white pwdr.	1g
49-1800	**Indium(III) trifluoromethanesulfonate, 99% (Indium triflate)** *(128008-30-0)* $In(CF_3SO_3)_3$; FW: 562.02; white pwdr.; m.p. dec. *hygroscopic*	5g 25g
49-2010 amp HAZ	**Trimethylindium, 98+% (99.9+%-In)** *(3385-78-2)* $(CH_3)_3In$; FW: 159.92; white xtl.; m.p. 88°; f.p. -1°F; d. 1.568 *heat sensitive, moisture sensitive, pyrophoric, (store cold)*	2g 10g

WARNING - Trimethylindium may undergo rapid thermal decomposition if exposed to temperatures above 100ºC. Never attempt to distill the material at atmospheric pressure

98-2010 HAZ	**Trimethylindium, elec. gr. (99.999%-In) PURATREM** *(3385-78-2)* $(CH_3)_3In$; FW: 159.93; white xtl.; m.p. 88°; f.p. -1°F; d. 1.568 *heat sensitive, moisture sensitive, pyrophoric, (store cold)* Note: Available prepacked in ALD cylinder- see 98-4056.	25g 100g

WARNING - Trimethylindium may undergo rapid thermal decomposition if exposed to temperatures above 100ºC. Never attempt to distill the material at atmospheric pressure

98-4056 HAZ	**Trimethylindium, elec. gr. (99.999%-In) PURATREM, 98-2010, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD** *(3385-78-2)* $(CH_3)_3In$; FW: 159.93; white xtl.; m.p. 88°; f.p. -1°F; d. 1.568 *heat sensitive, moisture sensitive, pyrophoric, (store cold)*	25g

WARNING - Trimethylindium may undergo rapid thermal decomposition if exposed to temperatures above 100ºC. Never attempt to distill the material at atmospheric pressure

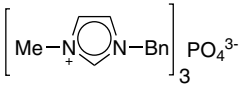
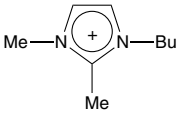
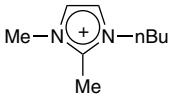
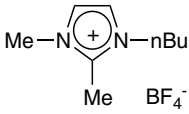
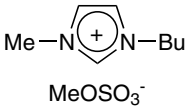
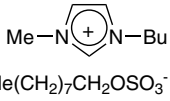
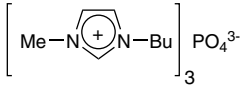
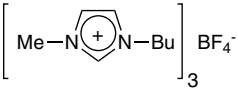
INDIUM (Compounds)

49-2200	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)indium(III), 99% (99.9%-In)** **[In(TMHD)$_3$]** *(34269-03-9)* $In(C_{11}H_{19}O_2)_3$; FW: 664.63; white to off-white pwdr.; m.p. 167°	1g 5g

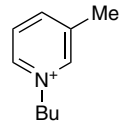
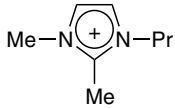
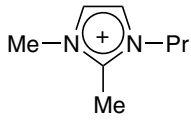
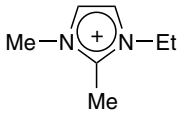
IODINE (Compounds)

93-5302 HAZ	**Iodine(V) oxide, 99%** *(12029-98-0)* I_2O_5; FW: 333.81; white pwdr.; m.p. 300-350° dec.; d. 4.799 *hygroscopic*	10g 50g

IONIC LIQUIDS (Compounds)

07-0090	**1-Benzyl-3-methylimidazolium phosphate, 99%** $[C_{11}H_{13}N_2]_3PO_4$; FW: 614.68; clear, brown liq.		5g
07-0050	**1-Butyl-2,3-dimethylimidazolium diethylene-glycolmonomethylether sulfate, 98% [BDiMIM] [MDEGSO$_4$]** *(108203-89-0)* $[C_9H_{17}N_2]^+[CH_3O(CH_2)_2O(CH_2)_2OSO_3]^-$; FW: 352.45; orange-brown liq.		5g
07-0060	**1-Butyl-2,3-dimethylimidazolium octylsulfate, 98% [BDiMIM] [OcSO$_4$]** *(108203-89-0)* $[C_9H_{17}N_2]^+[CH_3(CH_2)_6CH_2OSO_3]^-$; FW: 362.53; white to off-white pwdr.		5g
07-0075	**1-Butyl-2,3-dimethylimidazolium tetrafluoroborate, 98% [BDiMIM] [BF$_4$]** *(402846-78-0)* $[C_9H_{17}N_2]^+BF_4^-$; FW: 240.05; pale yellow liq.; d. 1.198		5g
07-0100	**1-Butyl-3-methylimidazolium chloride, 98% [BMIM]Cl** *(79917-90-1)* $[C_8H_{15}N_2]^+Cl^-$; FW: 174.67; white to off-white solid; m.p. 65° *hygroscopic* Note: BMIM Ionic Liquid Kit 2 component.		10g
07-0140	**1-Butyl-3-methylimidazolium methanesulfonate, 98% [BMIM] [MeSO$_4$]** *(401788-98-5)* $[C_8H_{15}N_2]^+[CH_3OSO_3]^-$; FW: 250.32; yellow liq.; d. 1.21 *hygroscopic* Note: BMIM Ionic Liquid Kit 2 component.		5g
07-0150	**1-Butyl-3-methylimidazolium octylsulfate, 98% [BMIM] [OctSO$_4$]** *(445473-58-5)* $[C_8H_{15}N_2]^+[CH_3(CH_2)_7OSO_3]^-$; FW: 348.51; beige solid; m.p. 37° *hygroscopic* Note: BMIM Ionic Liquid Kit 2 component.		5g
07-0160	**1-Butyl-3-methylimidazolium phosphate, 99% [BMIM]$_3$ [PO$_4$]** $[C_8H_{15}N_2]_3PO_4$; FW: 512.63; pale yellow liq. Note: BMIM Ionic Liquid Kit 2 component.		5g
07-0170	**1-Butyl-3-methylimidazolium tetrafluoroborate, 98% [BMIM] [BF$_4$]** *(174501-65-6)* $[C_8H_{15}N_2]^+BF_4^-$; FW: 226.03; yellow liq.; m.p. -75°; d. 1.21 *hygroscopic* Note: BMIM Ionic Liquid Kit 2 component.		5g

IONIC LIQUIDS (Compounds)

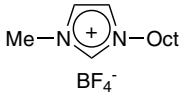
07-0180	**N-Butyl-3-methylpyridinium bis(trifluoromethylsulfonyl) imide, 99% [BMPIm]** *(344790-86-9)* $[C_{11}H_{16}N]^+[N(SO_2CF_3)_2]^-$; FW: 442.40; colorless to pale yellow liq.; d. 1.40 Note: Product protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc. Hydrophobic (water-immiscible) Ionic Liquid Kit 1 component.	 $[N(SO_2CF_3)_2]^-$	1g 5g
07-0465	**1,2-Dimethyl-3-propylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [DMPIIm]** *(169051-76-7)* $[C_8H_{15}N_2]^+[N(SO_2CF_3)_2]^-$; FW: 419.37; colorless to pale yellow liq.; d. 1.47 Note: Product protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc. Hydrophobic (water-immiscible) Ionic Liquid Kit 1 component.	 $[NH(SO_2CF_3)_2]^-$	1g 5g
07-0470	**1,2-Dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl)methide, 99% [DMPIMe]** *(169051-77-8)* $[C_8H_{15}N_2]^+[C(SO_2CF_3)_3]^-$; FW: 550.44; colorless to pale yellow liq.; d. 1.52 Note: Product protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc. Hydrophobic (water-immiscible) Ionic Liquid Kit 1 component.	 $(CF_3SO_2)_3C^-$	500mg 2g
07-0535	**1-Ethyl-2,3-dimethylimidazolium tosylate, 98% [EDiMIM] [TOS]** *(783321-71-1)* $[C_7H_{13}N_2]+[CH_3C_6H_4SO_3]-$; FW: 296.38; white to off-white pwdr.	 $CH_3C_6H_4SO_3^-$	5g
07-0578	**1-Ethyl-3-methylimidazolium bis(pentafluoroethylsulfonyl)imide, 99% [EMIBeti]** *(216299-76-2)* $[C_6H_{11}N_2]^+[N(SO_2CF_2CF_3)_2]^-$; FW: 491.33; colorless to pale yellow liq.; d. 1.57 Note: Product protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc. Hydrophobic (water-immiscible) Ionic Liquid Kit 1 component.	 $[(CF_3CF_2SO_2)_2N]^-$	500mg 2g
07-0579	**1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [EMIIm]** *(174899-82-2)* $[C_6H_{11}N_2]^+[N(SO_2CF_3)_2]^-$; FW: 391.31; colorless to pale yellow liq.; d. 1.53 Note: Product protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc. Hydrophobic (water-immiscible) Ionic Liquid Kit 1 component.	 $[N(SO_2CF_3)_2]^-$	1g 5g
07-0581	**1-Ethyl-3-methylimidazolium ethylsulfate, 98%** *(342573-75-5)* $[C_6H_{11}N_2]^+[CH_3CH_2OSO_3]^-$; FW: 236.29; colorless liq.; m.p. <65°; d. 1.2285 Note: Halogen free ionic liquid.	 $[MeCH_2OSO_3]^-$	10g 50g 250g
07-0588	**1-Ethyl-3-methylimidazolium tosylate, 98% [EMIM] [TOS]** *(328090-25-1)* $[C_6H_{11}N_2]^+[CH_3C_6H_4SO_3]^-$; FW: 282.35; off-white solid; m.p. 32° *hygroscopic*	 $MeC_6H_4SO_3^-$	5g
07-0968	**1-Hexyl-3-methylimidazolium tetrafluoroborate, 98% [HMIM] [BF$_4$]** *(244193-50-8)* $[C_{10}H_{19}N_2]^+BF_4^-$; FW: 254.08; yellow liq.; m.p. -81°; d. 1.149 *hygroscopic*	 BF_4^-	5g
96-6510	**Ionic Liquid Kit 2: BMIM Kit** *See* page 499		

IONIC LIQUIDS (Compounds)

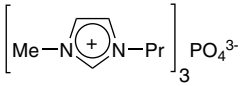
96-6520 **Ionic Liquid Kit 3: CYPHOS® IL Phosphonium Salt Kit**
See page 499

96-6500 **Ionic Liquid Kit 1: Hydrophobic (water-immiscible) Kit**
See page 498

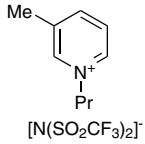
07-1264 **1-Methyl-3-octylimidazolium tetrafluoroborate, 98% [OMIM] [BF$_4$]** *(244193-52-0)* — 5g
$[C_{12}H_{23}N_2]^+BF_4^-$; FW: 282.13; yellow liq.; m.p. -88°; d. 1.12
hygroscopic



07-1725 **1-Methyl-3-propylimidazolium phosphate, 99%** *(817575-04-5)* — 5g
$[C_7H_{13}N_2]_3PO_4$; FW: 470.55; clear, brown liq.



07-1775 **N-Propyl-3-methylpyridinium bis(trifluoromethylsulfonyl) imide, 99% [PMPIm]** *(817575-06-7)* — 1g, 5g
$[C_7H_{14}N]^+[N(SO_2CF_3)_2]^-$; FW: 380.33; colorless to pale yellow liq.; m.p. 0°; d. 1.44
Note: Product protected by U.S. Patent 5,827,602 assigned to Covalent Associates, Inc. Hydrophobic (water-immiscible) Ionic Liquid Kit 1 component.



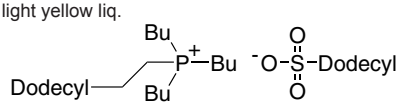
15-1322 **Tetraoctylphosphonium bromide, min. 95%** *(23906-97-0)* — 5g, 25g
$C_{32}H_{68}BrP$; FW: 563.76; white to yellow, waxy solid
hygroscopic

15-1330 **Tributyl(ethyl)phosphonium diethylphosphate, 95%** *(20445-94-7)* — 5g, 25g
$C_{18}H_{42}O_4P_2$; FW: 384.47; colorless to pale-yellow liq.; d. 1.007
hygroscopic

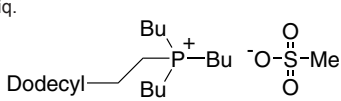
15-1327 HAZ **Tributyl(methyl)phosphonium methylsulfate, min. 95%** *(69056-62-8)* — 5g, 25g
$C_{14}H_{33}O_4PS$; FW: 328.18; white solid to pale-yellow liq.

15-1324 **Tri-i-butyl(methyl)phosphonium tosylate, min. 95%** *(374683-35-9)* — 5g, 25g
$C_{20}H_{37}O_3PS$; FW: 388.54; white to yellow, waxy solid; d. 1.1

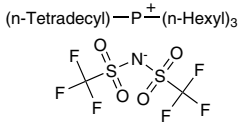
15-5960 **Tributyl(tetradecyl)phosphonium dodecylbenzenesulfonate, min. 98% CYPHOS® IL 201** — 10g, 50g
$[(C_4H_9)_3(C_{14}H_{29})P]^+[(C_{12}H_{25}C_6H_4SO_3]^-$; FW: 725.18; light yellow liq.



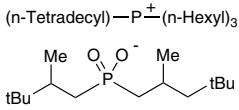
15-5970 **Tributyl(tetradecyl)phosphonium methanesulfonate, min. 98% CYPHOS® IL 203** — 10g, 50g
$[(C_4H_9)_3(C_{14}H_{29})P]^+CH_3SO_3^-$; FW: 494.80; light yellow liq.



15-6370 **Trihexyl(tetradecyl)phosphonium bis(trifluoromethanesulfonyl)amide, min. 97% CYPHOS® IL 109** *(460092-03-9)* — 10g, 50g
$[(C_6H_{13})_3(C_{14}H_{29})P]^+[(CF_3SO_2)_2N]^-$; FW: 764.00; colorless liq.
Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.

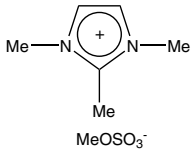


15-6374 **Trihexyl(tetradecyl)phosphonium bis(2,4,4-trimethylpentyl)phosphinate, min. 95% CYPHOS® IL 104** *(465527-59-7)* — 10g, 50g
$[(C_6H_{13})_3(C_{14}H_{29})P]^+[[(CH_3)_3CCH_2CH(CH_3)CH_2]_2P(O)O]^-$; FW: 773.27; pale yellow liq.; d. 0.887
Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.



IONIC LIQUIDS (Compounds)

15-6378	**Trihexyl(tetradecyl)phosphonium bromide, min. 95% CYPHOS® IL 102** *(654057-97-3)* $[(C_6H_{13})_3(C_{14}H_{29})P]^+Br^-$; FW: 563.76; pale yellow liq.; d. 0.952 Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.	10g 50g
15-6382	**Trihexyl(tetradecyl)phosphonium chloride, min. 93% CYPHOS® IL 101** *(258864-54-9)* $[(C_6H_{13})_3(C_{14}H_{29})P]^+Cl^-$; FW: 519.31; colorless liq.; d. 0.894 Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.	10g 50g
15-6386	**Trihexyl(tetradecyl)phosphonium decanoate, min. 95% CYPHOS® IL 103** *(465527-65-5)* $[(C_6H_{13})_3(C_{14}H_{29})P]^+[CH_3(CH_2)_8COO]^-$; FW: 655.11; pale yellow semi solid; m.p. 24°; d. 0.883 Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.	10g 50g
15-6390	**Trihexyl(tetradecyl)phosphonium dicyanamide, min. 95% CYPHOS® IL 105** $[(C_6H_{13})_3(C_{14}H_{29})P]^+[NCNHCN]^-$; FW: 550.91; pale yellow liq. Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.	10g 50g
15-6394	**Trihexyl(tetradecyl)phosphonium hexafluorophosphate, min. 98% CYPHOS® IL 110** *(374683-44-0)* $[(C_6H_{13})_3(C_{14}H_{29})P]^+PF_6^-$; FW: 628.82; white solid; m.p. 50°; d. 1.013 Note: CYPHOS® IL Phosphonium Salt Ionic Liquid Kit 3 component.	10g 50g
07-2660	**1,2,3-Trimethylimidazolium methyl sulfate, 98% [TriMIM] [MeSO4]** *(65086-12-6)* $[C_6H_{11}N_2]^+[CH_3SO_4]^-$; FW: 222.27; tan pwdr.; m.p. 115°	5g

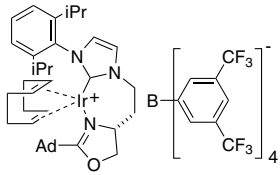


IRIDIUM (Elemental Forms)

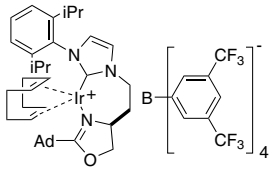
77-2000 HAZ	**Iridium black (99.9% Ir)** *(7439-88-5)* Ir; FW: 192.20; 30-60 m^2/g; m.p. 2410°; b.p. 4130°; d. 22.421	500mg 2g
77-2090	**Iridium foil (99.8%)** *(7439-88-5)* Ir; FW: 192.20; 0.25mm thick (~3.5g/25 x25mm); m.p. 2410°; b.p. 4130°; d. 22.421	25 x 25mm 50 x 50mm
77-2500 HAZ	**Iridium powder (99.8%)** *(7439-88-5)* Ir; FW: 192.20; bluish-gray pwdr.; m.p. 2410°; b.p. 4130°; d. 22.421	500mg 2g
77-2580 HAZ	**Iridium sponge (99.95%)** *(7439-88-5)* Ir; FW: 192.20; -20 mesh bluish-gray pwdr.; m.p. 2410°; b.p. 4130°; d. 22.421	500mg 2g
77-2700	**Iridium wire (99.7%)** *(7439-88-5)* Ir; FW: 192.20; 0.127mm dia. (~0.3g/m); m.p. 2410°; b.p. 4130°; d. 22.421	10cm 50cm

IRIDIUM (Compounds)

77-5030	**{1-[(4R)-2-(1-Adamantyl-4,5-dihydrooxazolyl)ethyl]-3-(2,6-di-i-propylphenyl)imidazolin-2-ylidene}(1,5-cyclooctadiene)iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 99%** *(934621-82-6)* $C_{70}H_{67}BF_{24}IrN_3O$; FW: 1623.27; orange solid **For detailed technical note visit strem.com.**	50mg 250mg



77-5031	**{1-[(4S)-2-(1-Adamantyl-4,5-dihydrooxazolyl)ethyl]-3-(2,6-di-i-propylphenyl)imidazolin-2-ylidene}(1,5-cyclooctadiene)iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 99%** *(369657-32-9)* $C_{70}H_{65}BF_{24}IrN_3O$; FW: 1623.27; orange solid **For detailed technical note visit strem.com.**	50mg 250mg

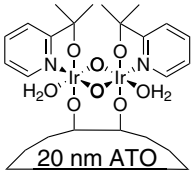


77-0019	**Ammonium hexachloroiridate(III) hydrate (~39% Ir)** *(15752-05-3)* *See* page 5	
77-0020	**Ammonium hexachloroiridate(IV), 99%** *(16940-92-4)* *See* page 5	

IRIDIUM (Compounds)

77-0030 NEW

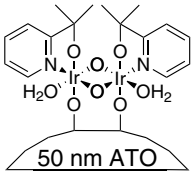
Antimony Tin Oxide/Iridium Het-WOC core/shell nanopowder, 20 nm (conductive and acid-stable)
blue pwdr.
Note: Sold under license from Catalytic Innovations, LLC for research purposes only. US Patent Publication No. US20150021194 A1.
For detailed technical note visit strem.com.



250mg
1g

77-0035 NEW

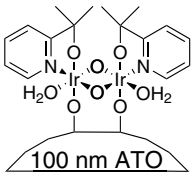
Antimony Tin Oxide/Iridium Het-WOC core/shell nanopowder, 50 nm (conductive and acid-stable)
blue pwdr.
Note: Sold under license from Catalytic Innovations, LLC for research purposes only. US Patent Publication No. US20150021194 A1.
For detailed technical note visit strem.com.



250mg
1g

77-0040 NEW

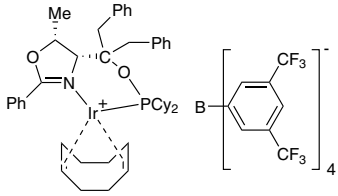
Antimony Tin Oxide/Iridium Het-WOC core/shell nanopowder, 100 nm (conductive and acid-stable)
blue pwdr.
Note: Sold under license from Catalytic Innovations, LLC for research purposes only. US Patent Publication No. US20150021194 A1.
For detailed technical note visit strem.com.



250mg
1g

77-5009

((4R,5R)-(+)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl](dicyclohexylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (R,R)-[COD]Ir[cy$_2$PThrePHOX]
(880262-14-6)
$Ir(C_8H_{12})(C_{37}H_{46}NO_2P)^+B[C_6H_3(CF_3)_2]_4^-$; FW: 1731.35; orange pwdr.; m.p. 160-161°
air sensitive, moisture sensitive, (store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

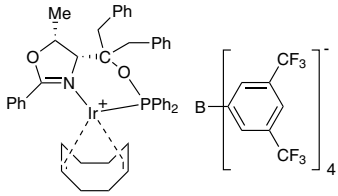
77-5010

((4S,5S)-(-)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl]-dicyclohexylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (S,S)-[COD]Ir[cy$_2$PThrePHOX] *(583844-38-6)*
$Ir(C_8H_{12})(C_{37}H_{46}NO_2P)^+B[C_6H_3(CF_3)_2]_4^-$; FW: 1731.35; orange pwdr.; m.p. 160-161°
air sensitive, moisture sensitive, (store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

77-5019

((4R,5R)-(+)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl](diphenylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (R,R)-[COD]Ir[Ph$_2$PThrePHOX]
(880262-16-8)
$Ir(C_8H_{12})(C_{37}H_{34}NO_2P)^+B[C_6H_3(CF_3)_2]_4^-$; FW: 1719.25; orange pwdr.; m.p. 112-113°
air sensitive, (store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

77-5020

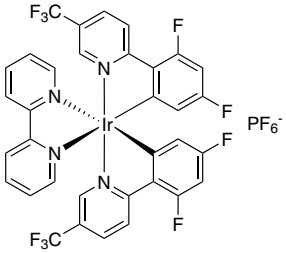
((4S,5S)-(-)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl]-diphenylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl) phenylborate, min. 97% (S,S)-[COD]Ir[Ph$_2$PThrePHOX] *(405235-55-4)*
$Ir(C_8H_{12})(C_{37}H_{34}NO_2P)^+B[C_6H_3(CF_3)_2]_4^-$; FW: 1719.25; orange pwdr.; m.p. 112-113°
air sensitive, (store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

IRIDIUM (Compounds)

77-0220 NEW

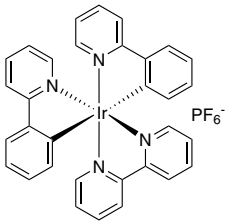
(2,2'-Bipyridine)bis[3,5-difluoro-2-[5-(trifluoromethyl)-2-pyridinyl-kN][phenyl-kC]iridium(III) hexafluorophosphate, 95% *(1092775-62-6)*
$C_{34}H_{18}F_{16}IrN_4P$; FW: 1009.70; yellow pwdr.
air sensitive
Note: Photocatalyst
For detailed technical note visit strem.com.



50mg
250mg

77-0465 NEW

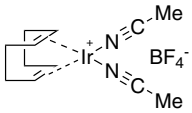
(2,2'-Bipyridine)bis[2-pyridinyl-kN)phenyl-kC]iridium(III) hexafluorophosphate, 99% *(106294-60-4)*
$[Ir(C_{10}H_8N_2)(C_{11}H_8N)_2]PF_6$; FW: 801.74; yellow pwdr.
Note: Photocatalyst
For detailed technical note visit strem.com.



100mg
500mg

77-0213

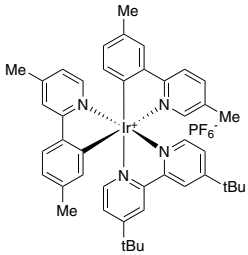
Bis(acetonitrile)(1,5-cyclooctadiene)iridium(I) tetrafluoroborate, min. 97% *(32679-03-1)*
$[Ir(C_8H_{12})(CH_3CN)_2]^+BF_4^-$; FW: 469.31; yellow pwdr.
air sensitive



250mg
1g

77-0218 NEW

4,4'-Bis(t-butyl-2,2'-bipyridine]bis[5-methyl-2-(4-methyl-2-pyridinyl-kN)phenyl-kC]iridium hexafluorophosphate, 95% *(1607469-49-7)*
$C_{44}H_{48}F_6IrN_4P$; FW: 970.06; yellow pwdr.
air sensitive
Note: Photocatalyst
For detailed technical note visit strem.com.



50mg
250mg

77-0200

Bis(1,5-cyclooctadiene)iridium(I) tetrafluoroborate, 98% *(35138-23-9)*
$Ir(C_8H_{12})_2^+BF_4^-$; FW: 495.40; dark red xtl.
air sensitive, (store cold)

100mg
500mg
2g

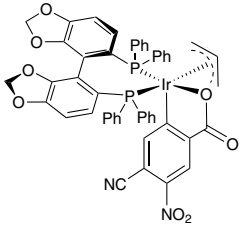
77-0225

Bis(1,5-cyclooctadiene)iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl] borate, 98% *(666826-16-0)*
$Ir(C_8H_{12})_2^+[B(C_8H_3F_6)_4]^-$; FW: 1271.80; black xtl.
For detailed technical note visit strem.com.

100mg
500mg

77-5074

[(R)-(+)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole][4-cyano-3-nitrobenzenecarboxylato][1,2,3-η-2-propenyl] iridium(III), min. 97% *(1208092-27-6)*
$C_{49}H_{35}IrN_2O_8P_2$; FW: 1033.98; yellow pwdr.
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.



100mg
500mg

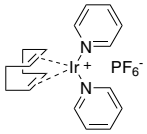
77-5075

[(S)-(-)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole][4-cyano-3-nitrobenzenecarboxylato][1,2,3-η-2-propenyl]iridium(III), min. 97% *(1221768-92-8)*
$C_{49}H_{35}IrN_2O_8P_2$; FW: 1033.98; yellow pwdr.
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

100mg
500mg

IRIDIUM (Compounds)

77-0440 NEW
Bis(pyridine)(1,5-cyclooctadiene)iridium(I) hexafluorophosphate, 99% *(56678-60-5)*
$(C_5H_5N)_2(C_8H_{12})Ir_5PF_6^-$; FW: 603.56; orange pwdr.
air sensitive
For detailed technical note visit strem.com.



250mg
1g

96-7650
CATHy™ Catalyst Kit for Asymmetric Transfer Hydrogenation of Ketones and Imines
See page 476

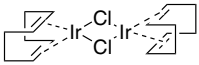
77-0250
Chlorobis(cyclooctene)iridium(I) dimer, 97% *(12246-51-4)*
$[IrCl(C_8H_{14})_2]_2$; FW: 896.13; yellow xtl.
moisture sensitive, (store cold)

250mg
1g
5g

77-0300
Chlorocarbonylbis(triphenylphosphine)iridium(I), 99% VASKA'S COMPLEX
(14871-41-1)
$IrCl(CO)[(C_6H_5)_3P]_2$; FW: 780.27; lemon yellow xtl.

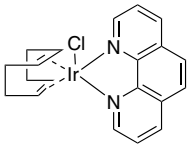
250mg
1g
5g

77-0400
Chloro-1,5-cyclooctadiene iridium(I) dimer, 99%
(12112-67-3)
$[IrCl(C_8H_{12})]_2$; FW: 671.71; red to orange pwdr.;
m.p. 190° dec.
For detailed technical note visit strem.com.



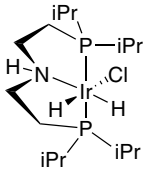
500mg
2g
10g

77-0258 NEW
Chloro(1,5-cyclooctadiene)(1,10-phenanthroline) iridium(I) THF adduct, min. 98% *(41396-69-4)*
$C_{20}H_{20}ClIrN_2$; FW: 516.05; purple solid
air sensitive
For detailed technical note visit strem.com.



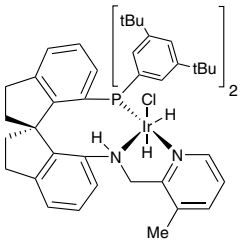
250mg
1g
5g

77-0500
Chlorodihydrido[bis(2-di-i-propylphosphinoethyl)amine] iridium(III), min. 98% *(791629-96-4)*
$IrClH_2(C_{16}H_{37}NP_2)$; FW: 535.10; white pwdr.
Note: Sold under license from Kanata for research purposes only.
Patent WO04096735; US 10/985,058.
For detailed technical note visit strem.com.



250mg
1g

77-4035 NEW
Chlorodihydrido{(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane}iridium(III), >97% (>99% ee) Ir-(R)-DTB-SpiroPAP-3-Me *(1396201-63-0)*
$C_{52}H_{67}ClIrN_2P$; FW: 978.75; yellow-green solid
For detailed technical note visit strem.com.



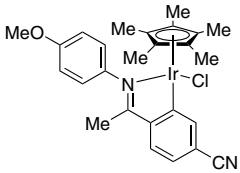
25mg
100mg

77-4036 NEW
Chlorodihydrido{(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane} iridium(III), >97% (>99% ee) Ir-(S)-DTB-SpiroPAP-3-Me *(1418483-59-6)*
$C_{52}H_{67}ClIrN_2P$; FW: 978.75; yellow-green solid

25mg
100mg

Technical Note:
1. See 77-4035 (page 87)

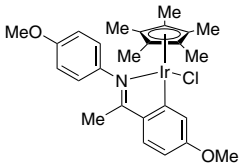
77-0424
Chloro(pentamethylcyclopentadienyl){5-cyano-2-{1-[(4-methoxyphenyl)imino-kN]ethyl}phenyl-kC} iridium(III), 99% Iridicycle-CN *(1258964-46-3)*
$C_{26}H_{28}ClIrN_2O$; FW: 612.18; red pwdr.
Note: Sold in collaboration with Yorkshire Process Technology for research purposes only. Developed by Prof. J. Xiao, Liverpool University. Patents GB 1206572.8 and GB 1206573.6 Iridicycle Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

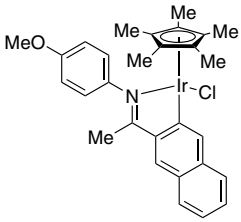
IRIDIUM (Compounds)

77-0418 **Chloro(pentamethylcyclopentadienyl){5-methoxy-2-{1-[(4-methoxyphenyl)imino-kN]ethyl}phenyl-kC}iridium(III), 99% Iridicycle-MeO** *(1258964-48-5)*
$C_{26}H_{31}ClIrNO_2$; FW: 617.20; orange pwdr.
Note: Sold in collaboration with Yorkshire Process Technology for research purposes only. Developed by Prof. J. Xiao, Liverpool University. Patents GB 1206572.8 and GB 1206573.6 Iridicycle Catalyst Kit component.
For detailed technical note visit strem.com.



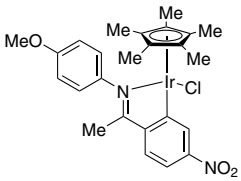
100mg
500mg

77-0428 **Chloro(pentamethylcyclopentadienyl){2-{1-[(4-methoxyphenyl)imino-kN]ethyl}naphthyl-kC}iridium(III), 99% Iridicycle-Naphth** *(1469467-94-4)*
$C_{29}H_{31}ClIrNO$; FW: 637.23; red-orange pwdr.
Note: Sold in collaboration with Yorkshire Process Technology for research purposes only. Developed by Prof. J. Xiao, Liverpool University. Patents GB 1206572.8 and GB 1206573.6 Iridicycle Catalyst Kit component.
For detailed technical note visit strem.com.



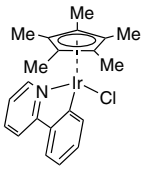
100mg
500mg

77-0430 **Chloro(pentamethylcyclopentadienyl){5-nitro-2-{1-[(4-methoxyphenyl)imino-kN]ethyl}phenyl-kC}iridium(III), 99% Iridicycle-NO2** *(1439402-25-1)*
$C_{25}H_{28}ClIrN_2O_3$; FW: 632.17; brown pwdr.
Note: Sold in collaboration with Yorkshire Process Technology for research purposes only. Developed by Prof. J. Xiao, Liverpool University. Patents GB 1206572.8 and GB 1206573.6 Iridicycle Catalyst Kit component.
For detailed technical note visit strem.com.



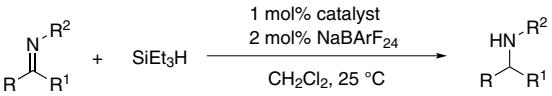
100mg
500mg

77-0650 **Chloro(pentamethylcyclopentadienyl)[(2-pyridinyl-kN)phenyl-kC]iridium(III), 99%** *(945491-51-0)*
$IrCl(C_{10}H_{15})(C_{11}H_8N)$; FW: 517.08; orange pwdr.

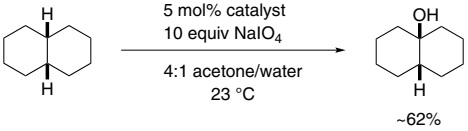


100mg
500mg

Technical Notes:
1. Highly active catalyst for water oxidation.
2. Catalyst for the hydrosilylation of imines.
3. Catalyst for C–H oxidation.



Tech. Note (2)
Ref. (2)



Tech. Note (3)
Ref. (3)

References:
1. *J. Am. Chem. Soc.,* **2009**, *131*, 8730.
2. *Catal. Sci. Technol.* **2015**, *5*, 1452.
3. *Organometallics,* **2015**, *32*, 957.

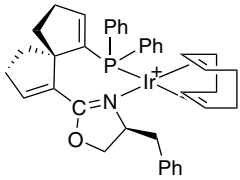
77-0900 **1,5-Cyclooctadiene(acetylacetonato)iridium(I), 99% (99.9%-Ir)** *(12154-84-6)*
$Ir(C_8H_{12})(C_5H_7O_2)$; FW: 399.49; yellow xtl.; m.p. 145-150° dec.

100mg
500mg

Technical Note:
1. Convenient precursor to a variety of Iridium complexes and catalysts.

IRIDIUM (Compounds)

77-5041 **1,5-Cyclooctadiene{(4S)-(-)-2-[(5R)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-benzyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (R.S)-(COD)Ir[Bn-SpinPHOX]** 25mg 100mg



$B[C_6H_3(CF_3)_2]_4^-$

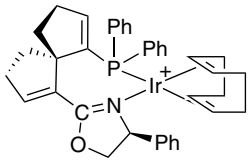
(1195511-56-8)
$C_{39}H_{42}IrNOP(C_{32}H_{12}BF_{24})$; FW: 1627.16; red pwdr.; m.p. 103-105°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents CN200910051314.3, CN 101555259. SpinPHOX-Ir Catalyst Kit component.

77-5040 **1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-benzyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD)Ir[Bn-SpinPHOX]** 25mg 100mg
(1194050-19-5)
$C_{39}H_{42}IrNOP(C_{32}H_{12}BF_{24})$; FW: 1627.16; red solid; m.p. 49-51°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents CN200910051314.3, CN 101555259. SpinPHOX-Ir Catalyst Kit component.
For detailed technical note visit strem.com.

77-5046 **1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-phenyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD)Ir[Ph-SpinPHOX]** 25mg 100mg
(1194050-21-9)
$C_{38}H_{40}IrNOP(C_{32}H_{12}BF_{24})$; FW: 1613.13; orange pwdr.; m.p. 197-198°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents CN200910051314.3, CN 101555259. SpinPHOX-Ir Catalyst Kit component.

Technical Note:
1. See 77-5047 (page 89)

77-5047 **1,5-Cyclooctadiene{(4S)-(-)-2-[(5R)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-phenyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl) phenyl]borate, 97% (R,S)-(COD)Ir[Ph-SpinPHOX]** 25mg 100mg

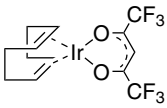


$B[C_6H_3(CF_3)_2]_4^-$

(1195511-59-1)
$C_{38}H_{40}IrNOP(C_{32}H_{12}BF_{24})$; FW: 1613.13; red pwdr.; m.p. 172-174°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents CN200910051314.3, CN 101555259. SpinPHOX-Ir Catalyst Kit component.

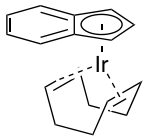
77-5050 **1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-(i-propyl)oxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD)Ir[iPr-SpinPHOX]** 25mg 100mg
(1194050-23-1)
$C_{35}H_{42}IrNOP(C_{32}H_{12}BF_{24})$; FW: 1579.11; red-orange pwdr.; m.p. 201-203°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents CN200910051314.3, CN 101555259. SpinPHOX-Ir Catalyst Kit component.
For detailed technical note visit strem.com.

77-0930 **1,5-Cyclooctadiene(hexafluoroacetylacetonato) iridium(I), 98%** *(34801-95-1)* 100mg 500mg
$Ir(C_8H_{12})(C_5HF_6O_2)$; FW: 507.45; red-purple xtl.
For detailed technical note visit strem.com.



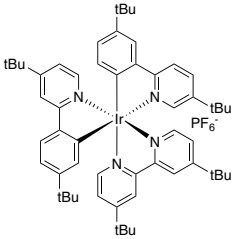
IRIDIUM (Compounds)

77-0950 **1,5-Cyclooctadiene(η5-indenyl)iridium(I), 99%** *(102525-11-1)*
$C_{17}H_{19}Ir$; FW: 415.55; yellow xtl.
For detailed technical note visit strem.com.



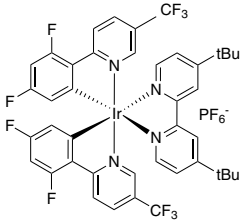
250mg
1g

77-0285 NEW
[4,4'-Di-t-butyl-2,2'-bipyridine][bis[5-(t-butyl)-2-[4-(t-butyl)-2-pyridinyl-kN]phenyl-kC] iridium(III) hexafluorophosphate, 95%
(808142-80-5)
$C_{56}H_{72}F_6IrN_4P$; FW: 1138.38; yellow pwdr.
air sensitive
Note: Photocatalyst



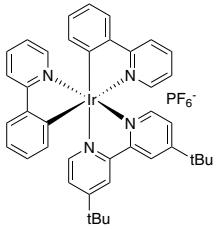
50mg
250mg

77-0425 NEW
(4,4'-Di-t-butyl-2,2'-bipyridine)bis[3,5-difluoro-2-[5-trifluoromethyl-2-pyridinyl-kN)phenyl-kC]iridium(III) hexafluorophosphate, 99%
(870987-63-6)
$[Ir(C_{18}H_{24}N_2)(C_{12}H_5F_5N)_2]^+PF_6^-$; FW: 1121.91; yellow xtl.
Note: Photocatalyst
For detailed technical note visit strem.com.



50mg
250mg

77-0410 NEW
(4,4'-Di-t-butyl-2,2'-bipyridine)bis[2-(2-pyridinyl-kN)phenyl-kC]iridium(III) hexafluorophosphate, 99% *(676525-77-2)*
$[Ir(C_{18}H_{24}N_2)(C_{11}H_8N)_2]^+PF_6^-$; FW: 913.95; yellow xtl.
Note: Photocatalyst
For detailed technical note visit strem.com.



100mg
500mg

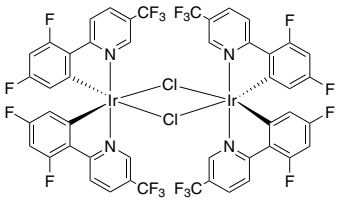
77-1050 **Dicarbonyl(acetylacetonato)iridium(I), 98%** *(14023-80-4)*
$Ir(CO)_2(CH_3COCHCOCH_3)$; FW: 347.35; copper brown xtl.
(store cold)

100mg
500mg
2g

77-1060 **Dichloro(pentamethylcyclopentadienyl)iridium(III) dimer, 98%** *(12354-84-6)*
$[(CH_3)_5C_5IrCl_2]_2$; FW: 796.67; orange xtl.
Note: CATHy™ Catalyst Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g

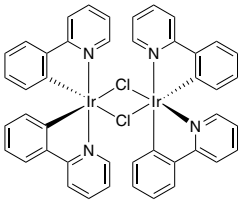
77-0468 NEW
Di-μ-chlorotetrakis[3,5-difluoro-2-[5-trifluoromethyl-2-pyridinyl-kN)phenyl-kC] diiridium(III), 99% *(870987-64-7)*
$C_{48}H_{20}Cl_2F_{20}Ir_2N_4$; FW: 1488.01; yellow xtl.
Note: Photocatalyst
For detailed technical note visit strem.com.



50mg
250mg

IRIDIUM (Compounds)

77-0455 **Di-µ-chlorotetrakis[2-(2-pyridinyl-kN)phenyl-kC] diiridium(III), 99%** *(603109-48-4)*
$C_{44}H_{32}Cl_2Ir_2N_4$; FW: 1072.09; yellow-green xtl.
Note: Photocatalyst
For detailed technical note visit strem.com.



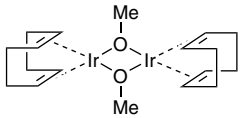
250mg
1g

77-1090
HAZ

Dihydrogen hexachloroiridate(IV) hydrate (99.9%-Ir) *(110802-84-1)*
$H_2IrCl_6 \cdot XH_2O$; FW: 407.00; black xtl.
hygroscopic

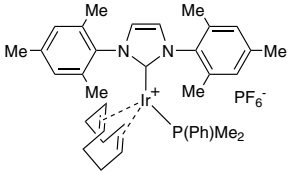
1g
5g

77-1100 **Di-µ-methoxobis(1,5-cyclooctadiene)diiridium(I), min. 98%** *(12148-71-9)*
$[Ir(OCH_3)(C_8H_{12})]_2$; FW: 662.86; yellow pwdr.



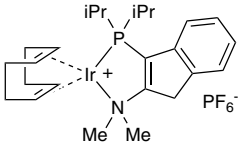
500mg
2g
10g

77-1830 **(Dimethylphenylphosphine)(1,5-cyclooctadiene)[1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene]iridium(I) hexafluorophosphate, min. 98%** *(1019853-03-2)*
$[Ir(C_8H_{12})(C_{21}H_{24}N_2)(C_8H_{11}P)]^+PF_6^-$; FW: 887.93; red xtl.
For detailed technical note visit strem.com.



100mg
500mg

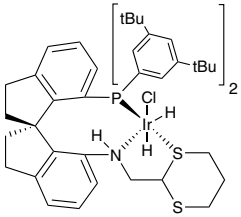
77-1115 **3-Di-i-propylphosphino-2-(N,N-dimethylamino)-1H-indene(1,5-cyclooctadiene)iridium(I) hexafluorophosphate, min. 98%** *(870077-94-4)*
$[IrC_{25}H_{38}NP]^+PF_6^-$; FW: 720.73; orange pwdr.
For detailed technical note visit strem.com.



250mg
1g

77-2510
NEW

{(R)-(+)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane}chlorodihydroiridium(III), 97+% [Ir-(R)-DTB-SpiroSAP]
$C_{50}H_{68}ClIrNPS_2$; FW: 1005.86; pale yellow solid
For detailed technical note visit strem.com.



25mg
100mg

77-2511
NEW

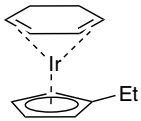
{(S)-(-)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane}chlorodihydroiridium(III), 97+% [Ir-(S)-DTB-SpiroSAP]
$C_{50}H_{68}ClIrNPS_2$; FW: 1005.86; pale yellow solid

25mg
100mg

Technical Note:
1. See 77-2510 (page 91)

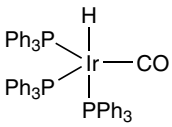
77-1105
NEW

1-Ethylcyclopentadienyl-1,3-cyclohexadieneiridium(I), 99% (99.9%-Ir) *(721427-58-3)*
$C_{13}H_{17}Ir$; FW: 365.49; pale yellow liq.



250mg
1g

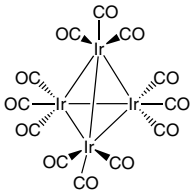
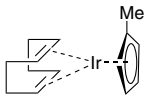
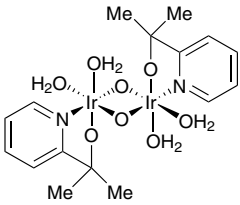
77-1400 **Hydridocarbonyltris(triphenylphosphine)iridium(I), 99%** *(17250-25-8)*
$IrH(CO)[(C_6H_5)_3P]_3$; FW: 1008.12; light yellow pwdr.; m.p. 170° dec.
air sensitive
For detailed technical note visit strem.com.



1g
5g

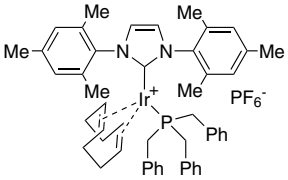
96-3745 **Iridicycle Catalyst Kit**
See page 486

IRIDIUM (Compounds)

77-1500	**Iridium(III) acetylacetonate, 98%** *(15635-87-7)* $Ir(CH_3COCHCOCH_3)_3$; FW: 489.53; orange xtl.	250mg 1g 5g 25g
93-7728	**Iridium(III) bromide tetrahydrate, 99%** *(13464-83-0)* $IrBr_3 \cdot 4H_2O$; FW: 431.93 (503.99); black xtl.	500mg 2g
77-1800	**Iridium carbonyl, min. 98%** *(11065-24-0)* $Ir_4(CO)_{12}$; FW: 1105.01; yellow pwdr.; m.p. 230° dec. 	250mg 1g 5g
93-7729	**Iridium(III) chloride, anhydrous (99.95+%-Ir)** *(10025-83-9)* $IrCl_3$; FW: 298.58; black pwdr.; m.p. 763° dec.; d. 5.30	500mg 2g
77-3000	**Iridium(III) chloride hydrate (99.9%-Ir)** *(14996-61-3)* $IrCl_3 \cdot XH_2O$; FW: 298.58; black xtl.	1g 5g 25g
77-3010 NEW	**Iridium(III) chloride, hydrate (99.99+%-Ir) PURATREM [free of Ir(IV) by electrochemical analysis]** *(14996-61-3)* $IrCl_3 \cdot XH_2O$; FW: 298.58; black xtl. *hygroscopic*	250mg 1g 5g
93-7727	**Iridium(IV) chloride, hydrate** *(10025-97-5)* $IrCl_4 \cdot XH_2O$; FW: 334.03; black pwdr.; m.p. dec.	250mg 1g 5g
93-7702	**Iridium(IV) oxide, 99% (99.9+%-Ir)** *(12030-49-8)* IrO_2; FW: 224.20; blue to black pwdr.; m.p. 1100° dec.; d. 11.66	1g 5g
77-5000	**(Methylcyclopentadienyl) (1,5-cyclooctadiene)iridium(I), 99% (99.9%-Ir)** *(132644-88-3)* $(C_6H_7)(C_8H_{12})Ir$; FW: 379.53; white to off-white pwdr.; m.p. 38-40°; b.p. subl. 100°/0.05mm **For detailed technical note visit strem.com.** 	250mg 1g
77-6500	**Potassium hexachloroiridate(IV), 99%** *(16920-56-2)* *See* page 342	
77-6590	**Potassium pentachloronitrosyl iridium(III), 99%** *(22594-86-1)* *See* page 343	
77-0025 NEW	**[2-(Pyridine-2-yl)-2-propanato]iridium(IV) dimer solution 97% (1 mM in 0.1 Molar aqueous $NaIO_3$)** *(1446713-81-0)* $C_{16}H_{28}IrNO_3$; FW: 728.84; blue liq. Note: Sold under license from Catalytic Innovations, LLC for research purposes only. US Patent Publication No. US20150021194 A1. **For detailed technical note visit strem.com.** 	10ml 50ml
77-8890	**Sodium hexachloroiridate(IV) hexahydrate, 99%** *(19567-78-3)* *See* page 418	
77-9000	**Sodium hexachloroiridate(III) hydrate** *(123334-23-6)* *See* page 418	
96-7710	**SpinPHOX-Ir Catalyst Kit for enantioselective hydrogenation** *See* page 489	

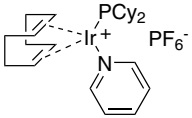
IRIDIUM (Compounds)

77-1810 **Tribenzylphosphine(1,5-cyclooctadiene) [1,3-bis(2,4,6-trimethylphenyl)imidaz-ol-2-ylidene]iridium(I) hexafluorophosphate, min. 98%** *(1019853-01-0)*
$[Ir(C_8H_{12})(C_{21}H_{24}N_2)(C_{21}H_{21}P)]^+PF_6^-$;
FW: 1054.15; red xtl.



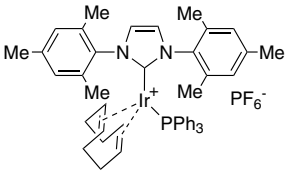
100mg
500mg

77-9500 **(Tricyclohexylphosphine)(1,5-cyclooctadiene) (pyridine)iridium(I)hexafluorophosphate, 99% CRABTREE'S CATALYST** *(64536-78-3)*
$[(C_6H_{11})_3P][C_8H_{12}][C_5H_5N]Ir^+PF_6^-$; FW: 804.89; orange xtl.
moisture sensitive
For detailed technical note visit strem.com.



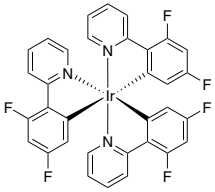
50mg
250mg
1g

77-1825 **Triphenylphosphine(1,5-cyclooctadiene) [1,3-bis(2,4,6-trimethylphenyl)imidaz-ol-2-ylidene]iridium(I) hexafluorophosphate, min. 98%** *(1019852-99-3)*
$[Ir(C_8H_{12})(C_{21}H_{24}N_2)(C_{18}H_{15}P)]^+PF_6^-$;
FW: 1012.08; red xtl.



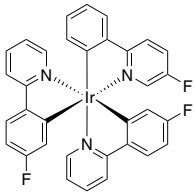
100mg
500mg

77-7030 NEW **Tris[2-(2,4-difluorophenyl)pyridine]iridium(III), 95%** *(387859-70-3)*
$C_{33}H_{18}F_6IrN_3$; FW: 762.72; yellow pwdr.
air sensitive
Note: Photocatalyst



50mg
250mg

77-6100 NEW **Tris[5-fluoro-2-(2-pyridinyl-kN)phenyl-kC]iridium(III), 95%** *(370878-69-6)*
$C_{33}H_{21}F_3IrN_3$; FW: 708.75; yellow pwdr.
air sensitive
Note: Photocatalyst

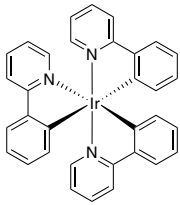


50mg
250mg

77-9700 **Tris(norbornadiene)(acetylacetonato)iridium(III), 98% (99.9%-Ir)** *(41612-46-8)*
$Ir(C_7H_8\text{-}C_7H_8)(C_7H_8)(C_5H_7O_2)$; FW: 567.75; light yellow pwdr.; m.p. 189°

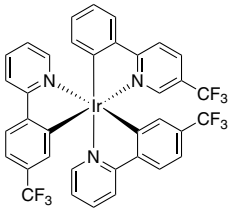
100mg
500mg

77-7015 NEW **Tris(2-phenylpyridinato-C2,N)iridium(III), 95%** *(94928-86-8)*
$C_{33}H_{24}IrN_3$; yellow pwdr.
air sensitive
Note: Photocatalyst
For detailed technical note visit strem.com.



50mg
250mg

77-6580 NEW **Tris[(2-(2-pyridinyl-kN)-5-(trifluoromethyl)phenyl-kC] iridium(III), 95%** *(500295-52-3)*
$C_{36}H_{21}F_9IrN_3$; FW: 858.78; yellow solid
air sensitive
Note: Photocatalyst

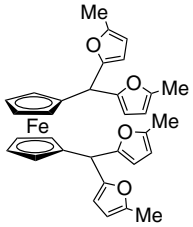
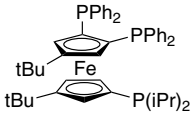
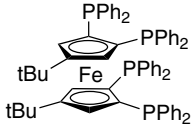
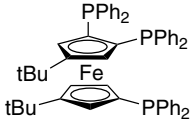


50mg
250mg

IRON (Elemental Forms)

93-2664	**Iron chips (99.95%)** *(7439-89-6)* Fe; FW: 55.80; <2mm thick x <2mm x <25mm; m.p. 1535°; b.p. 3000°; d. 7.86	250g 1kg
93-2661	**Iron foil (99.5+%)** *(7439-89-6)* Fe; FW: 55.80; 0.127 mm thick x 25 mm wide; m.p. 1535°; b.p. 3000°; d. 7.86	25 x 25mm 100 x 25mm
26-0070	**Iron lump (99.98%)** *(7439-89-6)* Fe; FW: 55.80; 12 x 12 x 2mm and down (irregular); m.p. 1535°; b.p. 3000°; d. 7.86	250g 1kg 5kg
93-2663 HAZ	**Iron powder (99%)** *(7439-89-6)* Fe; FW: 55.80; -100 mesh; m.p. 1535°; b.p. 3000°; d. 7.86	500g 2kg
93-2601 HAZ	**Iron powder (99.9%)** *(7439-89-6)* Fe; FW: 55.80; 5-9 microns; m.p. 1535°; b.p. 3000°; d. 7.86	250g 1kg
93-2605 HAZ	**Iron powder (99.99%)** *(7439-89-6)* Fe; FW: 55.80; -22 mesh; m.p. 1535°; b.p. 3000°; d. 7.86	10g 50g
93-2666	**Stainless steel foil, type 304** *(7439-89-6)* Fe; FW: 55.80; 0.05 mm thick x 15 cm wide; m.p. 1535°; b.p. 3000°; d. 7.86	300 x 150mm 1500 x 150mm
93-2697	**Stainless steel powder, type 304-L** *(7439-89-6)* Fe; FW: 55.80; -100 mesh; m.p. 1535°; b.p. 3000°; d. 7.86	100g 500g
93-2671	**Stainless steel powder, type 316** *(52013-36-2)* Fe; FW: 55.80; -325 mesh; m.p. 1535°; b.p. 3000°; d. 7.86	500g

IRON (Compounds)

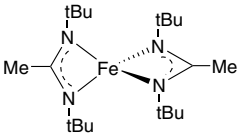
26-0050 HAZ	**Acetylferrocene, 99.5%** *(1271-55-2)* $CH_3COC_5H_4FeC_5H_5$; FW: 228.07; orange xtl.; m.p. 83°	5g 25g 100g
26-0320	**1,1'-Bis[bis(5-methyl-2-furanyl) phosphino]ferrocene, 98% HiersoPHOS-3** *(756824-22-3)* $C_{30}H_{28}FeO_4P_2$; FW: 570.33; orange xtl. **For detailed technical note visit strem.com.** 	100mg 500mg
26-0315	**1',4-Bis(t-butyl)-1,2-bis(diphenylphosphino)-3'-(di-i-propylphosphino)ferrocene, 98% HiersoPHOS-1** *(1313012-94-0)* $C_{48}H_{57}FeP_3$; FW: 782.73; orange xtl. **For detailed technical note visit strem.com.** 	100mg 500mg
26-0326	**4,4'-Bis(t-butyl)-1,1',2,2'-tetrakis(diphenylphosphino) ferrocene, 98% HiersoPHOS-5** *(403815-19-0)* $C_{66}H_{62}FeP_4$; FW: 1034.94; orange xtl. **For detailed technical note visit strem.com.** 	100mg 500mg
26-0318	**1',4-Bis(t-butyl)-1,2,3'-tris(diphenylphosphino) ferrocene, 98% HiersoPHOS-2** *(1159850-42-6)* $C_{54}H_{53}FeP_3$; FW: 850.77; orange xtl. **For detailed technical note visit strem.com.** 	100mg 500mg
26-1650 HAZ	**Bis(cyclooctatetraene)iron(0), min. 98%** *(12184-52-0)* $(C_8H_8)_2Fe$; FW: 264.14; black xtl. *air sensitive, (store cold)*	100mg 500mg
26-1699	**Bis(cyclopentadienyl)iron, 98% (Ferrocene)** *(102-54-5)* $(C_5H_5)_2Fe$; FW: 186.04; orange xtl.; m.p. 172-173°	500g 2kg
26-1700	**Bis(cyclopentadienyl)iron, 99% (Ferrocene)** *(102-54-5)* $(C_5H_5)_2Fe$; FW: 186.04; orange xtl.; m.p. 172-173°	100g 500g 2kg

IRON (Compounds)

96-3730 **1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit**
See page 501

26-0145
amp

Bis(N,N'-di-t-butylacetamidinato)iron (II), min. 98%
(635680-56-7)
$C_{20}H_{42}N_4Fe$; FW: 394.42; off-white to gray xtl.; m.p. 107°
air sensitive, moisture sensitive
Note: Extremely air-sensitive. Contact Strem to discuss.
Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2.



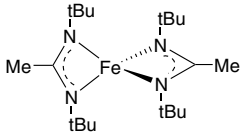
250mg
1g
5g

Technical Notes:
1. Iron amidinate used in the chemical vapor deposition of iron, iron carbides and iron nitride films.
2. Precursor for the MOCVD of iron-containing thin films.
3. Fabrication of thin films of iron oxide via atomic layer deposition.

References:
1. *Journal of the Electrochemical Society,* **2010**, *157*, D454
2. *ECS Transactions,* **2009**, *25*, 181
3. *ACS Appl. Mater. Interfaces* **2015**, *7*, 16138

98-4038
NEW

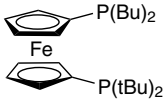
Bis(N,N'-di-t-butylacetamidinato)iron(II), min. 98%, 26-0145, contained in 50 ml Swagelok® (96-1070) cylinder for CVD/ALD *(635680-56-7)*
$C_{20}H_{42}N_4Fe$; FW: 394.42; off-white to gray xtl.; m.p. 107°
air sensitive, moisture sensitive
Note: Extremely air-sensitive. Contact Strem to discuss.
Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2



5g

26-0150

1,1'-Bis(di-t-butylphosphino)ferrocene, min. 98% DTBPF
(84680-95-5)
$[(C_4H_9)_2PC_5H_4]_2Fe$; FW: 474.42; orange to red xtl.
Note: 1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit component. .
For detailed technical note visit strem.com.



500mg
2g
10g

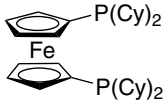
26-0160
HAZ

1,1'-Bis(dichlorophosphino)ferrocene, 98% *(142691-70-1)*
$C_{10}H_8Cl_4FeP_2$; FW: 387.77; yellow pwdr.
moisture sensitive

500mg
2g

26-0155

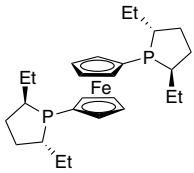
1,1'-Bis(dicyclohexylphosphino)ferrocene, min. 98%
(146960-90-9)
$[(C_6H_{11})_2P(C_5H_4)]_2Fe$; FW: 578.57; orange pwdr.; m.p. 138°
Note: 1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit component.



500mg
2g
10g

26-1625

1,1'-Bis[(2R,5R)-2,5-diethylphospholano]ferrocene, min. 97%
(147762-89-8)
$C_{26}H_{40}FeP_2$; FW: 470.39; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.



250mg
1g

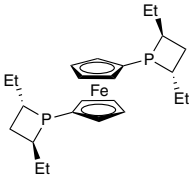
26-1626

1,1'-Bis[(2S,5S)-2,5-diethylphospholano]ferrocene, min. 97% *(436863-50-2)*
$C_{26}H_{40}FeP_2$; FW: 470.39; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

250mg
1g

26-0201

(-)-1,1'-Bis((2S,4S)-2,4-diethylphosphonato)ferrocene, min. 95% (S,S)-Et-FerroTANE® *(290347-66-9)*
$[C_5H_4(C_7H_{14}P)]_2Fe$; FW: 442.35; yellow-orange pwdr.; m.p. 76°
air sensitive
Note: **Limited quantities available** Sold in collaboration with Chirotech for research purposes only. US Patent no. 5936109.
For detailed technical note visit strem.com.

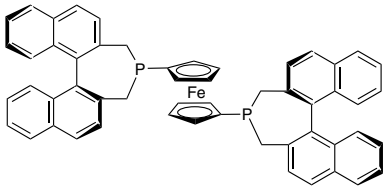


100mg

IRON (Compounds)

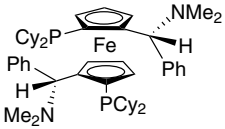
26-0243 **1,1'-Bis{(S)-4,5-dihydro-3H-binaphtho[1,2-c:2',1'-e]phosphino}ferrocene, min. 98% (S,S)-f-Binaphane** *(544461-38-3)* — 100mg, 500mg

$C_{54}H_{40}FeP_2$; FW: 806.69; yellow-brown pwdr.
air sensitive, light sensitive
Note: Sold in collaboration with Chiral Quest for research purposes only. US Patent No. 6,525,210, US6828271.
For detailed technical note visit strem.com.



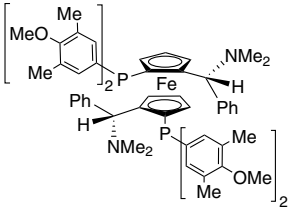
26-0240 **(S,S)-(+)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(dicyclohexylphosphino)ferrocene, min. 97%** *(494227-35-9)* — 100mg, 500mg, 2g, 10g

$C_{52}H_{74}FeN_2P_2$; FW: 844.95; orange-red solid
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias MandyPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



26-0248 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocene, min. 97%** *(494227-37-1)* — 100mg, 500mg, 2g, 10g

$C_{64}H_{74}FeN_2O_4P_2$; FW: 1053.08; yellow to orange-red solid
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias MandyPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



26-0245 **(R,R)-(+)-2,2'-Bis[(S)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97%** *(847997-73-3)* — 100mg, 500mg, 2g, 10g

$C_{60}H_{66}FeN_2P_2$; FW: 932.99; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

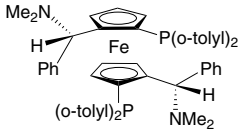
26-0246 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97%** *(793718-16-8)* — 100mg, 500mg, 2g, 10g

$C_{60}H_{66}FeN_2P_2$; FW: 932.99; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias MandyPhos™ Ligand Kit component.

Technical Note:
1. See 26-0245 (page 96)

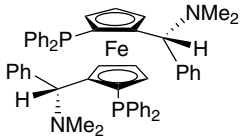
26-0253 **(R,R)-(+)-2,2'-Bis[(S)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(2-methylphenyl)phosphino)ferrocene, min. 97%** *(831226-39-2)* — 100mg, 500mg

$C_{56}H_{58}FeN_2P_2$; FW: 876.88; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



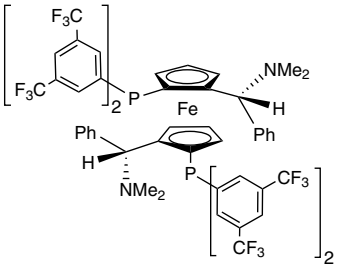
26-0252 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(diphenylphosphino)ferrocene, min. 97%** *(174467-31-3)* — 100mg, 500mg, 2g, 10g

$C_{52}H_{50}FeN_2P_2$; FW: 820.76; orange-red solid
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias MandyPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



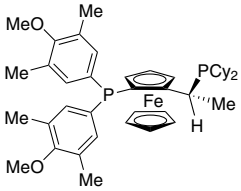
IRON (Compounds)

26-0244 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-trifluoromethylphenyl)phosphino]ferrocene, min. 97%** *(494227-36-0)*
$C_{60}H_{42}F_{24}FeN_2P_2$; FW: 1364.74; orange-red solid
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias MandyPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



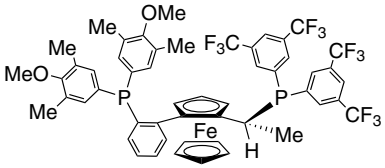
100mg
500mg
2g
10g

26-1150 **(R)-(-)-1-{(S)-2-[Bis(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocenyl}ethyldicyclohexylphosphine, min. 97%** *(360048-63-1)*
$C_{42}H_{56}FeO_2P_2$; FW: 710.71; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



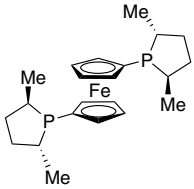
100mg
500mg
2g
10g

26-1130 **(R)-(+)-1-{(R)-2-[2'-Bis(3,5-dimethyl-4-methoxyphenyl)phosphinophenyl]ferrocenyl} ethylbis(di-3,5-tri fluoromethylphenyl) phosphine, min. 97%** *(494227-30-4)*
$C_{52}H_{44}F_{12}FeO_2P_2$; FW: 1046.68; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

26-1618 **1,1'-Bis((2R,5R)-2,5-dimethylphospholano)ferrocene, min. 97%** *(540475-45-4)*
$C_{22}H_{32}FeP_2$; FW: 414.28; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.
For detailed technical note visit strem.com.

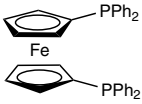


250mg
1g

26-1619 **1,1'-Bis((2S,5S)-2,5-dimethylphospholano)ferrocene, min. 97%** *(162412-87-5)*
$C_{22}H_{32}FeP_2$; FW: 414.28; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

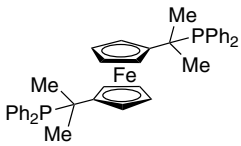
250mg
1g

26-0270 **1,1'-Bis(diphenylphosphino)ferrocene, 99% DPPF** *(12150-46-8)*
$(C_6H_5)_2PC_5H_4FeC_5H_4P(C_6H_5)_2$; FW: 554.39; yellow to orange xtl.; m.p. 180°
Note: Phosphine Ligand Kit component. 1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit component.
For detailed technical note visit strem.com.



1g
5g
25g
250g

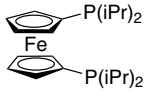
26-0290 **1,1'-Bis(1-diphenylphosphino-1-methylethyl) ferrocene ethanol adduct, 97% HiersoPHOS-6 (Sylphos)** *(109313-83-9)*
$C_{40}H_{40}FeP_2 \cdot CH_3CH_2OH$; FW: 638.54 (684.61); orange solid
For detailed technical note visit strem.com.



100mg
500mg

IRON (Compounds)

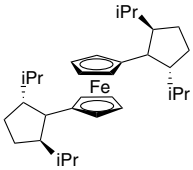
26-0275 **1,1'-Bis(di-i-propylphosphino)ferrocene, min. 98% DiPPF** *(97239-80-0)*
$[(C_3H_7)_2PC_5H_4]_2Fe$; FW: 418.33; orange-yellow pwdr.
Note: 1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit component. .
For detailed technical note visit strem.com.



500mg
2g
10g

45-0205 **1,1'-Bis(di-i-propylphosphino)ferrocene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98%** *(157772-65-1)*
See page 354

26-1610 **1,1'-Bis((2R,5R)-2,5-di-i-propylphospholano)ferrocene, min. 97%** *(849950-54-5)*
$C_{30}H_{48}FeP_2$; FW: 526.49; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

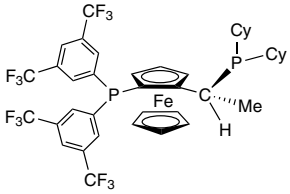


100mg
500mg

26-1611 **1,1'-Bis((2S,5S)-2,5-di-i-propylphospholano)ferrocene, min. 97%** *(540475-73-8)*
$C_{30}H_{48}FeP_2$; FW: 526.49; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

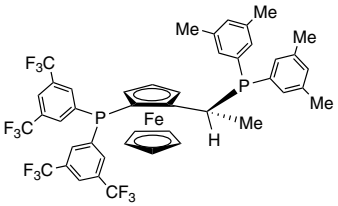
100mg
500mg

26-0960 **(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethyl-phenyl)phosphino]ferrocenyl}ethyldi-cyclohexylphosphine, min. 97%**
(292638-88-1)
$C_{40}H_{40}F_{12}FeP_2$; FW: 866.56; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-0965 **(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino] ferrocenyl}ethyldi-3,5-xylylphosphine, min. 97%** *(166172-63-0)*
$C_{44}H_{36}F_{12}FeP_2$; FW: 910.57; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem. com.

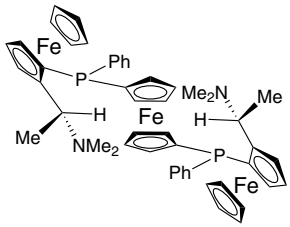


100mg
500mg
2g
10g

26-0310 **Bis(ethylcyclopentadienyl)iron, min. 98%** *(1273-97-8)*
$[(C_2H_5)C_5H_4]_2Fe$; FW: 242.14; orange liq.; d. 1.18

1g
5g

26-1261 **1,1'-Bis{1-[(R)-ferrocenyl-2-(S)-ethyl-1-(di-ethylamino) phenyl]-(R)-phosphino} ferro-cene, min. 97% Trifer** *(899811-43-9)*
$C_{50}H_{54}Fe_3N_2P_2$; FW: 912.46; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

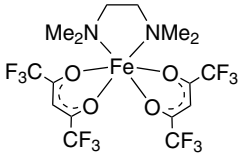
26-1260 **1,1'-Bis{1-[(S)-ferrocenyl-2-(R)-ethyl-1-(dimethylamino) phenyl]-(S)-phosphi-no} ferrocene, min. 97% Trifer** *(900505-82-0)*
$C_{50}H_{54}Fe_3N_2P_2$; FW: 912.46; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.

100mg
500mg
2g
10g

Technical Note:
1. See 26-1261 (page 98)

IRON (Compounds)

26-1640 **Bis(1,1,1,5,5,5-hexafluoroacetylacetonato) (N,N,N',N'-tetramethylethylenediamine)iron(II), min. 98%** *(73450-43-8)*
$C_{16}H_{18}F_{12}FeN_2O_4$; FW: 586.15; black xtl.
air sensitive
Note: Sold under license from Universita degli Studi di Padova for research purposes only. Int. Patent App. PCT/IT2012/000276. Italian Patent App. PD2011A000285.
For detailed technical note visit strem.com.



100mg
500mg

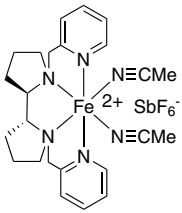
26-0400 **Bis(pentamethylcyclopentadienyl)iron, 99%** *(12126-50-0)*
$[(CH_3)_5C_5]_2Fe$; FW: 326.31; orange xtl.; m.p. 298-300° subl.
air sensitive

1g
5g

26-0450 **Bis(i-propylcyclopentadienyl)iron, min. 98%** *(12126-34-0)*
$[(C_3H_7)C_5H_4]_2Fe$; FW: 270.20; orange liq.

1g
5g

26-0061 **(2R,2'R)-(-)-[N,N'-Bis(2-pyridylmethyl]-2,2'-bipyrrolidinebis(acetonitrile)iron(II) hexafluoroantimonate Fe(R,R-PDP) White-Chen Catalyst** *(1361315-26-5)*
$[C_{24}H_{32}FeN_6](SbF_6)_2$; FW: 931.90; purple pwdr.
air sensitive
Note: Patent pending.

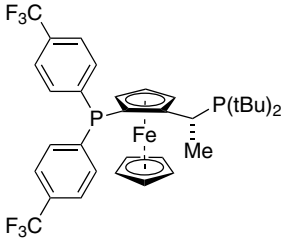


100mg
500mg

26-0060 **(2S,2'S)-(-)-[N,N'-Bis(2-pyridylmethyl]-2,2'-bipyrrolidinebis(acetonitrile)iron(II) hexafluoroantimonate Fe(S,S-PDP) White-Chen Catalyst** *(959395-10-9)*
$[C_{24}H_{32}FeN_6]^{+2}$ $(SbF_6)_2$; FW: 931.90; purple pwdr.
air sensitive
Note: Patent pending.
For detailed technical note visit strem.com.

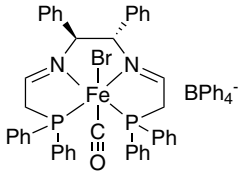
100mg
500mg

26-0650 **(R)-(-)-1-{(S)-2-[Bis(4-trifluoromethylphenyl) phosphino]ferrocenyl} ethyl-di-t-butylphosphine, min. 97%** *(246231-79-8)*
$C_{34}H_{38}F_6FeP_2$; FW: 678.45; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-0873 NEW
Bromocarbonyl[(1S,2S)-2,3-diphenylethylenediamine-N,N'-bis(2-diphenylphosphinoethylidene)]iron(II) tetraphenylborate, FeATHer-II Catalyst *(1257252-03-1)*
$C_{67}H_{65}BBrFeN_2OP_2$; FW: 1122.75; yellow pwdr.
air sensitive, moisture sensitive
Note: Sold in collaboration with GreenCentre for research purposes only. Patents: PCT/CA2013/050405, PCT 2013/010275.
For detailed technical note visit strem.com.

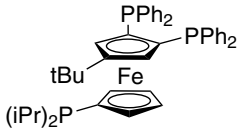


100mg
500mg

26-0460 **Bromoferrocene, 97%** *(1273-73-0)*
$C_{10}H_9BrFe$; FW: 264.93; orange solid

500mg
2g

26-0324 **4-(t-Butyl)-1,2-bis(diphenylphosphino)-1'-(di-i-propylphosphino)ferrocene, 98% HiersoPHOS-4** *(776315-37-8)*
$C_{44}H_{49}FeP_3$; FW: 726.63; orange xtl.
For detailed technical note visit strem.com.



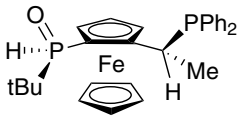
100mg
500mg

IRON (Compounds)

26-0700 **t-Butylferrocene, min. 98%** *(1316-98-9)*
$(CH_3)_3CC_5H_4FeC_5H_4$; FW: 242.15; dark-orange liq.; b.p. 80°/0.15mm; d. 1.201
1g, 5g, 25g

93-2602 **n-Butylferrocene, 99%** *(31904-29-7)*
$(C_4H_9C_5H_4)Fe(C_5H_5)$; FW: 242.14; orange to brown liq.; b.p. 232°C/630 mm; f.p. >230°F; d. 1.172
Note: For sale in USA. For other countries contact Strem.
10g, 50g

26-1270 **(R,S(p), R(SPO)-(1-t-Butylphosphinoyl)-2-[1-(diphenylphosphino)ethyl]ferrocene, min. 97% JoSPOphos** *(1221745-90-9)*
$C_{28}H_{32}FeOP_2$; FW: 502.35; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg, 500mg, 2g, 10g

26-1271 **(S, R(p), S(SPO)-(1-t-Butylphosphinoyl)-2-[1-(diphenylphosphino)ethyl]ferrocene, min. 97% JoSPOphos** *(1221746-31-1)*
$C_{28}H_{32}FeOP_2$; FW: 502.35; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.
100mg, 500mg, 2g, 10g

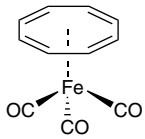
26-0725 **Butyroferrocene, 99%** *(1271-94-9)*
$CH_3CH_2CH_2C(O)C_5H_4FeC_5H_5$; FW: 256.10; dark orange liq.; d. 1.254
5g, 25g

58-0870 **Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in octanoic acid and Kensol 50H (CEF-KE02)**
See page 149

58-0865 **Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in water at pH 4.75 +-0.25 (CEF-W420)**
See page 149

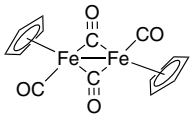
26-0850 HAZ **Cyclohexadiene iron tricarbonyl, 98%** *(12152-72-6)*
$C_6H_8Fe(CO)_3$; FW: 220.01; yellow to orange liq.; m.p. 8°
air sensitive, (store cold)
5g

26-0875 HAZ **Cyclooctatetraene iron tricarbonyl, 98%** *(12093-05-9)*
$C_8H_8Fe(CO)_3$; FW: 244.03; red to brown xtl.; m.p. 93-95°
air sensitive



1g, 5g

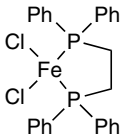
26-0900 **Cyclopentadienyliron dicarbonyl dimer, 99%**
(12154-95-9)
$[C_5H_5Fe(CO)_2]_2$; FW: 353.92; red to purple xtl.; m.p. 194° dec.
air sensitive



10g, 50g, 250g

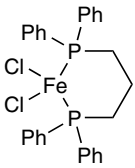
26-0952 **1,1'-Dibromoferrocene, 97%** *(1293-65-8)*
$C_{10}H_8Br_2Fe$; FW: 343.82; yellow-orange solid
500mg, 2g

26-0923 NEW **Dichloro[1,2-bis(diphenylphosphino)ethane]iron(II), 98%**
(41536-18-9)
$C_{26}H_{24}Cl_2FeP_2$; FW: 525.17; white-gray xtls.
air sensitive
For detailed technical note visit strem.com.



1g, 5g

26-0945 NEW **Dichloro[1,3-bis(diphenylphosphino)propane]iron(II), 98%**
(106245-43-6)
$C_{27}H_{26}Cl_2FeP_2$; FW: 539.19; white pwdr.
air sensitive
For detailed technical note visit strem.com.

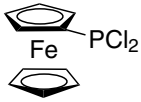


1g, 5g

IRON (Compounds)

26-0985
HAZ

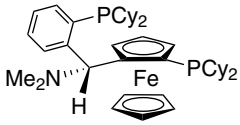
Dichlorophosphinoferrocene, 98% *(1291-31-2)*
$C_{10}H_9Cl_2FeP$; FW: 286.90; red-brown viscous liq. (solid when cold)
moisture sensitive
For detailed technical note visit strem.com.



1g
5g

26-0956

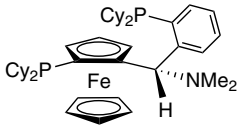
(R)-(+)-[(R)-2-Dicyclohexylphosphinoferrocenyl] (N,N-dimethylamino)(2-dicyclohexylphosphino-phenyl)methane, min. 97% *(1156547-61-3)*
$C_{43}H_{63}FeNP_2$; FW: 711.76; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-0955

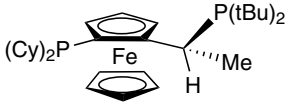
(S)-(-)-[(S)-2-Dicyclohexylphosphinoferrocenyl] (N,N-dimethylamino)(2-dicyclohexylphosphino-phenyl)methane, min. 97% *(914089-00-2)*
$C_{43}H_{63}FeNP_2$; FW: 711.76; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-0975

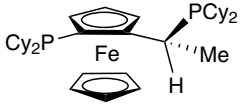
(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldi-t-butylphosphine, min. 97% *(158923-11-6)*
$C_{32}H_{52}FeP_2$; FW: 554.56; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-1000

(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldicyclohexylphosphine, min. 97% *(167416-28-6)*
$C_{36}H_{56}FeP_2$; FW: 606.64; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

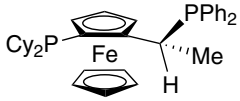
26-1001

(S)-(+)-1-[(R)-2-(Dicyclohexylphosphino)ferrocenyl] ethyldicyclohexylphosphine, min. 97% *(246231-77-6)*
$C_{36}H_{56}FeP_2$; FW: 606.64; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

26-1230

(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldiphenylphosphine, min. 97% *(158923-09-2)*
$C_{36}H_{44}FeP_2$; FW: 594.59; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-1101

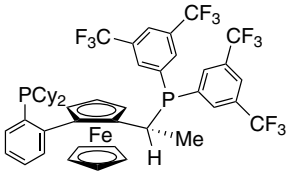
(S)-(+)-1-[(R)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldiphenylphosphine, min. 97% *(162291-01-2)*
$C_{36}H_{44}FeP_2$; FW: 594.59; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.

100mg
500mg
2g
10g

Technical Note:
1. See 26-1230 (page 101)

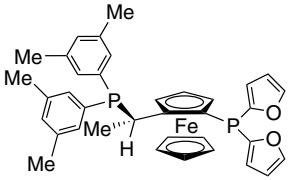
IRON (Compounds)

26-1120 **(R)-(+)-1-[(R)-2-(2'-Dicyclohexylphosphino-phenyl)ferrocenyl]ethylbis(3,5-trifluoromethylphenyl)phosphine, min. 97%** *(821009-34-1)*
$C_{46}H_{44}F_{12}FeP_2$; FW: 942.62; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



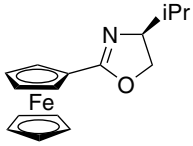
100mg
500mg
2g
10g

26-1170 **(S)-(+)-1-[(R)-2-(Di-2-furylphosphino)ferrocenyl]ethyldi- 3,5-xylylphosphine, min. 97%** *(649559-66-0)*
$C_{36}H_{36}FeO_2P_2$; FW: 618.46; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



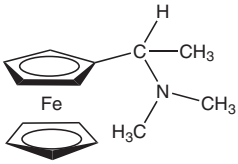
100mg
500mg
2g
10g

26-1490 **(S)-(-)-[4,5-Dihydro-4-(1-methylethyl)-2-oxazolyl] ferrocene, min. 98%** *(162157-03-1)*
$C_{16}H_{19}FeNO$; FW: 297.17; orange pwdr.



1g
5g

26-1399 **α-(N,N-Dimethylamino)ethylferrocene, 98%** *(31904-34-4)*
$(C_5H_5)Fe(C_5H_4CH(CH_3)N(CH_3)_2)$; FW: 257.16; orange liq.; b.p. 110°C/0.45mm; d. 1.222

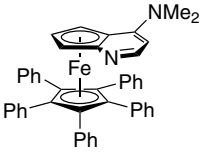


1g
5g
25g

26-1400 **N,N-Dimethylaminomethylferrocene, min. 95%** *(1271-86-9)*
$(CH_3)_2NCH_2C_5H_4FeC_5H_5$; FW: 243.13; amber liq.; b.p. 91-92°C/0.5mm; f.p. >230°F; d. 1.228

5g
25g
100g

26-1410 **(R)-(+)-4-Dimethylaminopyrindinyl(pentaphenylcyclopentadienyl)iron, min. 98% (R)-C_5Ph_5-DMAP** *(187682-64-0)*
$C_{45}H_{36}FeN_2$; FW: 660.60; purple xtl.; m.p. 231-234°
Note: Limited quantities available.
For detailed technical note visit strem.com.

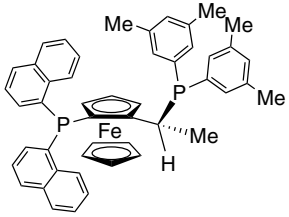


100mg

26-1500 **1,1'-Dimethylferrocene, min. 98%** *(1291-47-0)*
$(CH_3C_5H_4)_2Fe$; FW: 214.09; orange xtl.; m.p. 32-37°
air sensitive

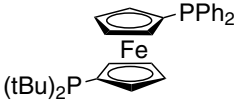
2g
10g

26-1175 **(R)-(-)-1-[(S)-2-(Di-1-naphthylphosphino) ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%** *(851308-40-2)*
$C_{48}H_{44}FeP_2$; FW: 738.68; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

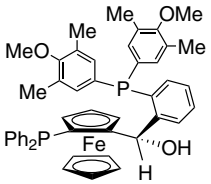
26-1240 NEW
1-Diphenylphosphino-1'-(di-t-butylphosphino) ferrocene, 97% *(95408-38-1)*
$C_{30}H_{36}FeP_2$; FW: 514.40; yellow to orange pwdr.; m.p. 75-79°
air sensitive



250mg
1g

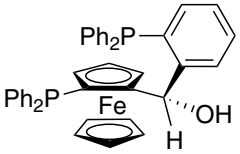
IRON (Compounds)

26-1153 **(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl] [2-bis(3,5-dimethyl-4-methoxyphenyl)phosphino-phenyl]methanol, min. 97%** *(851308-47-9)*
$C_{47}H_{47}FeO_2P_2$; FW: 777.68; orange foam
Note: Air-stable. Sold in collaboration with Solvias for research purposes only.



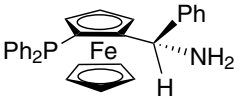
100mg

26-1160 **(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl] [2-diphenylphosphinophenyl]methanol, min. 97%** *(851308-43-5)*
$C_{41}H_{34}FeOP_2$; FW: 660.50; yellow pwdr.
Note: Air-stable. Sold in collaboration with Solvias for research purposes only.



100mg
500mg

26-1151 **(R)-(-)-1-[(S)-2-(Diphenylphosphino)ferrocenyl] benzylamine, min. 98%** *(498580-48-6)*
$C_{29}H_{26}FeNP$; FW: 475.34; yellow to orange pwdr.



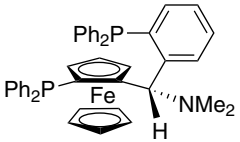
100mg
500mg

Technical Note:
1. Precursor ligand for the preparation of catalysts used in palladium-catalyzed asymmetric allylic alkylations.

26-1152 **(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]benzylamine, min. 98%**
$C_{29}H_{26}FeNP$; FW: 475.34; yellow to orange pwdr.
For detailed technical note visit strem.com.
100mg
500mg

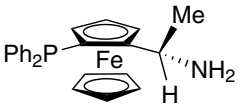
26-1156 **(R)-(+)-[(R)-2-Diphenylphosphinoferrocenyl](N,N-dimethylamino)(2-diphenyl-phosphinophenyl)methane, min. 97%** *(1003012-96-1)*
$C_{43}H_{39}FeNP_2$; FW: 687.57; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.
100mg
500mg
2g
10g

26-1155 **(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl] (N,N-dimethylamino) (2-diphenylphosphino-phenyl)methane, min. 97% TANIAPHOS**
(850444-36-9)
$C_{43}H_{39}FeNP_2$; FW: 687.57; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

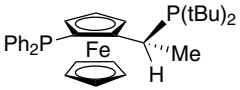
26-1425 **(R)-1-((S)-2-Diphenylphosphino)ferrocenylethyl-amine, min. 97%** *(607389-84-4)*
$C_{24}H_{24}FeNP$; FW: 413.27; yellow solid
air sensitive



100mg
500mg

26-1426 **(S)-1-((R)-2-Diphenylphosphino)ferrocenylethylamine, min. 97%**
$C_{24}H_{24}FeNP$; FW: 413.27; yellow solid
air sensitive
100mg
500mg

26-1200 **(R)-(-)-1-[(S)-2-(Diphenylphosphino)ferrocenyl] ethyldi-t-butylphosphine, min. 97%** *(155830-69-6)*
$C_{32}H_{40}FeP_2$; FW: 542.46; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit com-ponent.
For detailed technical note visit strem.com.

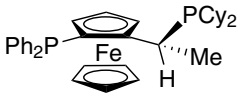


100mg
500mg
2g
10g

26-1201 **(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%**
(277306-29-3)
$C_{32}H_{40}FeP_2$; FW: 542.46; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.
100mg
500mg
2g
10g

IRON (Compounds)

26-1210 **(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl] ethyldicyclohexylphosphine ethanol adduct, min. 97% (R)-(S)-JOSIPHOS** *(155806-35-2)*
$C_{36}H_{44}FeP_2 \cdot CH_3CH_2OH$; FW: 594.59 (640.66); orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.

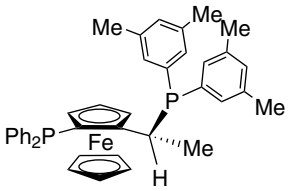


100mg
500mg
2g
10g

26-1211 **(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]ethyldicyclohexylphosphine ethanol adduct, min. 97% (S)-(R)-JOSIPHOS** *(162291-02-3)*
$C_{36}H_{44}FeP_2 \cdot CH_3CH_2OH$; FW: 594.59 (640.66); orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

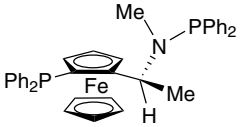
100mg
500mg
2g
10g

26-1255 **(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%** *(184095-69-0)*
$C_{40}H_{40}FeP_2$; FW: 638.56; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Josiphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-2515 **(R)-1-[(S)-2-Diphenylphosphinoferrocenyl] (N-methyl)(N-diphenylphosphino)ethylamine (R)-Me-Bophoz** *(406680-94-2)*
$C_{37}H_{35}FeNP_2$; FW: 611.50; yellow solid
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

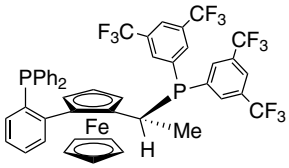


100mg
500mg

26-2516 **(S)-1-[(R)-2-Diphenylphosphinoferrocenyl](N-methyl)(N-diphenylphosphino) ethylamine (S)-Me-Bophoz** *(406681-09-2)*
$C_{37}H_{35}FeNP_2$; FW: 611.50; yellow solid
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

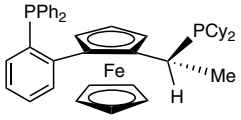
100mg
500mg

26-1300 **(R)-(-)-1-[(R)-2-(2'-Diphenylphosphino-phenyl)ferrocenyl]ethylbis(di-3,5-tri-fluoromethylphenyl)phosphine, min. 97%** *(565184-33-0)*
$C_{46}H_{32}F_{12}FeP_2$; FW: 930.52; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



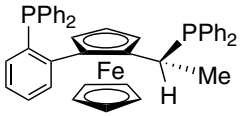
100mg
500mg
2g
10g

26-1310 **(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl) ferrocenyl]ethyldicyclohexylphosphine, min. 97%** *(565184-29-4)*
$C_{42}H_{48}FeP_2$; FW: 670.62; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

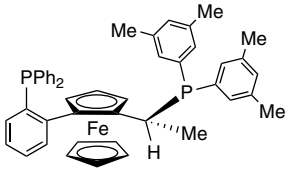
26-1315 **(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl) ferrocenyl]ethyldiphenylphosphine, min. 97%** *(565184-32-9)*
$C_{42}H_{36}FeP_2$; FW: 658.53; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

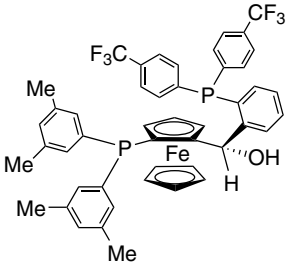
IRON (Compounds)

26-1320 **(R)-(+)-1-[(R)-2-(2'-Diphenylphosphino-phenyl)ferrocenyl]ethyldi(3,5-xylyl)phosphine, min. 97%** *(894771-25-6)*
$C_{46}H_{44}FeP_2$; FW: 714.63; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



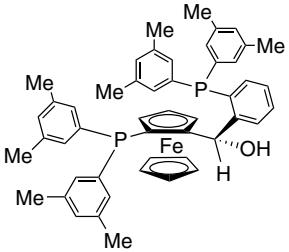
100mg
500mg
2g
10g

26-1560 **(S)-(-)-[(S)-2-Di(3,5-xylyl)phosphinoferrocenyl][2-di(4-trifluoromethylphenyl)phosphino-phenyl]methanol, min. 97%** *(851308-48-0)*
$C_{47}H_{40}F_6FeOP_2$; FW: 852.60; yellow pwdr.
Note: Air-stable. Sold in collaboration with Solvias for research purposes only. **Limited quantities available**



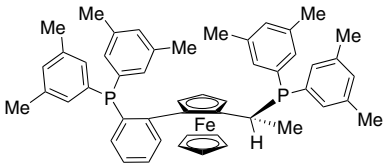
100mg

26-1565 **(S)-(-)-[(S)-2-Di(3,5-xylyl)phosphinoferrocenyl][2-di(3,5-xylyl)phosphinophenyl] methanol, min. 97%** *(851308-45-7)*
$C_{49}H_{50}FeOP_2$; FW: 772.71; orange foam
Note: Air-stable. Sold in collaboration with Solvias for research purposes only.



100mg
500mg

26-1555 **(R)-(+)-1-[(R)-2-(2'-Di-3,5-xylyl-phosphinophenyl)ferrocenyl] ethyldi-3,5-xylylphosphine, min. 97%** *(894771-28-9)*
$C_{50}H_{52}FeP_2$; FW: 770.74; orange-red solid
Note: Sold in collaboration with Solvias for research purposes only. Solvias Walphos Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-1600 **Ethylferrocene, 98%** *(1273-89-8)* 5g
$C_2H_5C_5H_4FeC_5H_5$; FW: 214.09; red-orange liq.; d. 1.256 25g

26-1750 **Ferrocene carboxaldehyde, min. 98%** *(12093-10-6)* 2g
$H(O)CC_5H_4FeC_5H_5$; FW: 214.05; orange to red xtl.; m.p. 124° 10g
light sensitive 50g

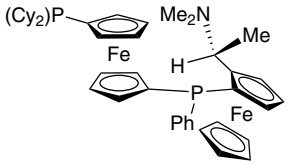
26-1800 **1,1'-Ferrocene dicarboxylic acid, min. 96%** *(1293-87-4)* 1g
$(HO(O)CC_5H_4)_2Fe$; FW: 274.06; orange xtl.; m.p. 235° dec. 5g
Note: For sale in USA. For other countries contact Strem.

26-1900 **Ferrocene monocarboxylic acid, min. 97%** *(1271-42-7)* 1g
$(HO(O)CC_5H_4)FeC_5H_5$; FW: 230.05; yellow xtl.; m.p. 210° dec. 5g
Note: For sale in USA. For other countries contact Strem. 25g

26-1430 **Ferrocenylacetic acid, min. 98%** *(1287-16-7)* 500mg
$(C_5H_5)Fe(C_5H_4)CH_2C(O)OH$; FW: 244.07; orange-brown pwdr.; m.p. 158-160° 2g
Note: For sale in USA. For other countries contact Strem.

IRON (Compounds)

26-1266 **1-{[(R)-Ferrocenyl-2-(S)-ethyl-1-dimethylamino)phenyl]-(R)-phosphino}-1'-dicyclohexylphosphinoferrocene, min. 97% Chenphos** *(952586-19-5)*
$C_{42}H_{53}Fe_2NP_2$; FW: 745.51; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

26-1265 **1-{[(S)-Ferrocenyl-2-(R)-ethyl-1-dimethylamino)phenyl]-(S)-phosphino}-1'-dicyclohexylphosphinoferrocene, min. 97% Chenphos** *(1036373-39-3)*
$C_{42}H_{53}Fe_2NP_2$; FW: 745.51; orange pwdr.
Note: Sold in collaboration with Solvias for research purposes only.

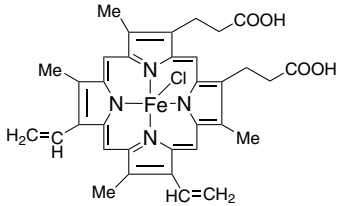
100mg
500mg
2g
10g

Technical Note:
1. See 26-1266 (page 106)

26-1450 **Ferrocenylmethyltrimethylammonium iodide, 99%** *(12086-40-7)*
$[C_5H_5FeC_5H_4CH_2N(CH_3)_3]^+I^-$; FW: 385.08; yellow xtl.; m.p. 220° dec.

5g
25g

26-1480 **Hemin (Ferriprotoporphyrin IX chloride), min. 95%** *(16009-13-5)*
$Fe(C_{34}H_{32}N_4O_4)Cl$; FW: 651.95; black xtl.



5g
25g

26-2000 **α-Hydroxyethylferrocene, 98%** *(1277-49-2)*
$(CH_3CHOHC_5H_4)FeC_5H_5$; FW: 230.09; yellow xtl.; m.p. 76-77°

1g
5g

26-2200 **Hydroxymethylferrocene, 99%** *(1273-86-5)*
$HOCH_2C_5H_4FeC_5H_5$; FW: 216.07; yellow xtl.; m.p. 66-70°

1g
5g

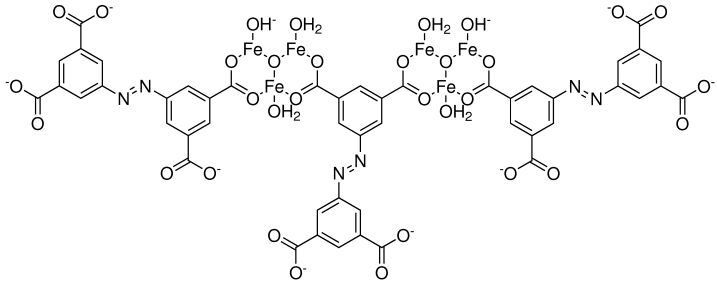
93-2678 **Iron(II) acetate, anhydrous, 97%** *(3094-87-9)*
$Fe(OOCCH_3)_2$; FW: 173.94; off-white to light brown pwdr.
air sensitive, moisture sensitive

5g
25g
100g

26-2300 **Iron(III) acetylacetonate, 99%** *(14024-18-1)*
$Fe(CH_3C(O)CHC(O)CH_3)_3$; FW: 353.18; orange to red xtl.; m.p. 184°; b.p. 110°C/2mm; d. 5.24

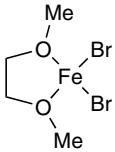
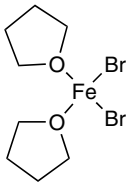
50g
250g

26-3725 NEW
Iron azobenzene tetracarboxylic, Porous [PCN-250(Fe)], CONEKTIC™ F250 *(1771755-22-6)*
Dark red-brown pwdr.
Note: Sold in collaboration with framergy for research purposes only. PCT/GB2014/053506
For detailed technical note visit strem.com.



500mg
2g
10g

IRON (Compounds)

26-2340 NEW	**Iron(III) 1,3,5-benzenetricarboxylate hydrate, porous (F-free MIL-100(Fe), KRICT F100) [Iron trimesate]** *(1257379-83-1)* $[Fe_3O(H_2O)_2(OH)\{C_6H_3(COO)_3\}_2]\cdot XH_2O$; red solid Note: Sold under agreement with KRICT for research and development purposes only. Patents US 8507399 B2, US 8252950 B2. KRICT F100 	500mg 2g
93-2629	**Iron(II) bromide, anhydrous, 98%** *(7789-46-0)* $FeBr_2$; FW: 215.67; orange pwdr.; m.p. 684° dec.; d. 4.636 *hygroscopic*	10g 50g
26-0065 NEW	**Iron(II) bromide, dimethoxyethane, min. 98%** *(99611-53-7)* $FeBr_2\cdot CH_3O(CH_2)_2OCH_3$; FW: 305.77; brown xtl. *moisture sensitive* 	1g 5g 25g
93-2628	**Iron(II) bromide hydrate** *(13463-12-2)* $FeBr_2\cdot XH_2O$; FW: 215.67; greenish-black xtl.; m.p. 27°	25g 100g
26-0078 NEW	**Iron(II) bromide, Bis(tetrahydrofuran), min. 98%** *(70317-91-8)* $FeBr_2(C_4H_8O)_2$; FW: 359.86; brown xtl. *air sensitive, moisture sensitive* 	1g 5g 25g
93-2665	**Iron(III) bromide, anhydrous, 99%** *(10031-26-2)* $FeBr_3$; FW: 295.57; reddish-black xtl.; m.p. subl. dec. *hygroscopic*	10g 50g
26-2630	**Iron(II) carbonate, tech. gr. (Siderite)** *(14476-16-5)* FeCO3; FW: 115.85; white to gray pwdr.	5g 25g
93-2631 HAZ	**Iron(II) chloride, anhydrous, 98%** *(7758-94-3)* $FeCl_2$; FW: 126.75; tan pwdr.; m.p. 674°; b.p. 1023°; d. 3.162 *air sensitive, hygroscopic*	25g 100g
93-2632 HAZ	**Iron(II) chloride tetrahydrate, 99%** *(13478-10-9)* $FeCl_2\cdot 4H_2O$; FW: 126.75 (198.81); light green xtl.; m.p. 110° (dec.); d. 1.93	250g 1kg
93-2607 HAZ	**Iron(III) chloride, anhydrous, 98%** *(7705-08-0)* $FeCl_3$; FW: 162.22; black pwdr.; m.p. 304°; d. 2.804 *hygroscopic*	1kg 5kg
93-2606 HAZ	**Iron(III) chloride hexahydrate, 97+% (ACS)** *(10025-77-1)* $FeCl_3\cdot 6H_2O$; FW: 162.22 (270.32); yellow lump; m.p. 37°	250g 1kg
26-2400	**Iron disulfide (Iron pyrite), 95%** *(12068-85-8)* FeS_2; FW: 119.97; -20 mesh pwdr.	1kg 5kg
26-2500 HAZ	**Iron dodecacarbonyl (Stabilized with 5-10% methanol)** *(17685-52-8)* $Fe_3(CO)_{12}$; FW: 503.67; black xtl.; m.p. 140° dec.; d. 2.00 *air sensitive, (store cold)*	10g 50g
26-2520 HAZ	**Iron 2-ethylhexanoate, 6% (Fe) in mineral spirits (99.998+%-Fe) PURATREM** *(7321-53-1)* $Fe[OOCCH(C_2H_5)C_4H_9]_3$; FW: 485.46; liq.	50g 250g
93-2675	**Iron(II) fluoride, anhydrous, 99%** *(7789-28-8)* FeF_2; FW: 93.84; -80 mesh off-white pwdr.; m.p. > 1000°; d. 4.09 *hygroscopic*	5g 25g
93-2610 HAZ	**Iron(III) fluoride, anhydrous, 99+%** *(7783-50-8)* FeF_3; FW: 112.84; greenish-brown pwdr.; m.p. subl. > 1000°; d. 3.52 *hygroscopic*	10g 50g

IRON (Compounds)

93-2670 HAZ	**Iron(III) fluoride trihydrate, 98%** *(15469-38-2)* $FeF_3 \cdot 3H_2O$; FW: 112.84 (166.89); light yellow pwdr.	25g 100g
93-2613 HAZ	**Iron naphthenate, 40% in mineral spirits (6% Fe)** *(1338-14-3)* brown liq.; f.p. 104°F; d. 0.90	500g 2kg
26-2600 HAZ	**Iron naphthenate, 80% in mineral spirits (12% Fe)** *(1338-14-3)* brown liq.; f.p. >100°F	500g 2kg
93-2614 HAZ	**Iron(III) nitrate nonahydrate, 98+%** *(7782-61-8)* $Fe(NO_3)_3 \cdot 9H_2O$; FW: 241.86 (404.02); light purple xtl.; m.p. 47.2°; b.p. 125° dec.; d. 1.684 *hygroscopic*	250g 1kg 5kg
93-2672 HAZ	**Iron(III) nitrate nonahydrate (99.999%-Fe) PURATREM** *(7782-61-8)* $Fe(NO_3)_3 \cdot 9H_2O$; FW: 241.86 (404.02); colorless to pale violet xtl.; m.p. 47.2°; b.p. 125° dec.; d. 1.684 *hygroscopic*	5g 25g
26-2640 HAZ	**Iron nonacarbonyl, 99%** *(15321-51-4)* $Fe_2(CO)_9$; FW: 363.79; yellow to orange xtl.; m.p. 100° dec.; d. 2.85 *air sensitive, (store cold)*	5g 25g 100g
93-2636	**Iron(II) oxalate dihydrate, min. 95%** *(6047-25-2)* $FeC_2O_4 \cdot 2H_2O$; FW: 143.87 (179.90); yellow pwdr.; m.p. 190° dec.; d. 2.28	500g 2kg
93-2615 HAZ	**Iron(III) oxalate hexahydrate, tech. gr.** *(19469-07-9)* $Fe_2(C_2O_4)_3 \cdot 6H_2O$; FW: 375.76 (483.86); yellow pwdr.	5g 25g
93-2616	**Iron(II,III) oxide, black (Magnetite), min. 95%** *(1317-61-9)* Fe_3O_4; FW: 231.54; black pwdr.; m.p. 1538° dec.; d. 5.18	500g 2kg
26-0032	**Iron(II,III) oxide (Magnetite) aqueous magnetic fluid [3.5 vol%, Ms = 15-16 kA/m]** *(1317-61-9)* *See* page 158	
26-0036	**Iron(II,III) oxide (Magnetite) aqueous magnetic fluid [7.0 vol%, Ms = 30-31 kA/m]** *(1317-61-9)* *See* page 158	
26-0022	**Iron(II,III) oxide (Magnetite) magnetic fluid in kerosene with oleic acid [7-9 vol%, Ms = 35-45 kA/m]** *(1317-61-9)* *See* page 158	
26-0024	**Iron(II,III) oxide (Magnetite) magnetic fluid in kerosene with oleic acid [15-18 vol%, Ms = 50-70 kA/m]** *(1317-61-9)* *See* page 158	
26-2750	**Iron(III) oxide (99.995%-Fe) PURATREM** *(1309-37-1)* Fe_2O_3; FW: 159.69; red to brown pwdr.; m.p. 1565°	10g 50g
93-2618	**Iron(III) oxide monohydrate, yellow (99.9+%-Fe)** *(51274-00-1)* $Fe_2O_3 \cdot H_2O$; FW: 159.69 (177.71); yellow pwdr.	1kg 5kg
93-2617	**Iron(III) oxide, red (Hematite) (99.8%-Fe)** *(1317-60-8)* Fe_2O_3; FW: 159.69; red pwdr.	250g 1kg 5kg
	Iron oxide nanoparticles, organic solvent-dispersible (in chloroform) *(1309-37-1)* *See* page 160	
	Iron oxide nanoparticles in water, with amine surface functional group *(1309-37-1)* *See* page 159	
	Iron oxide nanoparticles in water, with carboxylic acid surface functional group *(1309-37-1)* *See* page 159	
	Iron oxide nanoparticles in water, with PEG *(1309-37-1)* *See* page 160	
26-2758	**Iron(III) oxyhydroxide in water at pH = 3.0 +- 0.5 (FEO-W320)** *(20344-49-4)* *See* page 159	
26-2800 HAZ	**Iron pentacarbonyl, 99.5% (99.9+%-Fe)** *(13463-40-6)* $Fe(CO)_5$; FW: 195.90; orange liq.; m.p. -20°; b.p. 103°; f.p. 5°F; d. 1.490 *air sensitive, (store cold)*	250g 1kg

IRON (Compounds)

26-2801
HAZ

Iron pentacarbonyl, 99.5% (99.9+%-Fe) (Sure/Seal™ bottle) *(13463-40-6)*
$Fe(CO)_5$; FW: 195.90; orange liq.; m.p. -20°; b.p. 103°; f.p. 5°F; d. 1.490
air sensitive, (store cold)
250g
1kg

93-2673
HAZ

Iron(III) perchlorate hydrate (purple) *(15201-61-3)*
$Fe(ClO_4)_3 \cdot XH_2O$; FW: 354.22; purple xtl.
hygroscopic
50g
250g

93-2620
HAZ

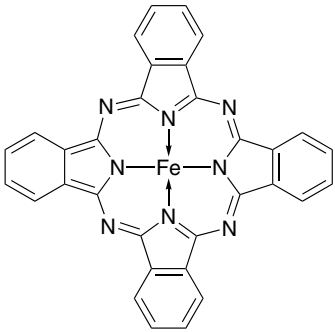
Iron(III) perchlorate hydrate (yellow) *(15201-61-3)*
$Fe(ClO_4)_3 \cdot XH_2O$; FW: 354.22; yellow xtl.
hygroscopic
50g
250g

93-2647

Iron(III) phosphate hydrate *(13463-10-0)*
$FePO_4 \cdot XH_2O$; FW: 150.82; off-white pwdr.
500g
2kg

26-2825

Iron(II) phthalocyanine, min. 95%
(132-16-1)
$(C_{32}H_{16}N_8)Fe$; FW: 568.38; dark purple xtl.
1g
5g



26-2860

Iron(III) i-propoxide (99.9+%-Fe) *(14995-22-3)*
$Fe(OC_3H_7)_3$; FW: 233.12; brown to black solid
moisture sensitive
25g

93-2648

Iron silicide, 99% *(12022-99-0)*
$FeSi_2$; FW: 112.02; gray pwdr.; m.p. 1220°; d. 4.75
10g
50g

26-2622

Iron(II) stearate (9% Fe) *(2980-59-8)*
$Fe(O_2C_{18}H_{35})_2$; FW: 622.81; orange pwdr.
100g
500g

93-2638

Iron(II) sulfamate, (38-42%) aqueous solution *(14017-39-1)*
$Fe(NH_2SO_3)_2$; FW: 248.02; green liq.
air sensitive
For detailed technical note visit strem.com.
250g
1kg

93-2639

Iron(II) sulfate heptahydrate, 99+% (ACS) *(7782-63-0)*
$FeSO_4 \cdot 7H_2O$; FW: 151.96 (278.03); off-white pwdr.; m.p. dec.; d. 2.970
250g
1kg

93-2623

Iron(III) sulfate hydrate, tech. gr. *(15244-10-7)*
$Fe_2(SO_4)_3 \cdot XH_2O$; FW: 399.87; off-white pwdr.
250g
1kg

93-2640

Iron(II) sulfide (99%-Fe) *(1317-37-9)*
FeS; FW: 87.91; -60 + 200 mesh black pwdr.
100g
500g
2kg

26-2635

Iron(II) sulfide (99.9%-Fe) *(1317-37-9)*
FeS; FW: 87.91; -100 mesh black pwdr.
10g
50g

93-2633

Iron(II) tetrafluoroborate, 40-45% aqueous solution *(15283-51-9)*
$Fe(BF_4)_2$; FW: 229.45; green liq.
air sensitive
50g
250g

26-2880

Iron(III) meso-tetraphenylporphine chloride *(16456-81-8)*
$Fe(C_{44}H_{28}N_4)Cl$; FW: 704.03; purple xtl.
500mg
2g

26-3900

Iron(III) meso-tetraphenylporphine-μ-oxo dimer *(12582-61-5)*
$[(C_{44}H_{28}N_4)Fe]_2O$; FW: 1353.16; purple xtl.
500mg
2g

93-2644

Iron(III) trifluoroacetylacetonate, 99% (99.9%-Fe) *(14526-22-8)*
$Fe(CF_3C(O)CHC(O)CF_3)_3$; FW: 515.09; red xtl.; m.p. 110-112°
5g
25g

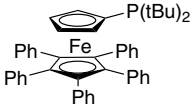
26-2830
HAZ

Iron(II) trifluoromethanesulfonate, 98% (Iron triflate) *(59163-91-6)*
$Fe(CF_3SO_3)_2$; FW: 353.99; off-white to brown pwdr.
hygroscopic
25g
100g

IRON (Compounds)

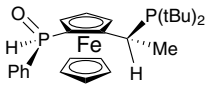
26-3525 **Pentamethylcyclopentadienyliron dicarbonyl dimer, min. 98%** *(35344-11-7)* — 1g, 5g
$[(CH_3)_5C_5Fe(CO)_2]_2$; FW: 494.20; red to purple xtl.

26-3575 **1,2,3,4,5-Pentaphenyl-1'-(di-t-butylphosphino)ferrocene, 95% CTC-Q-PHOS** *(312959-24-3)* — 100mg, 500mg, 2g, 10g
$C_{48}H_{47}FeP$; FW: 710.71; pink pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. Patent Application No WO 02/11883.
For detailed technical note visit strem.com.

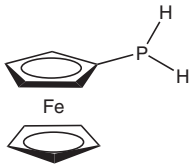


26-1269 **(S, R(p), S(SPO)-1-Phenylphosphinoyl)-2-[1-(t-butylphosphino)ethyl]ferrocene, min. 97% JoSPOphos** *(1221746-56-0)* — 100mg, 500mg, 2g, 10g
$C_{26}H_{36}FeOP_2$; FW: 482.36; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

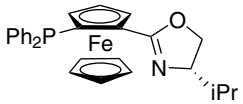
26-1268 **(R,S(p), R(SPO)-1-Phenylphosphinoyl)-2-[1-(di-t-butylphosphino)ethyl]ferrocene, min. 97% JoSPOphos** *(1221746-66-2)* — 100mg, 500mg, 2g, 10g
$C_{26}H_{36}FeOP_2$; FW: 482.36; orange pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



26-3620 **Phosphinoferrocene, 98%** *(83528-85-2)* — 1g, 5g
$C_{10}H_{11}FeP$; FW: 218.01; red-brown solid
air sensitive
For detailed technical note visit strem.com.

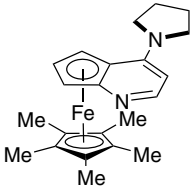


26-4011 **(R,R)-[2-(4'-i-Propyloxazolin-2'-yl)ferrocenyl] diphenylphosphine, min. 97%** *(541540-70-9)* — 100mg, 500mg
$C_{28}H_{26}FeNOP$; FW: 481.35; orange solid
air sensitive



26-4010 **(S,S)-[2-(4'-i-Propyloxazolin-2'-yl)ferrocenyldiphenylphosphine, min. 97%** *(163169-29-7)* — 100mg, 500mg
$C_{28}H_{26}FeNOP$; FW: 481.35; orange solid
air sensitive

26-3700 **(R)-(+)-4-Pyrrolidinopyrindinyl(pentamethylcyclopentadienyl) iron, min. 98% (R)-PPY*** *(217459-10-4)* — 100mg
$C_{22}H_{28}FeN_2$; FW: 376.30; dark red xtl.; m.p. 163-164°
Note: Limited quantities available.
For detailed technical note visit strem.com.



26-3701 **(S)-(-)-4-Pyrrolidinopyrindinyl(pentamethylcyclopentadienyl)iron, min. 98% (S)-PPY*** *(217459-11-5)* — 100mg
$C_{22}H_{28}FeN_2$; FW: 376.30; dark red xtl.; m.p. 163-164°
Note: Limited quantities available.

Technical Note:
1. See 26-3700 (page 110)

96-3650 **Solvias Josiphos Ligand Kit**
See page 520

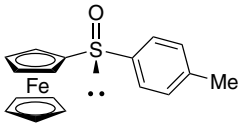
96-3652 **Solvias MandyPhos™ Ligand Kit**
See page 521

96-3651 **Solvias Walphos Ligand Kit**
See page 522

IRON (Compounds)

26-3765 NEW
Tetramethylammonium ferricyanide, 98% *(14591-44-7)*
$C_{18}H_{36}FeN_9$; FW: 434.38; yellow xtl.
100mg
500mg

26-3705
(R)-(-)-(p-Toluenesulfinyl)ferrocene, min. 98%
(130225-27-3)
$C_{17}H_{16}FeOS$; FW: 324.22; orange pwdr.; m.p. 143°
100mg
500mg



Technical Note:
1. Starting material for the synthesis of a variety of ferrocene-based catalysts.

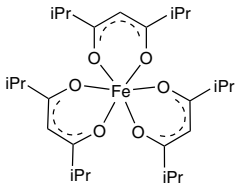
References:

1. *Org. Lett.,* **2007**, *9*, 3089
2. *J. Org. Chem.,* **2005**, *70*, 8332
3. *Angew. Chem. Int. Ed.,* **2002**, *41*, 4708

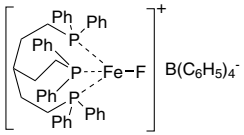
26-3706
(S)-(+)-(p-Toluenesulfinyl)ferrocene, min. 98% *(164297-25-0)*
$C_{17}H_{16}FeOS$; FW: 324.22; orange pwdr.; m.p. 143°
100mg
500mg

Technical Note:
1. See 26-3705 (page 111)

26-3915 NEW
Tris(2,6-dimethyl-3,5-heptanedionato)iron(III), 98% Fe(dibm)3 *(24444-72-2)*
$C_{27}H_{45}FeO_6$; FW: 521.49; red-orange xtl.
For detailed technical note visit strem.com.
500mg
2g
10g



26-3955 NEW
Tris{[2-(diphenylphosphino)ethyl]phosphine}(fluoro) iron(II) tetraphenylborate, min. 98% *(1318882-57-3)*
$C_{66}H_{62}FeBFP_4$; FW: 1064.75; purple solid
100mg
500mg



26-3910
Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)iron(III), 99% (99.9%-Fe) [Fe(TMHD)$_3$] *(14876-47-2)*
$Fe(C_{11}H_{19}O_2)_3$; FW: 605.66; red xtl.; m.p. 164°; b.p. dec. 300°
1g
5g
25g

26-3950
Vinylferrocene, 99% *(1271-51-8)*
$CH_2{=}CHC_5H_4FeC_5H_5$; FW: 212.07; orange xtl.; m.p. 49-51°
1g
5g

LANTHANUM (Elemental Forms)

93-5746 HAZ
Lanthanum chips (99.6% REO) *(7439-91-0)*
La; FW: 138.90; (packed in mineral oil); m.p. 920°; b.p. 3454°; d. 6.166
air sensitive, moisture sensitive
25g
100g

93-5750 HAZ
Lanthanum foil (99.9% REO) *(7439-91-0)*
La; FW: 138.90; 0.62 mm thick (~2.4g/25 x 25 mm) (packed in mineral oil); m.p. 920°; b.p. 3454°; d. 6.166
air sensitive, moisture sensitive
25 x 25mm
50 x 50mm

57-5747 HAZ
Lanthanum ingot (99.9% REO) *(7439-91-0)*
La; FW: 138.90; packed in mineral oil; m.p. 920°; b.p. 3454°; d. 6.166
air sensitive, moisture sensitive
For detailed technical note visit strem.com.
25g
100g

93-5745 HAZ
Lanthanum powder (99.9% REO) *(7439-91-0)*
La; FW: 138.90; -325 mesh (packed in mineral oil); b.p. 3454°; d. 6.166
air sensitive, moisture sensitive
10g
50g

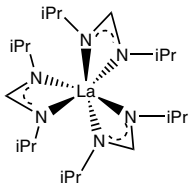
LANTHANUM (Compounds)

57-0201
Di-[3-((S)-2,2'-dihydroxy-1,1'-binaphthylmethyl)]ether, lanthanum(III) salt, tetrahydrofuran adduct SCT-(S)-BINOL *(293293-33-1)*
$C_{42}H_{27}LaO_5{\cdot}C_4H_8O$; FW: 750.58 (822.69); pale yellow pwdr.
For detailed technical note visit strem.com.
100mg

LANTHANUM (Compounds)

93-5701	**Lanthanum(III) acetate hydrate (99.9%-La) (REO)** *(100587-90-4)* $La(OOCCH_3)_3 \cdot XH_2O$; FW: 316.05; white xtl.	100g 500g
93-5702	**Lanthanum(III) acetylacetonate hydrate (99.9%-La) (REO)** *(64424-12-0)* $La(CH_3C(O)CHC(O)CH_3)_3 \cdot XH_2O$; FW: 436.24; white to off-white pwdr.	25g 100g
57-0500	**Lanthanum(III) aluminum oxide** *(12003-65-5)* $LaAlO_3$; FW: 213.88; white pwdr.	5g 25g
93-5735	**Lanthanum boride (99%-La)** *(12008-21-8)* LaB_6; FW: 203.78; purple to black pwdr.; m.p. 2210°; d. 2.61	10g 50g
57-0505 NEW	**Lanthanum(III) bromide, anhydrous (99.99%-La) (REO) PURATREM** *(13536-79-3)* $LaBr_3$; FW: 378.62; white xtl. *air sensitive, moisture sensitive*	2g 10g
93-5730	**Lanthanum(III) bromide heptahydrate (99.9%-La) (REO)** *(13465-19-5)* $LaBr_3 \cdot 7H_2O$; FW: 378.63 (504.74); white xtl.	5g 25g
93-5707	**Lanthanum(III) carbonate hydrate (99.9%-La) (REO)** *(6487-39-4)* $La_2(CO_3)_3 \cdot XH_2O$; FW: 457.85; white pwdr.; d. 2.6-2.7	100g 500g
93-5708	**Lanthanum(III) chloride, anhydrous (99.9%-La) (REO)** *(10099-58-8)* $LaCl_3$; FW: 245.27; white pwdr.; m.p. 860°; b.p. 1000°; d. 3.842 *hygroscopic*	25g 100g
93-5731	**Lanthanum(III) chloride hexahydrate (99.9%-La) (REO)** *(17272-45-6)* $LaCl_3 \cdot 6H_2O$; FW: 245.27 (353.36); white xtl.; m.p. 91° dec.	100g 500g
57-5731	**Lanthanum(III) chloride hydrate (99.999%-La) (REO) PURATREM** *(10025-84-0)* $LaCl_3 \cdot XH_2O$; FW: 245.27; white xtl.; m.p. 91° dec. *hygroscopic*	25g 100g
57-5730	**Lanthanum(III) chloride hydrate (99.999+%-La) (low Ca, Fe, Mg) PURATREM** *(10025-84-0)* $LaCl_3 \cdot XH_2O$; FW: 245.27; white xtl.; m.p. 91° dec. *hygroscopic*	25g 100g
93-5710	**Lanthanum(III) fluoride, anhydrous (99.9%-La) (REO)** *(13709-38-1)* LaF_3; FW: 195.90; white pwdr.; m.p. 1493°; d. 5.936 *hygroscopic*	25g 100g
57-2000	**Lanthanum(III) fluoride, anhydrous (99.99%-La) (REO) PURATREM** *(13709-38-1)* LaF_3; FW: 195.90; white lumps; m.p. 1493°; d. 5.936 *hygroscopic*	25g 100g
93-5711	**Lanthanum(III) hydroxide, anhydrous (99.9%-La) (REO)** *(14507-19-8)* $La(OH)_3$; FW: 189.93; white pwdr.	10g 50g
93-5712	**Lanthanum(III) iodide, anhydrous (99.9%-La) (REO)** *(13813-22-4)* LaI_3; FW: 519.62; off-white to red pwdr.; m.p. 772°; d. 5.63 *hygroscopic*	1g 5g
93-5713 HAZ	**Lanthanum(III) nitrate hexahydrate (99.9%-La) (REO)** *(10277-43-7)* $La(NO_3)_3 \cdot 6H_2O$; FW: 324.93 (433.02); white xtl.; m.p. 40°; b.p. 126° dec. *hygroscopic*	100g 500g
93-5732 HAZ	**Lanthanum(III) nitrate hexahydrate (99.99%-La) (REO) PURATREM** *(10277-43-7)* $La(NO_3)_3 \cdot 6H_2O$; FW: 324.93 (433.02); white xtl.; m.p. 40°; b.p. 126° dec. *hygroscopic*	25g 100g 500g
57-5732 HAZ	**Lanthanum(III) nitrate hexahydrate (99.999%-La) (REO) PURATREM** *(10277-43-7)* $La(NO_3)_3 \cdot 6H_2O$; FW: 324.93 (433.02); white xtl.; m.p. 40°; b.p. 126° dec.	25g 100g
93-5740	**Lanthanum(III) oxide (99.9%-La) (REO)** *(1312-81-8)* La_2O_3; FW: 325.82; white pwdr.; m.p. 2315°; b.p. 4200°; d. 6.51	50g 250g 1kg
93-5716	**Lanthanum(III) oxide (99.99%-La) (REO) PURATREM** *(1312-81-8)* La_2O_3; FW: 325.82; white pwdr.; m.p. 2315°; b.p. 4200°; d. 6.51	100g 500g
93-5741	**Lanthanum(III) oxide (99.999%-La) (REO) PURATREM** *(1312-81-8)* La_2O_3; FW: 325.82; white pwdr.; m.p. 2315°; b.p. 4200°; d. 6.51	25g 100g

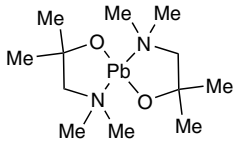
LANTHANUM (Compounds)

93-5733 HAZ	**Lanthanum(III) perchlorate hexahydrate** *(36907-37-6)* $La(ClO_4)_3 \cdot 6H_2O$; FW: 437.26 (545.35); white xtl. *hygroscopic*	10g 50g 250g
93-5717	**Lanthanum(III) phosphate hydrate** *(14913-14-5)* $LaPO_4 \cdot XH_2O$; FW: 233.88; white pwdr.	25g 100g
57-2550	**Lanthanum(III) i-propoxide, 99% (99.9%-La) (REO)** *(19446-52-7)* $La(OC_3H_7)_3$; FW: 316.17; white to off-white pwdr. *moisture sensitive*	1g 5g
93-5720	**Lanthanum(III) sulfate hydrate (99.9%-La) (REO)** *(57804-25-8)* $La_2(SO_4)_3 \cdot XH_2O$; FW: 566.00; white xtl.; m.p. dec.; d. 2.821	50g 250g
93-5721	**Lanthanum(III) sulfide (99.9%-La) (REO)** *(12031-49-1)* La_2S_3; FW: 374.01; yellow pwdr.; m.p. 2100-2150°; d. 4.911	5g 25g
57-2800	**Lanthanum(III) trifluoromethanesulfonate, min. 97% (Lanthanum triflate)** *(52093-26-2)* $La(SO_3CF_3)_3$; FW: 586.11; white pwdr. *hygroscopic*	2g 10g 50g
57-0510 amp	**Tris(N,N-bis(trimethylsilyl)amide)lanthanum(III), min. 98% (99.9%-La) (REO)** *(175923-07-6)* $\{[(CH_3)_3Si]_2N\}_3La$; FW: 620.06; white pwdr. *air sensitive, moisture sensitive, (store cold)* **For detailed technical note visit strem.com.**	1g 5g
57-3000 amp	**Tris(cyclopentadienyl)lanthanum (99.9%-La) (REO)** *(1272-23-7)* $(C_5H_5)_3La$; FW: 334.19; white to off-white xtl.; m.p. 295° dec. *air sensitive, moisture sensitive*	1g 5g
57-1200 NEW amp HAZ	**Tris(N,N'-di-i-propylformamidinato)lanthanum(III), (99.999+%-La) PURATREM La-FMD** *(1034537-36-4)* $C_{21}H_{45}LaN_6$; FW: 520.53; white to off-white pwdr. *air sensitive, moisture sensitive* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2. **For detailed technical note visit strem.com.** 	1g 5g
57-3500	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)lanthanum(III), 99% (99.9%-La) (REO) [La(FOD)$_3$]** *(19106-89-9)* $La(C_3F_7C(O)CHC(O)C_4H_9)_3$; FW: 1024.44; white pwdr.	1g 5g
57-4000 amp	**Tris(i-propylcyclopentadienyl)lanthanum (99.9%-La) (REO)** *(68959-87-5)* $(C_3H_7C_5H_4)_3La$; FW: 460.43; colorless to pale yellow liq.; b.p. 180-195°/0.02mm *air sensitive, moisture sensitive*	1g 5g 25g
57-1000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)lanthanum(III), 99% (99.9%-La) (REO) [La(TMHD)$_3$]** *(14319-13-2)* $La(C_{11}H_{19}O_2)_3$; FW: 688.72; white pwdr.; m.p. 227-231°; b.p. dec. 370° (subl. 210°/0.2mm)	1g 5g 25g
57-1100	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)lanthanum(III) tetraglyme adduct (99.9%-La) (REO)** *(151139-14-9)* $La(C_{11}H_{19}O_2)_3 \cdot CH_3(OCH_2CH_2)_4OCH_3$; FW: 688.72 (911.00); white to pale-yellow xtl.; m.p. 59°; b.p. 125°/0.1mm	1g 5g 25g

LEAD (Elemental Forms)

93-8271	**Lead granules (99.9+%)** *(7439-92-1)* Pb; FW: 207.21; -20 mesh; m.p. 327.43°; b.p. 1620°; d. 11.288	100g 500g
82-0050	**Lead granules (99.999%)** *(7439-92-1)* Pb; FW: 207.21; 1-3 mm; m.p. 327.43°; b.p. 1620°; d. 11.288	50g 250g
93-8273 HAZ	**Lead powder (99.5%)** *(7439-92-1)* Pb; FW: 207.21; -100 mesh; m.p. 327.43°; b.p. 1620°; d. 11.288	250g 1kg
82-0100	**Lead rod (99.999%)** *(7439-92-1)* Pb; FW: 207.21; 10 mm dia. (~50g/5.6 cm); m.p. 327.43°; b.p. 1620°; d. 11.288	50g 250g 1kg
82-0200	**Lead wire (99.9995%)** *(7439-92-1)* Pb; FW: 207.21; 0.75mm dia. (~5g/m); m.p. 327.43°; b.p. 1620°; d. 11.288	2m 10m

LEAD (Compounds)

82-2155 NEW	**Bis(1-dimethylamino-2-methyl-2-propanolate) lead(II), 98% Pb(DMAMP)$_2$** *(934302-16-6)* $C_{12}H_{28}N_2O_2Pb$; FW: 439.56; white solid **For detailed technical note visit strem.com.** 	250mg 1g 5g
82-2100	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)lead(II), 99% [Pb(TMHD)$_2$]** *(21319-43-7)* $Pb(C_{11}H_{19}O_2)_2$; FW: 573.75; white pwdr.; m.p. 126-128°; b.p. 325° dec. (subl. 134°/0.1mm)	1g 5g 25g
82-0580	**Hexaphenyldilead, min. 98%** *(3124-01-4)* $(C_6H_5)_3PbPb(C_6H_5)_3$; FW: 877.04; white xtl.; m.p. 170° dec.	1g 5g
93-8250 HAZ	**Lead(II) acetate trihydrate, 99+% (ACS)** *(6080-56-4)* $Pb(OOCCH_3)_2{\cdot}3H_2O$; FW: 325.28 (379.33); white pwdr.; m.p. 75° dec.; d. 2.55	250g 1kg
82-0595 HAZ	**Lead(II) acetate trihydrate (99.999%-Pb) PURATREM** *(6080-56-4)* $Pb(OOCCH_3)_2{\cdot}3H_2O$; FW: 325.28 (379.33); white xtl.; m.p. 75° dec.; d. 2.55	25g 100g
93-8270 HAZ	**Lead(IV) acetate, 95%** *(546-67-8)* $Pb(OOCCH_3)_4$; FW: 443.37; white to light brown xtl.; m.p. 175°; d. 2.28 *moisture sensitive, (store cold)*	50g 250g
93-8251	**Lead(II) acetylacetonate, min. 95%** *(15282-88-9)* $Pb(CH_3COCHCOCH_3)_2$; FW: 405.41; white pwdr. *hygroscopic*	5g 25g 100g
93-8201	**Lead antimonide, 99+%** *(12266-38-5)* PbSb; FW: 328.94; gray pieces	5g 25g
93-8203	**Lead(II) bromide, 98+%** *(10031-22-8)* $PbBr_2$; FW: 367.01; white pwdr.; m.p. 373°; b.p. 916°; d. 6.66	50g 250g
93-8206 HAZ	**Lead(II) chloride, 99%** *(7758-95-4)* $PbCl_2$; FW: 278.10; white pwdr.; m.p. 501°; b.p. 950°; d. 5.85	100g 500g
82-0600	**Lead(II) citrate trihydrate, min. 97%** *(512-26-5)* $Pb_3(C_6H_5O_7)_2{\cdot}3H_2O$; FW: 999.77 (1053.82); white pwdr. Note: For sale in USA. For other countries contact Strem.	25g 100g
93-8224	**Lead(II) 2-ethylhexanoate (40.5%-42.5% Pb)** *(301-08-6)* $Pb[OOCCH(C_2H_5)C_4H_9]_2$; FW: 493.61; viscous liq.; f.p. 324°F; d. 1.56	250g 1kg
93-8214	**Lead(II) fluoride, 99+%** *(7783-46-2)* PbF_2; FW: 245.19; white pwdr.; m.p. 855°; b.p. 1290°; d. 8.24	100g 500g
93-8265	**Lead(II) hexafluoroacetylacetonate, min. 98%** *(19648-88-5)* $Pb(CF_3C(O)CHC(O)CF_3)_2$; FW: 621.29; white pwdr.; m.p. 153-158°; b.p. dec. 210° (subl. 180°/0.05 mm)	1g 5g
93-8217 HAZ	**Lead(II) iodide, 98.5%** *(10101-63-0)* PbI_2; FW: 461.00; yellow pwdr.; m.p. 402°; b.p. 954°; d. 6.16	50g
82-0750 HAZ	**Lead(II) iodide (99.999+%-Pb) PURATREM** *(10101-63-0)* PbI_2; FW: 461.00; yellow pwdr.; m.p. 402°; b.p. 954°; d. 6.16	10g 50g
93-8222 HAZ	**Lead(II) nitrate, 99+% (ACS)** *(10099-74-8)* $Pb(NO_3)_2$; FW: 331.23; white xtl.; m.p. 470° dec.; d. 4.53 *hygroscopic*	250g 1kg
93-8267 HAZ	**Lead(II) nitrate (99.999%-Pb) PURATREM** *(10099-74-8)* $Pb(NO_3)_2$; FW: 331.20; white xtl.; m.p. 470° dec.; d. 4.53 *hygroscopic*	25g 100g
93-8220	**Lead(II) oxide (Litharge), 99+%** *(1317-36-8)* PbO; FW: 223.19; yellow pwdr.; m.p. 888°; d. 9.53	500g 2kg
93-8219	**Lead(II) oxide (99.999+%-Pb) PURATREM** *(1317-36-8)* PbO; FW: 223.19; yellow pwdr.; m.p. 888°; d. 9.53	10g 50g
93-8210 HAZ	**Lead(IV) oxide, 97+% (ACS)** *(1309-60-0)* PbO_2; FW: 239.19; red to brown pwdr.; m.p. 290° dec.; d. 9.375	100g 500g
82-1600 HAZ	**Lead(II) perchlorate, trihydrate, 97+% (ACS)** *(13453-62-8)* $Pb(ClO_4)_2{\cdot}3H_2O$; FW: 406.10(460.15); white xtl. *hygroscopic*	100g 500g

LEAD (Compounds)

93-8257 HAZ	**Lead(II) selenide (99.99%-Pb) PURATREM** *(12069-00-0)* PbSe; FW: 286.15; gray to black pieces; m.p. 1065°; d. 8.10	5g 25g
93-8232	**Lead(II) sulfate, 99%** *(7446-14-2)* $PbSO_4$; FW: 303.25; white pwdr.; m.p. 1170°; d. 6.2	250g 1kg
93-8233	**Lead(II) sulfide (99.999%-Pb) PURATREM** *(1314-87-0)* PbS; FW: 239.25; black pwdr.; m.p. 1114°; d. 7.5	5g 25g
	Lead sulfide CANdot® quantum dots (10 mg/mL in toluene) *(1314-87-0)* *See* page 161	
93-8237 HAZ	**Lead(II) titanate, 99.5%** *(12060-00-3)* $PbTiO_3$; FW: 303.09; off-white pwdr.; d. 7.5	250g 1kg
93-8239	**Lead(II) zirconate, 99%** *(12060-01-4)* $PbZrO_3$; FW: 346.42; off-white pwdr.; d. 7.0	100g 500g
82-2180 NEW HAZ	**Methylammonium triiodoplumbate(II) (40wt% solution in DMF) (99.99+%-Pb)** *(69507-98-8)* $[CH_3NH_3]^+PbI_{3-}$; FW: 616.96; clear yellow liq.; d. 1.368	2g 10g
82-2150	**Tetraphenyllead, min. 97%** *(595-89-1)* $(C_6H_5)_4Pb$; FW: 515.61; white xtl.; m.p. 229-230°; b.p. 325° dec. (subl. 230°/0.05 mm); d. 1.530	1g 5g 25g

LITHIUM (Elemental Forms)

03-0375 HAZ	**Lithium granules (99+%)** *(7439-93-2)* Li; FW: 6.94; 2.5mm granules; m.p. 179°; b.p. 1317°; d. 0.534 *air sensitive, moisture sensitive*	50g 250g
93-0369 HAZ	**Lithium ribbon (99.8%)** *(7439-93-2)* Li; FW: 6.94; 100 mm wide x 1.5 mm thick; m.p. 179°; b.p. 1317°; d. 0.534 *air sensitive, moisture sensitive*	25g 100g
93-0359 HAZ	**Lithium rod (99.8%)** *(7439-93-2)* Li; FW: 6.94; 1.27 cm dia. (packed in mineral oil) (~0.67g/cm); m.p. 179°; b.p. 1317°; d. 0.534 *air sensitive, moisture sensitive*	50g 250g

LITHIUM (Compounds)

93-0389 HAZ	**s-Butyllithium, 12% in cyclohexane (1.4M)** *(598-30-1)* C_4H_9Li; FW: 64.05; cloudy liq.; f.p. 1°F *moisture sensitive, pyrophoric, (store cold)* Note: Free rubber septum included.	0.25mole 1mole
93-0301 HAZ	**n-Butyllithium, 15% in hexanes (1.6M)** *(109-72-8)* C_4H_9Li; FW: 64.05; slightly cloudy liq.; d. 0.680 *moisture sensitive, pyrophoric, (store cold)* Note: Free rubber septum included.	0.25mole 1mole
93-0302 HAZ	**t-Butyllithium 16% in pentane (1-2M)** *(594-19-4)* C_4H_9Li; FW: 64.05; slightly cloudy liq. *moisture sensitive, pyrophoric, (store cold)* Note: Free rubber septum included.	0.25mole 1mole
93-0362	**Lithium acetate dihydrate, 98% (99.9%-Li)** *(6108-17-4)* $LiOOCCH_3 \cdot 2H_2O$; FW: 65.98 (102.01); white pwdr.; m.p. dec.; d. 1.3	250g 1kg
93-0361	**Lithium acetylacetonate, 98+%** *(18115-70-3)* $LiCH_3C(O)CHC(O)CH_3$; FW: 106.05; white pwdr.; m.p. ~250° *hygroscopic*	10g 50g
03-0750 HAZ	**Lithium aluminum deuteride, 98% isotopic purity** *(14128-54-2)* $LiAlD_4$; FW: 41.99; gray pwdr.; m.p. 175° dec. *air sensitive, moisture sensitive*	1g
93-0393 HAZ	**Lithium aluminum hydride, powder, 95%** *(16853-85-3)* $LiAlH_4$; FW: 37.94; gray pwdr.; m.p. 125° dec.; d. 0.917 *air sensitive, moisture sensitive*	10g 50g 250g 1kg

LITHIUM (Compounds)

03-0753 HAZ	**Lithium aluminum hydride 2.2M (10wt% ±1wt%) in 2-methyltetrahydrofuran** *(16853-85-3)* $LiAlH_4$; FW: 37.94; liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.05mole 0.25mole
93-0306 HAZ	**Lithium amide, 95%** *(7782-89-0)* $LiNH_2$; FW: 22.96; off-white pwdr.; m.p. 373-375°; d. 1.178 *air sensitive, moisture sensitive*	50g 250g
93-0308	**Lithium benzoate, 99+%** *(553-54-8)* $LiOOCC_6H_5$; FW: 128.06; white pwdr.	100g 500g
93-0397 HAZ	**Lithium borohydride, 95%** *(16949-15-8)* $LiBH_4$; FW: 21.78; white pwdr.; m.p. 279° dec.; d. 0.66 *moisture sensitive*	1g 5g 25g
93-0372	**Lithium bromide, anhydrous, 99+%** *(7550-35-8)* LiBr; FW: 86.85; white pwdr.; m.p. 550°; b.p. 1265°; d. 3.46 *hygroscopic*	250g 1kg
97-7223	**Lithium bromide (99.95%-Li) (0.2% H_2O)** *(7550-35-8)* LiBr; FW: 86.85; white pwdr.; m.p. 550°; b.p. 1265°; d. 3.46 *hygroscopic*	10g 50g 250g
93-0371	**Lithium bromide hydrate, 99%** *(13453-70-8)* $LiBr{\cdot}XH_2O$; FW: 86.85; white pwdr.	50g 250g
03-0780 HAZ	**Lithium t-butoxide, 98+%** *(1907-33-1)* $LiOC_4H_9$; FW: 80.06; off-white pwdr.; d. 0.89 *moisture sensitive*	25g 100g
93-0311	**Lithium carbonate, 99%** *(554-13-2)* Li_2CO_3; FW: 73.89; white pwdr.; m.p. 723°; b.p. 1310° dec.; d. 2.11	250g 1kg
93-0312	**Lithium carbonate (99.99%-Li) PURATREM** *(554-13-2)* Li_2CO_3; FW: 73.89; white pwdr.; m.p. 723°; b.p. 1310° dec.; d. 2.11	25g 100g
03-0800	**Lithium carbonate (99.999%-Li) PURATREM** *(554-13-2)* Li_2CO_3; FW: 73.89; white pwdr.; m.p. 723°; b.p. 1310° dec.; d. 2.11	25g 100g
93-0313	**Lithium chloride, 99% (ACS)** *(7447-41-8)* LiCl; FW: 42.39; white pwdr.; m.p. 614°; b.p. 1325-1360°; d. 2.068 *hygroscopic*	250g 1kg
03-0900	**Lithium chloride hydrate (99.996%-Li) PURATREM** *(16712-20-2)* $LiCl{\cdot}XH_2O$; FW: 42.39; white xtl.	10g 50g
93-0314 HAZ	**Lithium chromate, min. 95%** *(14307-35-8)* Li_2CrO_4; FW: 129.87; yellow xtl.	250g
93-0386	**Lithium cobalt(III) oxide, min. 98%** *(12190-79-3)* $LiCoO_2$; FW: 97.87; dark gray pwdr.	50g 250g
03-1000 HAZ	**Lithium cyclopentadienide, 97%** *(16733-97-4)* C_5H_5Li; FW: 72.04; off-white pwdr. *air sensitive, moisture sensitive*	5g 25g
93-0374 HAZ	**Lithium deuteride, 99+% isotopic purity** *(13587-16-1)* LiD; FW: 8.95; off-white pwdr.; m.p. ~680°; d. 0.820 *air sensitive, moisture sensitive*	1g 5g
93-0317 HAZ	**Lithium diethylamide, 95+%** *(816-43-3)* $LiN(C_2H_5)_2$; FW: 79.07; off-white to light-orange solid *moisture sensitive, pyrophoric*	5g 25g
93-0383	**Lithium dihydrogen phosphate, 97%** *(13453-80-0)* LiH_2PO_4; FW: 103.93; white pwdr.; d. 2.461	100g 500g
93-0318 HAZ	**Lithium dimethylamide, 95%** *(3585-33-9)* $LiN(CH_3)_2$; FW: 51.02; off-white pwdr.; m.p. dec. *moisture sensitive, pyrophoric*	5g 25g
03-1180	**Lithium dodecyl sulfate, min. 98%** *(2044-56-6)* *See* page 168	

LITHIUM (Compounds)

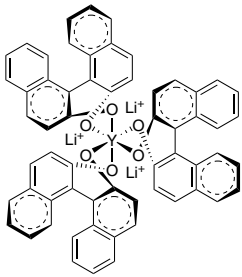
93-0341	**Lithium 2-ethylhexanoate, min. 98%** *(15590-62-2)* $LiOOCCH(C_2H_5)C_4H_9$; FW: 150.15; off-white pwdr.	5g 25g
93-0322 HAZ	**Lithium fluoride, 99+%** *(7789-24-4)* LiF; FW: 25.94; white pwdr.; m.p. 842°; b.p. 1672°; d. 2.635	250g 1kg
93-0321 HAZ	**Lithium fluoride, 99.9% (99.9+%-Li)** *(7789-24-4)* LiF; FW: 25.94; white xtl.; m.p. 842°; b.p. 1672°; d. 2.635	10g 50g 250g
93-0320 HAZ	**Lithium fluoride (99.9%-Li)** *(7789-24-4)* LiF; FW: 25.94; 3-6mm pieces; m.p. 842°; b.p. 1672°; d. 2.635	10g 50g
93-0323	**Lithium formate hydrate** *(6108-23-2)* $LiOOCH{\cdot}XH_2O$; FW: 51.95; white pwdr.	100g 500g
03-1200 HAZ	**Lithium hexafluoroantimonate, min. 97%** *(18424-17-4)* $LiSbF_6$; FW: 242.68; white to off-white pwdr. *hygroscopic*	5g 25g
03-1250	**Lithium hexafluoroarsenate(V) (99.9+%-As)** *(29935-35-1)* $LiAsF_6$; FW: 195.85; white pwdr. *hygroscopic*	5g 25g
93-0325 HAZ	**Lithium hexafluorophosphate, 99+%** *(21324-40-3)* $LiPF_6$; FW: 151.92; white to off-white pwdr. *hygroscopic*	5g 25g
03-0325 HAZ	**Lithium hexafluorophosphate (99.9+%-Li)** *(21324-40-3)* $LiPF_6$; FW: 151.92; white xtl. *hygroscopic*	10g 50g 250g
93-0327	**Lithium hexafluorostannate(IV), 99%** *(17029-16-2)* Li_2SnF_6; FW: 246.56; white pwdr.	5g 25g
93-0328 HAZ	**Lithium hydride, min. 95%** *(7580-67-8)* LiH; FW: 7.95; gray pwdr. *air sensitive, moisture sensitive*	50g 250g
93-0330 HAZ	**Lithium hydroxide, anhydrous, 95%** *(1310-65-2)* LiOH; FW: 23.95; white pwdr.; m.p. 450°; b.p. 925°; d. 1.46 *hygroscopic*	50g 250g
93-0329 HAZ	**Lithium hydroxide monohydrate, min. 98%** *(1310-66-3)* $LiOH{\cdot}H_2O$; FW: 23.95 (41.96); white pwdr. *hygroscopic*	500g 2kg
93-0382 amp	**Lithium iodide, anhydrous, min. 98%** *(10377-51-2)* LiI; FW: 133.84; white to off-white pwdr.; m.p. 450°; b.p. 1180°; d. 3.494 *hygroscopic*	25g 100g
93-0381	**Lithium iodide trihydrate, 99+%** *(7790-22-9)* $LiI{\cdot}3H_2O$; FW: 133.84 (187.89); colorless to yellow xtl.; d. 3.43 *hygroscopic*	50g 250g
93-0334	**Lithium metaborate, anhydrous, (99.9%-Li)** *(13453-69-5)* $LiBO_2$; FW: 49.75; white pwdr.; m.p. 845°; d. 1.4 *hygroscopic*	50g 250g
93-0370	**Lithium metaborate dihydrate** *(15293-74-0)* $LiBO_2{\cdot}2H_2O$; FW: 49.75 (85.78); white pwdr.; d. 1.8	100g 500g
93-0377	**Lithium metasilicate, 99%** *(10102-24-6)* Li_2SiO_3; FW: 89.94; white pwdr.; m.p. 1201°; d. 2.52	50g 250g
93-0335 HAZ	**Lithium methoxide, 10% in methanol** *(865-34-9)* $LiOCH_3$; FW: 37.97; colorless liq.; f.p. 52°F (methanol) *moisture sensitive*	100g 500g
93-0336 HAZ	**Lithium methoxide, min. 95%** *(865-34-9)* $LiOCH_3$; FW: 37.97; white pwdr.; m.p. 500° *moisture sensitive*	50g 250g
03-0784 HAZ	**Lithium 2-methyl-2-butoxide 3.1M (40wt% ±1wt%) in heptane** *(53535-81-2)* $[CH_3CH_2(CH_3)_2CO]_2Li$; FW: 94.08; liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.25mole
93-0337	**Lithium molybdate, 99%** *(13568-40-6)* Li_2MoO_4; FW: 173.82; white pwdr.; m.p. 705°; d. 2.66	100g 500g

LITHIUM (Compounds)

93-0338	**Lithium niobate (99.998%-Nb) PURATREM** *(12031-63-9)* $LiNbO_3$; FW: 147.85; white pwdr.	25g 100g
93-0339 HAZ	**Lithium nitrate, anhydrous, 99%** *(7790-69-4)* $LiNO_3$; FW: 68.94; white pwdr. *hygroscopic*	250g 1kg
93-0340 HAZ	**Lithium nitride (99.5%-Li)** *(26134-62-3)* Li_3N; FW: 34.82; -60 mesh reddish-brown pwdr.; m.p. 845°; d. 1.38 *moisture sensitive*	5g 25g
93-0349	**Lithium orthophosphate, 98%** *(10377-52-3)* Li_3PO_4; FW: 115.79; white pwdr.; m.p. 1205°; d. 2.54	100g 500g
03-0343 HAZ	**Lithium oxide, min. 95% (99.5%-Li)** *(12057-24-8)* Li_2O; FW: 29.88; white pwdr.; m.p. 1427°; d. 2.013 *moisture sensitive*	25g 100g
03-1150 amp HAZ	**Lithium pentamethylcyclopentadienide, min. 98%** *(51905-34-1)* $LiC_{10}H_{15}$; FW: 142.17; white to off-white pwdr. *air sensitive, moisture sensitive*	1g 5g 25g
93-0345 HAZ	**Lithium perchlorate, anhydrous, 95+% (ACS)** *(7791-03-9)* $LiClO_4$; FW: 106.39; white pwdr.; m.p. 235°; b.p. 430°; d. 2.428 *hygroscopic*	50g 250g
93-0344 HAZ	**Lithium perchlorate trihydrate, 98%** *(13453-78-6)* $LiClO_4 \cdot 3H_2O$; FW: 106.39 (160.45); white pwdr.; d. 1.841 *hygroscopic*	100g 500g
93-0353	**Lithium stearate, min. 95%** *(4485-12-5)* $LiC_{18}H_{35}O_2$; FW: 290.41; white pwdr.	250g 1kg
93-0378 HAZ	**Lithium sulfide, 98% (99.9%-Li)** *(12136-58-2)* Li_2S; FW: 45.95; off-white pwdr.; m.p. > 900°; d. 1.66 *moisture sensitive*	5g 25g
93-0384	**Lithium tantalate (99.998%-Ta) PURATREM** *(12031-66-2)* $LiTaO_3$; FW: 235.89; white pwdr.	2g 10g
93-0355	**Lithium tetraborate, 99%** *(12007-60-2)* $Li_2B_4O_7$; FW: 169.12; white pwdr.; m.p. 917°	100g 500g
93-0365	**Lithium tetraborate (99.998%-Li) PURATREM** *(12007-60-2)* $Li_2B_4O_7$; FW: 169.12; white pwdr.; m.p. 917°	10g 50g
03-4500 HAZ	**Lithium tetrachlorocuprate, 0.1M in THF** *(15489-27-7)* Li_2CuCl_4; FW: 219.24; orange liq.; b.p. 66° (THF) *moisture sensitive*	100ml 500ml
93-0356 HAZ	**Lithium tetrafluoroborate, 98%** *(14283-07-9)* $LiBF_4$; FW: 93.75; white pwdr.; m.p. dec. *hygroscopic*	10g 50g
03-4750 HAZ	**Lithium tetramethylcyclopentadienide, min. 95%** *(82061-21-0)* LiC_9H_{13}; FW: 128.15; off-white to yellow pwdr. *moisture sensitive*	1g 5g 25g
93-0572 HAZ	**Lithium tetraphenylborate tris(1,2-dimethoxyethane)adduct, 98%** *(75965-35-4)* $LiB(C_6H_5)_4 \cdot 3CH_3OCH_2CH_2OCH_3$; FW: 326.18 (596.54); white to off-white pwdr. *moisture sensitive*	1g 5g
03-4850 HAZ	**Lithium tri-t-butoxyaluminohydride, ~1.0M in THF** *(17476-04-9)* $LiAl[OC(CH_3)_3]_3H$; FW: 254.27; liq.; m.p. -108° (THF); b.p. 66° (THF) *air sensitive, moisture sensitive*	0.1mole 0.5mole
03-5000	**Lithium trifluoroacetate monohydrate, min. 97%** *(2923-17-3)* $LiOOCCF_3 \cdot H_2O$; FW: 119.96 (137.97); white pwdr. *hygroscopic*	25g 100g
03-2000	**Lithium trifluoromethanesulfonate, 99% (Lithium triflate)** *(33454-82-9)* $LiCF_3SO_3$; FW: 156.01; white pwdr. *hygroscopic*	10g 50g

LITHIUM (Compounds)

03-2010 **Lithium tris(S-(-)-1,1'-binaphthyl-2,2'-diolato) yttrate(III) tetrahydrofuran adduct, min. 97%** *(500995-67-5)* — 250mg, 1g
$3Li^+[(C_{20}H_{12}O_2)_3Y]^{3-}\cdot XC_4H_8O$; FW: 962.65; white pwdr.
hygroscopic
For detailed technical note visit strem.com.



93-0357 **Lithium tungstate, 98%** *(13568-45-1)* — 50g, 250g
Li_2WO_4; FW: 261.73; white to off-white pwdr.; m.p. 742°; d. 3.71

93-0358 HAZ **Methyllithium, complexed with lithium bromide in ethyl ether (1.5M)** *(917-54-4)* — 0.25mole, 1mole
$CH_3Li\cdot LiBr$; FW: 21.98 (108.82); colorless solution
moisture sensitive, pyrophoric, (store cold)
Note: Free rubber septum included.

03-5001 **2,2,6,6-Tetramethyl-3,5-heptanedionato lithium, 98+% [Li(TMHD)]** *(22441-13-0)* — 1g, 5g, 25g
$LiC_{11}H_{19}O_2$; FW: 190.24; white pwdr.; m.p. 265-268°; b.p. dec. 295°

LUTETIUM (Elemental Forms)

71-0050 **Lutetium foil (99.9% REO)** *(7439-94-3)* — 25 x 25mm, 50 x 50mm
Lu; FW: 174.97; 0.5mm thick (~3.1g/25 x 25mm); m.p. 1652°; b.p. 3327°; d. 9.842
air sensitive

71-0055 **Lutetium foil (99.9% REO)** *(7439-94-3)* — 25 x 25mm, 50 x 50mm
Lu; FW: 174.97; 0.1mm thick (~0.62g/25 x25mm); m.p. 1652°; b.p. 3327°; d. 9.842
air sensitive

71-0100 **Lutetium ingot (99.9% REO)** *(7439-94-3)* — 1g, 5g
Lu; FW: 174.97; ingot; m.p. 1652°; b.p. 3327°; d. 9.842
air sensitive
For detailed technical note visit strem.com.

71-0075 HAZ **Lutetium powder (99.9% REO)** *(7439-94-3)* — 1g
Lu; FW: 174.97; -40 mesh; m.p. 1652°; b.p. 3327°; d. 9.842
air sensitive

LUTETIUM (Compounds)

93-7110 **Lutetium(III) acetate hydrate (99.9%-Lu) (REO)** *(18779-08-3)* — 1g, 5g
$Lu(OOCCH_3)_3\cdot XH_2O$; FW: 352.11; white xtl.

93-7101 **Lutetium(III) chloride, anhydrous (99.9%-Lu) (REO)** *(10099-66-8)* — 1g, 5g
$LuCl_3$; FW: 281.33; white pwdr.; m.p. 905°; d. 3.98
hygroscopic

93-7111 **Lutetium(III) chloride hexahydrate (99.9%-Lu) (REO)** *(15230-79-2)* — 1g, 5g
$LuCl_3\cdot 6H_2O$; FW: 281.33 (389.42); white xtl.

93-7113 HAZ **Lutetium(III) nitrate hydrate (99.9%-Lu) (REO)** *(10099-67-9)* — 1g, 5g
$Lu(NO_3)_3\cdot XH_2O$; FW: 360.98; white xtl.

93-7102 **Lutetium(III) oxide (99.9%-Lu) (REO)** *(12032-20-1)* — 1g, 5g
Lu_2O_3; FW: 397.94; white pwdr.; m.p. 2487°; d. 9.41

93-7115 **Lutetium(III) oxide (99.999%-Lu) (REO) PURATREM** *(12032-20-1)* — 1g, 5g
Lu_2O_3; FW: 397.94; white pwdr.; m.p. 2487°; d. 9.41

93-7118 HAZ **Lutetium(III) perchlorate, 50% aqueous solution (99.9%-Lu) (REO)** *(14646-29-8)* — 2g, 10g
$Lu(ClO_4)_3$; FW: 473.32; colorless liq.

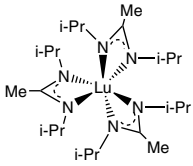
93-7116 **Lutetium(III) sulfate hydrate (99.9%-Lu) (REO)** *(13473-77-3)* — 1g, 5g
$Lu_2(SO_4)_3\cdot XH_2O$; FW: 638.12; white xtl.

71-1000 **Lutetium(III) trifluoromethanesulfonate, min. 98% (Lutetium triflate)** *(126857-69-0)* — 500mg, 2g
$Lu(CF_3SO_3)_3$; FW: 622.18; white pwdr.
hygroscopic

LUTETIUM (Compounds)

71-1050
amp

Tris(N,N'-di-i-propylacetamidinato)lutetium(III), 99%
$Lu(C_8H_{17}N_2)_3$; FW: 598.67; white to off-white pwdr.
air sensitive, moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2.



250mg
1g
5g

71-1080
NEW

Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)lutetium(III), 99% (99.9+%-Lu) (REO) [Lu(TMHD)$_3$] *(15492-45-2)*
$Lu(C_{11}H_{19}O_2)_3$; FW: 724.76; off-white xtl.

1g
5g
25g

MAGNESIUM (Elemental Forms)

93-1299
HAZ

Magnesium chips (99+%) *(7439-95-4)*
Mg; FW: 24.32; -4 + 18 mesh; m.p. 657°; b.p. 1107°; d. 1.74

50g
250g
1kg

93-1298
HAZ

Magnesium powder (99%) *(7439-95-4)*
Mg; FW: 24.32; -325 mesh; m.p. 657°; b.p. 1107°; d. 1.74
Note: For sale in USA. For other countries contact Strem.

100g
500g

93-1289
HAZ

Magnesium powder (99.8%) *(7439-95-4)*
Mg; FW: 24.32; -50 mesh; m.p. 657°; b.p. 1107°; d. 1.74

250g
1kg

93-1295
HAZ

Magnesium rod (99.8%) *(7439-95-4)*
Mg; FW: 24.32; ~454g/rod; 33 mm dia. x 305 mm long; m.p. 657°; b.p. 1107°; d. 1.74

1rod
5rods

93-1286
HAZ

Magnesium turnings for Grignards (99.8%) *(7439-95-4)*
Mg; FW: 24.32; turnings; m.p. 657°; b.p. 1107°; d. 1.74

100g
500g

MAGNESIUM (Compounds)

93-1201
HAZ

Allylmagnesium bromide, 0.95-1.1 M in ether *(1730-25-2)*
$CH_2{=}CHCH_2MgBr$; FW: 145.28; liq.
air sensitive, moisture sensitive
Note: Free rubber septum included.

0.25mole

93-1202
HAZ

Benzylmagnesium chloride, 1-2 M in THF *(6921-34-2)*
$C_6H_5CH_2MgCl$; FW: 150.89; liq.; f.p. 1°F (THF)
air sensitive, moisture sensitive
Note: Free rubber septum included.

0.25mole
1mole

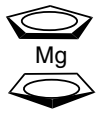
12-0500
amp
HAZ

Bis(cyclopentadienyl)magnesium (99.9+%-Mg) *(1284-72-6)*
$(C_5H_5)_2Mg$; FW: 154.49; white to light-pink xtl.; m.p. 176°; b.p. 290° (subl. 160°/0.1mm)
air sensitive, moisture sensitive

1g
5g
25g

97-1040
amp
HAZ

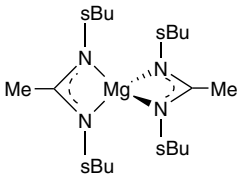
Bis(cyclopentadienyl)magnesium (99.99+%-Mg) PURATREM *(1284-72-6)*
$(C_5H_5)_2Mg$; FW: 154.49; white to light pink xtl.; m.p. 176°; b.p. 290° (subl. 160°/0.1mm)
air sensitive, moisture sensitive



1g
5g
25g

12-0845
NEW

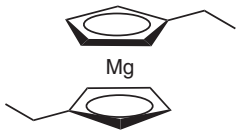
Bis(N,N'-di-sec-butylacetamidinato)magnesium, 99%
$C_{20}H_{42}MgN_4$; FW: 362.88; colorless to pale yellow liq.
moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2



1g
5g

12-0510
amp
HAZ

Bis(ethylcyclopentadienyl)magnesium, min. 98% *(114460-02-5)*
$(C_2H_5C_5H_4)_2Mg$; FW: 210.60; colorless to pale yellow liq.
air sensitive, moisture sensitive
Note: Available prepacked in ALD cylinder- see 98-4006, 98-4010.
For detailed technical note visit strem.com.



1g
5g
25g

MAGNESIUM (Compounds)

98-4006 HAZ	**Bis(ethylcyclopentadienyl)magnesium, min. 98%, 12-0510, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(114460-02-5)* $(C_2H_5C_5H_4)_2Mg$; FW: 210.60; colorless to pale yellow liq. *air sensitive, moisture sensitive* Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4010. **For detailed technical note visit strem.com.**	10g
98-4010 HAZ	**Bis(ethylcyclopentadienyl)magnesium, min. 98%, 12-0510, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD** *(114460-02-5)* $(C_2H_5C_5H_4)_2Mg$; FW: 210.60; colorless to pale yellow liq. *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	10g 25g
12-1045 amp HAZ	**Bis(pentamethylcyclopentadienyl)magnesium, min. 98%** *(74507-64-5)* $[(CH_3)_5C_5]_2Mg$; white to yellow xtl. *air sensitive, moisture sensitive*	500mg 2g
97-1045 amp HAZ	**Bis(pentamethylcyclopentadienyl)magnesium, elec. gr. (99.999%-Mg) PURA-TREM** *(74507-64-5)* $[(CH_3)_5C_5]_2Mg$; FW: 294.77; white to yellow xtl. *air sensitive, moisture sensitive*	1g 5g 25g
12-0550 amp HAZ	**Bis(n-propylcyclopentadienyl)magnesium, min. 98%** *(114504-74-4)* $(C_3H_7C_5H_4)_2Mg$; FW: 238.66; colorless to pale yellow liq.; d. 0.94 *air sensitive, moisture sensitive*	1g 5g
12-0900	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)magnesium, anhydrous, min. 98% [Mg(TMHD)$_2$]** *(21361-35-3)* $Mg(C_{11}H_{19}O_2)_2$; FW: 390.85; white pwdr. *hygroscopic* Note: Available prepacked in ALD cylinder- see 98-4069.	1g 5g
98-4069	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)magnesium, anhydrous, min. 98% [Mg(TMHD)2] , 12-0900, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD** *(21361-35-3)* $Mg(C_{11}H_{19}O_2)_2$; FW: 390.85; white pwdr. *hygroscopic*	15g
12-1000	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)magnesium dihydrate, min. 98% [Mg(TMHD)$_2$]** *(625832-70-4)* $Mg(C_{11}H_{19}O_2)_2 \cdot 2H_2O$; FW: 390.85 (426.88); white pwdr.; m.p. 135-150°(-H_2O); b.p. dec. 290° (subl. 150°/0.05mm)	1g 5g 25g
93-1204 HAZ	**n-Butylmagnesium chloride, 1.5-3.0 M in THF** *(693-04-9)* C_4H_9MgCl; FW: 116.87; liq.; f.p. 1°F (THF) *air sensitive, moisture sensitive* Note: Free rubber septum included.	0.25mole 1mole
12-0803 HAZ	**sec-Butylmagnesium chloride, lithium chloride complex 1.2M (15wt% ±1wt%) in tetrahydrofuran** *(15366-08-2)* $CH_3CH_2CH(CH_3)MgCl \cdot LiCl$; FW: 159.26; dark brown liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.25mole 1mole
93-1212 HAZ	**Ethylmagnesium bromide, 3M in ether** *(925-90-6)* C_2H_5MgBr; FW: 133.28; liq. *air sensitive, moisture sensitive* Note: Free rubber septum included.	0.25mole 1mole
12-0810 HAZ	**Ethylmagnesium bromide, 3.4M (40wt% ±1wt%) in 2-methyltetrahydrofuran** *(925-90-6)* C_2H_5BrMg; FW: 133.28; dark brown liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.25mole 1mole
12-0800 HAZ	**Ethylmagnesium chloride, 2M in ether** *(2386-64-3)* C_2H_5MgCl; FW: 88.83; liq. *air sensitive, moisture sensitive* Note: Free rubber septum included.	0.2mole 1mole
93-1216	**Magnesium acetate tetrahydrate, 99%** *(16674-78-5)* $Mg(OOCCH_3)_2 \cdot 4H_2O$; FW: 142.40 (214.46); white xtl.; m.p. 80°; d. 1.454	250g 1kg

MAGNESIUM (Compounds)

93-1280	**Magnesium acetylacetonate, anhydrous, 98%** *(14024-56-7)* $Mg(CH_3C(O)CHC(O)CH_3)_2$; FW: 222.53; white pwdr.; m.p. dec.	25g 100g
12-1100 HAZ	**Magnesium aluminum i-propoxide (99.99%-Mg) PURATREM** *(69207-83-6)* $MgAl_2(OC_3H_7)_8$; FW: 550.97; white xtl.; m.p. 40°; b.p. 110°/5 mm *moisture sensitive*	10g 50g
12-0801 HAZ	**Magnesium bis(di-i-propylamide) 0.7M (18wt% ±2wt%) in tetrahydrofuran** *(23293-23-4)* $\{[(CH_3)_2CH]_2N\}_2Mg$; FW: 224.67; liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.05mole 0.25mole
12-1200	**Magnesium bis(trifluoromethylsulfonyl)imide, min. 97%** *(133395-16-1)* $Mg[(CF_3SO_2)_2N]_2$; FW: 584.60; white pwdr. *moisture sensitive* **For detailed technical note visit strem.com.**	1g 5g
93-1218	**Magnesium bromide, anhydrous, 98%** *(7789-48-2)* $MgBr_2$; FW: 184.13; off-white pwdr.; m.p. 700°; d. 3.72 *hygroscopic*	10g 50g
93-1219	**Magnesium bromide hexahydrate, 98+%** *(13446-53-2)* $MgBr_2 \cdot 6H_2O$; FW: 184.13 (292.22); white xtl.; m.p. 172°; d. 2.00	250g 1kg
93-1220	**Magnesium carbonate, basic pentahydrate, 99%** *(39409-82-0)* $(MgCO_3)_4 \cdot Mg(OH)_2 \cdot 5H_2O$; FW: 413.63 (485.69); white pwdr.	100g 500g
93-1221	**Magnesium chloride, 97.5% (H_2O - 2% max.)** *(7786-30-3)* $MgCl_2$; FW: 95.22; off-white pwdr.; m.p. 714°; b.p. 1412°; d. 2.32 *hygroscopic*	250g 1kg
12-1250 HAZ	**Magnesium ethoxide, 98%** *(2414-98-4)* $Mg(OC_2H_5)_2$; FW: 114.44; white granular solid; m.p. dec. *moisture sensitive* Note: Sold in collaboration with Evonik for research purposes only.	100g 500g
12-1260 HAZ	**Magnesium 2-ethylhexanoate, 30-40% solution in toluene** *(15602-15-0)* $Mg[OOCCH(C_2H_5)C_4H_9]_2$; FW: 310.72; viscous, amber liq.	50g 250g
93-1225	**Magnesium fluoride, 99%** *(7783-40-6)* MgF_2; FW: 62.32; white pwdr.; m.p. 1248°; b.p. 2239°; d. 3.0	500g 2kg
93-1226	**Magnesium fluoride (99.99+%-Mg) PURATREM** *(7783-40-6)* MgF_2; FW: 62.32; 1-4mm white pieces; m.p. 1248°; b.p. 2239°; d. 3.0	25g 100g
93-1227	**Magnesium hexafluoroacetylacetonate dihydrate, min. 97%** *(120156-45-8)* $Mg(CF_3C(O)CHC(O)CF_3)_2 \cdot 2H_2O$; FW: 438.41 (474.44); white pwdr.	1g 5g
93-1252 HAZ	**Magnesium hexafluorosilicate hexahydrate, 98%** *(18972-56-0)* $MgSiF_6 \cdot 6H_2O$; FW: 166.39 (274.48); white pwdr.; d. 1.788	250g 1kg
93-1229	**Magnesium hydroxide, 95%** *(1309-42-8)* $Mg(OH)_2$; FW: 58.33; white pwdr.; d. 2.36	500g 2kg
93-1235	**Magnesium molybdate (99.9%-Mo)** *(13767-03-8)* $MgMoO_4$; FW: 184.25; white pwdr.; d. 2.208	10g 50g
93-1236	**Magnesium naphthenate (3.5-8.0% Mg)** *(68424-71-5)* dark viscous liq.	100g 500g
93-1238 HAZ	**Magnesium nitrate hexahydrate, 99% (ACS)** *(13446-18-9)* $Mg(NO_3)_2 \cdot 6H_2O$; FW: 148.32 (256.41); white xtl.; m.p. 89°; d. 1.64 *hygroscopic*	250g 1kg
93-1237 HAZ	**Magnesium nitrate hexahydrate (99.999%-Mg) PURATREM** *(13446-18-9)* $Mg(NO_3)_2 \cdot 6H_2O$; FW: 148.32 (256.41); white xtl.; m.p. 89°; d. 1.64 *hygroscopic*	25g 100g
12-2025	**Magnesium oxide (99.99+%-Mg) PURATREM** *(1309-48-4)* MgO; FW: 40.31; white pwdr.; m.p. 2800°; b.p. 3600°; d. 3.58	5g 25g
93-1244	**Magnesium oxide, -325 mesh, 98%** *(1309-48-4)* MgO; FW: 40.31; white pwdr.; m.p. 2800°; b.p. 3600°; d. 3.58	1kg
93-1243	**Magnesium oxide, -325 mesh (99.5%-Mg)** *(1309-48-4)* MgO; FW: 40.31; white pwdr.; m.p. 2800°; b.p. 3600°; d. 3.58	100g 500g
93-1241	**Magnesium oxide, -325 mesh (99.95%-Mg)** *(1309-48-4)* MgO; FW: 40.31; white pwdr.; m.p. 2800°; b.p. 3600°; d. 3.58	25g 100g

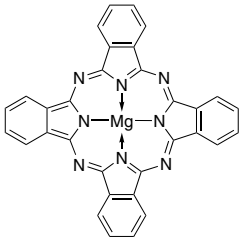
MAGNESIUM (Compounds)

12-1405 **Magnesium oxide nanopowder** *(1309-48-4)*
See page 161

93-1246 HAZ
Magnesium perchlorate, reagent (99.9%-Mg) *(10034-81-8)* — 50g, 250g
$Mg(ClO_4)_2$; FW: 223.21; white pwdr.; m.p. 251° dec.; d. 2.21
hygroscopic

93-1248 HAZ
Magnesium perchlorate hexahydrate, 99% *(13446-19-0)* — 100g, 500g
$Mg(ClO_4)\cdot 6H_2O$; FW: 223.21 (331.33); white xtl.; m.p. 185-190°; d. 1.98
hygroscopic

93-1250 — 5g
Magnesium phthalocyanine, min. 90%
(1661-03-6)
$(C_{32}H_{16}N_8)Mg$; FW: 536.83; purple pwdr.



93-1293 HAZ
Magnesium silicide (99.5%-Mg) (C < 1%) *(22831-39-6)* — 10g, 50g
Mg_2Si; FW: 76.71; -20 mesh gray pwdr.; m.p. 1102°; d. 1.94
moisture sensitive

93-1255
Magnesium sulfate, anhydrous, 99+% *(7487-88-9)* — 250g, 1kg
$MgSO_4$; FW: 120.39; white pwdr.; m.p. 1124° dec.; d. 2.66
hygroscopic

93-1256
Magnesium sulfate heptahydrate, 98+% (ACS) *(10034-99-8)* — 250g, 1kg
$MgSO_4\cdot 7H_2O$; FW: 120.39 (246.48); white xtl.; d. 1.68

12-1212
Magnesium (N,N,N',N'-tetramethylethylenediamine)bis[BREW] (99.99+%-Mg) — 1g
PURATREM — 5g
$Mg(C_6H_{16}N_2)[C_xHyC(O)CHC(O)C_xHy]_2$ (x=3-4, y=2x+1); pale yellow liq.
moisture sensitive
Note: ***Limited quantities available. Will discontinue when stock gone***

Technical Note:
1. See 56-5656 (page 11)

12-2000
Magnesium meso-tetraphenylporphine hydrate *(14640-21-2)* — 1g, 5g
$(C_{44}H_{28}N_4)Mg\cdot XH_2O$; FW: 637.04; purple xtl.

93-1258
Magnesium titanate, tech. gr., (~85%) *(12032-30-3)* — 100g, 500g
$MgTiO_3$; FW: 120.21; white pwdr.; m.p. 1610°; d. 3.36

93-1259
Magnesium trifluoroacetylacetonate dihydrate, min. 98% *(53633-79-7)* — 5g, 25g
$Mg(CF_3COCHCOCH_3)_2\cdot 2H_2O$; FW: 330.47 (366.50); white pwdr.

12-4000
Magnesium trifluoromethanesulfonate, min. 98% (Magnesium triflate) — 5g, 25g
(60871-83-2)
$Mg(SO_3CF_3)_2$; FW: 322.45; white pwdr.
hygroscopic

93-1261
Magnesium tungstate (99.9%-W) *(13573-11-0)* — 10g, 50g
$MgWO_4$; FW: 272.16; -325 mesh white pwdr.

93-1265 HAZ
Methylmagnesium bromide, 3M in ether *(75-16-1)* — 0.25mole, 1mole
CH_3MgBr; FW: 119.26; liq.
air sensitive, moisture sensitive
Note: Free rubber septum included.

12-0815 HAZ
Methylmagnesium bromide, 3.2M (35wt% ±1wt%) in 2-methyltetrahydrofuran — 0.25mole, 1mole
(75-16-1)
CH_3MgBr; FW: 119.26; brown liq.
air sensitive, moisture sensitive
Note: A product of Rockwood Lithium. Sold for R&D purposes only.

93-1266 HAZ
Methylmagnesium chloride, 3M in THF *(676-58-4)* — 0.25mole, 1mole
CH_3MgCl; FW: 74.81; liq.; f.p. 1°F (THF)
air sensitive, moisture sensitive
Note: Free rubber septum included.

MAGNESIUM (Compounds)

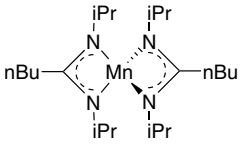
12-0820 HAZ	**Phenylmagnesium bromide, 2.9M (45wt% ±1wt%) in 2-methyltetrahydrofuran** *(100-58-3)* C_6H_5BrMg; FW: 136.88; liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.25mole 1mole
93-1268 HAZ	**Phenylmagnesium bromide, 3M in ether** *(100-58-3)* C_6H_5MgBr; FW: 181.34; liq. *air sensitive, moisture sensitive* Note: Free rubber septum included.	0.25mole 1mole
93-1269 HAZ	**Phenylmagnesium chloride, 2-3M in THF** *(100-59-4)* C_6H_5MgCl; FW: 136.88; liq.; f.p. 1°F (THF) *air sensitive, moisture sensitive* Note: Free rubber septum included.	0.25mole 1mole
12-0825 HAZ	**i-Propylmagnesium bromide, 2.9M (35wt% ±1wt%) in 2-methyltetrahydrofuran** *(920-39-8)* $(CH_3)_2CHMgBr$; FW: 147.30; liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.25mole 1mole
93-1271 HAZ	**i-Propylmagnesium chloride, 2-3M in ether** *(1068-55-9)* $(CH_3)_2CHMgCl$; FW: 102.85; liq. *air sensitive, moisture sensitive* Note: Free rubber septum included.	0.25mole 1mole
12-0827 HAZ	**i-Propylmagnesium chloride, lithium chloride complex 1.3M (14wt% ±1wt%) in tetrahydrofuran** *(745038-86-2)* $(CH_3)_2CHMgCl{\cdot}LiCl$; FW: 145.24; yellow-brown liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.25mole 1mole
12-0832 HAZ	**2,2,6,6-Tetramethylpiperidinylmagnesium chloride, lithium chloride complex 1.0M (18wt% ±2wt%) in toluene/tetrahydrofura** *(215863-85-7)* $C_9H_{18}NMg(LiCl)$; FW: 200.00 (242.40); brown liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	0.05mole 0.25mole

MANGANESE (Elemental Forms)

25-0050 HAZ	**Manganese chips (99.9%)** *(7439-96-5)* Mn; FW: 54.93; brown, irregular pieces; m.p. 1260°; b.p. 1900°; d. 7.20	500g 2kg
25-0100 HAZ	**Manganese powder (99+%)** *(7439-96-5)* Mn; FW: 54.93; 20-50 mesh; m.p. 1260°; b.p. 1900°; d. 7.20	100g 500g
93-2543 HAZ	**Manganese powder (99.5%)** *(7439-96-5)* Mn; FW: 54.93; -325 mesh; m.p. 1260°; b.p. 1900°; d. 7.20	250g 1kg

MANGANESE (Compounds)

98-4060 HAZ	**Bis(cyclopentadienyl)manganese, 98+%, 25-0200, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(73138-26-8)* $(C_5H_5)_2Mn$; FW: 185.13; brown xtl.; m.p. 172-173° *air sensitive, moisture sensitive*	10g 25g
25-0200 amp HAZ	**Bis(cyclopentadienyl)manganese, 98+% (Manganocene)** *(73138-26-8)* $(C_5H_5)_2Mn$; FW: 185.13; brown xtl.; m.p. 172-173° *air sensitive, moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4060.	1g 5g 25g
25-0230 amp	**Bis(N,N'-di-i-propylpentylamidinato) manganese(II), min. 98%** *(1188406-04-3)* $C_{22}H_{46}MnN_4$; FW: 421.57; brown solid *air sensitive, moisture sensitive* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2. **For detailed technical note visit strem.com.**	250mg 1g 5g



MANGANESE (Compounds)

25-0210 amp HAZ
Bis(ethylcyclopentadienyl)manganese, min. 98% *(101923-26-6)* — 1g, 5g, 25g
$[(C_2H_5)C_5H_4]_2Mn$; FW: 241.23; dark red liq.
air sensitive, moisture sensitive
Note: Available prepacked in ALD cylinder- see 98-4065.

98-4065 HAZ
Bis(ethylcyclopentadienyl)manganese, min. 98%, 25-0210, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(101923-26-6)* — 10g, 25g
$[(C_2H_5)C_5H_4]_2Mn$; FW: 241.23; dark red liq.
air sensitive, moisture sensitive

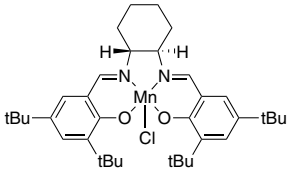
25-0235 amp
Bis(pentamethylcyclopentadienyl)manganese, min. 98% (Decamethylmanganocene) *(67506-86-9)* — 1g, 5g
$[(CH_3)_5C_5]_2Mn$; FW: 325.38; orange xtl.; m.p. 292°
air sensitive, moisture sensitive

25-0245 amp HAZ
Bis(i-propylcyclopentadienyl)manganese, min. 98% *(85594-02-1)* — 1g, 5g
$[(C_3H_7)C_5H_4]_2Mn$; FW: 269.28; dark red liq.
air sensitive, moisture sensitive

25-0265 amp HAZ
Bis(tetramethylcyclopentadienyl)manganese, min. 98% *(101932-75-6)* — 1g, 5g
$[(CH_3)_4C_5H]_2Mn$; FW: 297.33; red xtl.
air sensitive, moisture sensitive

25-2900
Carulite® Catalyst *(185036-38-8)* — 250g, 1kg
MnO_2/CuO; FW: 86.94/79.54; brown to black gran.; SA: 205m²/g
hygroscopic

25-0300
(1R,2R)-(-)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]manganese(III) chloride, 98% (R,R)-Jacobsen Cat. *(138124-32-0)* — 1g, 5g
$C_{36}H_{52}ClMnN_2O_2$; FW: 635.22; brown pwdr.; m.p. 324-326°
For detailed technical note visit strem.com.



25-0301
(1S,2S)-(+)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]manganese(III) chloride, 98% (S,S)-Jacobsen Cat. *(135620-04-1)* — 1g, 5g
$C_{36}H_{52}ClMnN_2O_2$; FW: 635.22; brown pwdr.; m.p. 325-326°

Technical Note:
1. See 25-0300 (page 125)

25-0390 HAZ
Cyclopentadienylmanganese tricarbonyl, 98% Cymantrene *(12079-65-1)* — 1g, 5g, 25g
$C_5H_5Mn(CO)_3$; FW: 204.06; yellow xtl.; m.p. 77°
air sensitive

93-2502
Manganese(II) acetate tetrahydrate, 99+% *(6156-78-1)* — 250g, 1kg
$Mn(OOCCH_3)_2 \cdot 4H_2O$; FW: 173.02 (245.08); pink pwdr.; d. 1.589

25-0760
Manganese(II) acetate tetrahydrate (99.999%-Mn) PURATREM *(6156-78-1)* — 5g, 25g
$Mn(CH_3COO)_2 \cdot 4H_2O$; FW: 173.02 (245.08); pale pink xtl.; d. 1.589

25-0750
Manganese(III) acetate dihydrate, 98% *(19513-05-4)* — 5g, 25g
$Mn(OOCCH_3)_3 \cdot 2H_2O$; FW: 232.08 (268.10); brown xtl.

93-2503
Manganese(II) acetylacetonate, 95% *(14024-58-9)* — 50g, 250g
$Mn(CH_3C(O)CHC(O)CH_3)_2$; FW: 253.14; tan pwdr.; m.p. > 180°
hygroscopic

25-1000
Manganese(III) acetylacetonate, min. 90% *(14284-89-0)* — 25g, 100g
$Mn(CH_3C(O)CHC(O)CH_3)_3$; FW: 352.27; black xtl.; m.p. 172°
hygroscopic

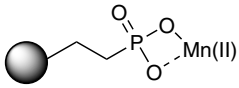
93-2506
Manganese(II) bromide, anhydrous, min. 97% (99.9%-Mn) *(13446-03-2)* — 10g, 50g
$MnBr_2$; FW: 214.76; pink pwdr.; m.p. dec.; d. 4.385
hygroscopic

25-1250 NEW
Manganese(II) bromide, bis(tetrahydrofuran), min. 98% *(57298-42-7)* — 1g, 5g, 25g
$MnBr_2(C_4H_8O)_2$; FW: 358.96; light pink-orange pwdr.
moisture sensitive

93-2507
Manganese(II) bromide tetrahydrate, 98% *(10031-20-6)* — 25g, 100g
$MnBr_2 \cdot 4H_2O$; FW: 214.76 (286.82); pink xtl.; m.p. 64.3° dec.
hygroscopic

93-2533
Manganese(II) carbonate, min. 90% *(598-62-9)* — 100g, 500g
$MnCO_3$; FW: 114.95; light brown pwdr.; m.p. 350° dec.; d. 3.125

MANGANESE (Compounds)

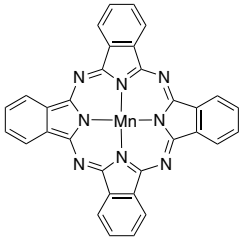
25-1330	**Manganese carbonyl, 98%** *(10170-69-1)* $Mn_2(CO)_{10}$; FW: 389.99; yellow xtl.; m.p. 152-155° *air sensitive, (store cold)*	2g 10g 50g
93-2527	**Manganese(II) chloride, anhydrous, 97%** *(7773-01-5)* $MnCl_2$; FW: 125.84; pink flakes; m.p. 650°; b.p. 1190°; d. 2.98 *hygroscopic*	500g 2kg
25-1345 NEW	**Manganese(II) chloride anhydrous (99.995%-Mn) PURATREM** *(7773-01-5)* $MnCl_2$; FW: 125.84; pink solid; m.p. 650°; b.p. 1190°; d. 2.98 *hygroscopic*	5g 25g 100g
93-2534	**Manganese(II) chloride tetrahydrate, 98+% (ACS)** *(13446-34-9)* $MnCl_2{\cdot}4H_2O$; FW: 125.84 (197.91); rose xtl.; m.p. 58°; d. 2.01 *hygroscopic*	250g 1kg
25-1355	**Manganese(II) chloride tetrahydrate (99.995%-Mn) PURATREM** *(13446-34-9)* $MnCl_2{\cdot}4H_2O$; FW: 125.84 (197.91); rose xtl.; m.p. 58°; d. 2.01	5g 25g
93-2508	**Manganese(II) cyclohexanebutyrate** *(35542-88-2)* $Mn[OOC(CH_2)_3C_6H_{11}]_2$; FW: 393.43; off-white pwdr.	1g 5g
25-1200	**Manganese(II) ethyl/butyl phosphonate Silica (PhosphonicS POMn)** white solid; SA: >350 m²/g Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metal Oxidation Catalyst Kit component. 	5g 25g

Particle size range: 70-200 microns
Average pore size: 60Å
Effective loadings: 0.3 to 0.5 mmol/g

93-2532 HAZ	**Manganese(II) 2-ethylhexanoate, 40% solution in mineral spirits (6% Mn)** *(13434-24-7)* $Mn[OOCCH(C_2H_5)C_4H_9]_2$; FW: 341.35; dark liq.	250g 1kg
93-2509	**Manganese(II) fluoride, 99%** *(7782-64-1)* MnF_2; FW: 92.93; light brown pwdr.; m.p. 856°; d. 3.98 *hygroscopic*	5g 25g
93-2542	**Manganese(III) fluoride, 98%** *(7783-53-1)* MnF_3; FW: 111.93; red pwdr.; m.p. dec.; d. 3.54 *hygroscopic*	5g 25g
93-2512	**Manganese(II) iodide, anhydrous, 98+%** *(7790-33-2)* MnI_2; FW: 308.75; reddish-brown pwdr. *hygroscopic*	10g 50g
93-2514	**Manganese(II) molybdate (99.9%-Mo)** *(14013-15-1)* $MnMoO_4$; FW: 214.88; orange-brown solid	5g 25g
93-2516 HAZ	**Manganese naphthenate, 56% in mineral spirits (6% Mn)** *(1336-93-2)* viscous liq.; f.p. 104°F	100g 500g
93-2517 HAZ	**Manganese(II) nitrate, 50-52% aqueous solution** *(10377-66-9)* $Mn(NO_3)_2$; FW: 178.95; pink liq.	250g 1kg
93-2513	**Manganese(II,III) oxide, 97%** *(1317-35-7)* Mn_3O_4; FW: 228.79; brown pwdr.; m.p. 1705°; d. 4.856	250g 1kg
93-2515	**Manganese(II) oxide, 99%** *(1344-43-0)* MnO; FW: 70.94; green pwdr.; d. 5.43-5.46	500g 2kg
93-2522	**Manganese(III) oxide, 99%** *(1317-34-6)* Mn_2O_3; FW: 157.86; black pwdr.; m.p. 1080° dec.; d. 4.50	250g 1kg
93-2510 HAZ	**Manganese(IV) oxide, 99+%** *(1313-13-9)* MnO_2; FW: 86.94; black xtl.; m.p. 535° dec.; d. 5.026	100g 500g
25-1380 HAZ	**Manganese(IV) oxide (99.995%-Mn) PURATREM** *(1313-13-9)* MnO_2; FW: 86.94; black, random pieces; m.p. 535° dec.; d. 5.026	10g 50g
25-1360 HAZ	**Manganese(IV) oxide, activated** *(1313-13-9)* MnO_2; FW: 86.94; brown to black pwdr.; m.p. 535° dec.; d. 5.026	50g 250g
25-1450	**Manganese pentacarbonyl bromide, min. 98%** *(14516-54-2)* $Mn(CO)_5Br$; FW: 274.90; yellow to orange xtl.	1g 5g 25g

MANGANESE (Compounds)

93-2520 HAZ	**Manganese(II) perchlorate hexahydrate, 99%** *(15364-94-0)* $Mn(ClO_4)_2 \cdot 6H_2O$; FW: 253.84 (361.93); pink xtl. *hygroscopic*	100g 500g
25-1460	**Manganese(II) phthalocyanine, min. 97%** *(14325-24-7)* $(C_{32}H_{16}N_8)Mn$; FW: 567.47; purple xtl.	1g 5g



93-2521	**Manganese(II) selenide (99.9%-Mn)** *(1313-22-0)* MnSe; FW: 133.90; -20 mesh black xtl.	5g 25g
93-2524	**Manganese(II) sulfide (99.9%-Mn)** *(18820-29-6)* MnS; FW: 87.00; -325 mesh green pwdr.; m.p. dec.; d. 3.99	5g 25g
25-1470	**Manganese(III) meso-tetraphenylporphine acetate** *(58356-65-3)* $Mn(C_{44}H_{28}N_4)OOCCH_3$; FW: 726.71; greenish black pwdr.	1g 5g
25-1550 HAZ	**Methylcyclopentadienylmanganese tricarbonyl, min. 97%** *(12108-13-3)* $(CH_3C_5H_4)Mn(CO)_3$; FW: 218.09; yellow liq.; m.p. -2.2°; b.p. 233°; f.p. 205°F; d. 1.38	5g 25g
96-6770	**PhosphonicS Metal Oxidation Catalyst Kit** *See* page 488	
25-5000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)manganese(III), 99% [$Mn(TMHD)_3$]** *(14324-99-3)* $Mn(C_{11}H_{19}O_2)_3$; FW: 604.74; black xtl.; m.p. 165°; b.p. dec. 255°	1g 5g 25g

MERCURY (Elemental Forms)

93-8046 HAZ	**Mercury (99.9994%) (ACS)** *(7439-97-6)* Hg; m.p. -38.89°; b.p. 356.9°; d. 200.61 13.546	450g 2.25kg
93-8045 HAZ	**Mercury, redistilled (99.998%)** *(7439-97-6)* Hg; FW: 200.61; m.p. -38.89°; b.p. 356.9°; d. 13.546	450g 2.25kg

MERCURY (Compounds)

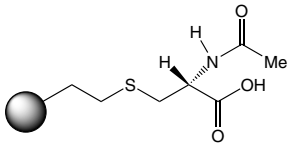
93-8040 HAZ	**Mercury(II) acetate, 98%** *(1600-27-7)* $Hg(OOCCH_3)_2$; FW: 318.68; white to light yellow pwdr.; m.p. dec.; d. 3.270	25g 100g
93-8003 HAZ	**Mercury(II) bromide (ACS)** *(7789-47-1)* $HgBr_2$; FW: 360.44; white pwdr.; m.p. 236°; b.p. 322°; d. 6.109	50g 250g
93-8018 HAZ	**Mercury(I) chloride, 99.5+% (ACS)** *(10112-91-1)* Hg_2Cl_2; FW: 472.09; -100 mesh white pwdr.; m.p. 400° subl.; d. 7.150	100g 500g
93-8004 HAZ	**Mercury(II) chloride, 99+%** *(7487-94-7)* $HgCl_2$; FW: 271.50; white pwdr.; m.p. 276°; b.p. 302°; d. 5.44	50g 250g
93-8041 HAZ	**Mercury(II) cyanide, 99%** *(592-04-1)* $Hg(CN)_2$; FW: 252.65; white pwdr.; m.p. dec.; d. 3.996	50g 250g
93-8019 HAZ	**Mercury(I) fluoride, 95+%** *(13967-25-4)* Hg_2F_2; FW: 439.22; white pwdr.; m.p. 570°; d. 8.73	5g
93-8007 HAZ	**Mercury(II) fluoride, 98%** *(7783-39-3)* HgF_2; FW: 238.61; off-white to yellow pwdr.; m.p. 645° dec.; d. 8.95	5g 25g
93-8008 HAZ	**Mercury(II) iodide, 99+% (ACS)** *(7774-29-0)* HgI_2; FW: 454.45; orange to red pwdr.; m.p. 259°; b.p. 354°; d. 6.271	50g 250g
80-8008 amp HAZ	**Mercury(II) iodide, anhydrous (99.999%-Hg) PURATREM** *(7774-29-0)* HgI_2; FW: 454.45; orange to red pwdr.; m.p. 259°; b.p. 354°; d. 6.271	5g 25g
93-8020 HAZ	**Mercury(I) nitrate hydrate, 98+%** *(7782-86-7)* $HgNO_3 \cdot H_2O$; FW: 262.62 (280.63); yellow xtl.; m.p. 70°; d. 4.79	50g 250g
93-8009 HAZ	**Mercury(II) nitrate monohydrate, 98+% (ACS)** *(7783-34-8)* $Hg(NO_3)_2 \cdot H_2O$; FW: 324.60 (342.62); white xtl.; d. 4.3	50g 250g

MERCURY (Compounds)

93-8011 HAZ	**Mercury(II) oxide, red, 99+% (ACS)** *(21908-53-2)* HgO; FW: 216.59; red pwdr.; m.p. 500° dec.; d. 11.14	50g 250g
93-8010 HAZ	**Mercury(II) oxide, yellow, 99+% (ACS)** *(21908-53-2)* HgO; FW: 216.59; yellow to orange pwdr.; m.p. 500° dec.; d. 11.14	50g 250g
93-8042 HAZ	**Mercury(II) perchlorate trihydrate, 99+%** *(73491-34-6)* $Hg(ClO_4)_2 \cdot 3H_2O$; FW: 399.46 (453.51); white xtl.; d. ~4 *hygroscopic*	10g 50g
93-8013 HAZ	**Mercury(II) selenide (99.99%-Hg) PURATREM** *(20601-83-6)* HgSe; FW: 279.55; gray pwdr.	1g 5g 25g
93-8036 HAZ	**Mercury(II) sulfate, min. 98%** *(7783-35-9)* $HgSO_4$; FW: 296.67; white pwdr.; m.p. dec.; d. 6.47 *hygroscopic*	50g 250g
80-2200 HAZ	**Mercury(II) trifluoromethanesulfonate, 98% (Mercury triflate)** *(49540-00-3)* $Hg(CF_3SO_3)_2$; FW: 498.71; white pwdr. *hygroscopic*	5g 25g
80-2300 HAZ	**Methylmercury(II) hydroxide, ~1M aqueous solution** *(1184-57-2)* CH_3HgOH; FW: 232.63; colorless liq.	0.001mole 0.01mole
93-8024 HAZ	**Methylmercury(II) iodide, 98+%** *(143-36-2)* CH_3HgI; FW: 342.56; yellow pwdr.; m.p. 143°	5g 25g
93-8025 HAZ	**Phenylmercury acetate, 97.5%** *(62-38-4)* $C_6H_5HgO(O)CCH_3$; FW: 336.75; white pwdr.; m.p. 150°; d. ~2.4	50g 250g
80-7000 HAZ	**Tetrakis(acetoxymercuri)methane, min. 95%** *(25201-30-3)* $C(HgOOCCH_3)_4$; FW: 1050.55; white xtl.; m.p. 255-275° dec.	1g 5g

METALS SCAVENGING AGENTS (Compounds)

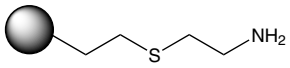
16-0200 **N-Acetyl-L-cysteine ethyl Silica (PhosphonicS SCYT1)** *(7631-86-9)* — 10g, 50g



white to off-white solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.8 mmol/g
Scavenges: Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Pt(II)

16-0215 **2-Aminoethyl sulfide ethyl Silica (PhosphonicS SEA)** — 10g, 50g

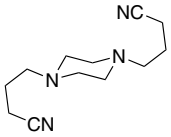


white to pale yellow solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.8 mmol/g
Scavenges: Fe(III), Ni(II), Cu(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV), Pt(II), Hg(II), Pb(II)

96-6700 **BASF Metals Scavenging Agent Kit (MSA Kit)**
See page 531

07-2203 NEW **1,4-Bis(2-isocyanopropyl)piperazine (SnatchCat Metal Scavenger)** *(51641-96-4)* — 1g, 5g



$C_{12}H_{20}N_4$; FW: 220.31; white xtl.
(store cold)
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 14/443,048; PCT/IB2014/062564.
For detailed technical note visit strem.com.

METALS SCAVENGING AGENTS (Compounds)

06-1522 NEW	**Chelating/scavenger resin with aminophosphonic - S940** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 425-850 micron; Purolite S940 is a chelating resin of macroporous structure, with a polystyrene matrix crosslinked with divinylbenzene (DVB) substituted with weakly acidic aminophosphonic active groups. This chemical structure facilitates the formation of complexes with metallic ions. The aminophosphonic chelating resins have a greater affinity for certain cations, and form more stable complexes with cations of low atomic mass metals than their iminodiacetic resin counterparts. Hence Purolite S940 is capable of fixing one or more specific cations from a larger range even from solutions which are highly concentrated. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1525 NEW	**Chelating/scavenger resin with aminophosphonic - S950** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1000 micron; Purolite S950 is a macroporous aminophosphonic acid chelating resin, designed for the removal of cations of toxic metals such as lead, copper and zinc from industrial effluents at low pH. At somewhat higher pH values, calcium, magnesium and barium, as well as the toxic metals cadmium, nickel, and cobalt are strongly complexed and may be separated from quite high concentrations of univalent cations. Purolite S950 is highly selective (under the appropriate conditions) for a range of both heavy metal and common divalent ions. Hence its use may be recommended where it is necessary to remove calcium or magnesium in order to avoid possible precipitation, or where its selectivity for a particular range of metals offers advantages. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1508 NEW	**Chelating/scavenger resin with aminoxime - S910** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Purolite® S910 is an amidoxime chelating resin, designed for the removal of cations of metals such as copper and iron from water or other solvent even at relatively low pH. It can also be used for the recovery of traces of precious metals from dilute solutions. It cannot be used for removal of alkaline earth metals. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1530 NEW	**Chelating/scavenger resin with bispicolylamine - S960** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 425-1000 micron; Purolite® S960 is a macroporous poly-styrene divinylbenzene copolymer within which weakly basic bis-picolylamine chelating functional groups are covalently bonded. This resin has high selectivity for valuable metals such as nickel, copper, and cobalt as compared to iron, aluminum, calcium, and magnesium. Purolite® S960 is active within the pH range of 0 8 and may function outside that range depending on the metals involved. Sold in collaboration with Purolite for research purposes only.	50g 5x50g

METALS SCAVENGING AGENTS (Compounds)

06-1520 NEW	**Chelating/scavenger resin with iminodiacetic - S930Plus** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 425-1000 micron; Purolite S930Plus is a macroporous polystyrene; based chelating resin, with iminodiacetic groups designed for the removal of heavy metals from industrial effluents. Purolite S930Plus finds use in processes for extraction and recovery of metals from ores, galvanic plating solutions, pickling baths and effluents. Further uses include the decalcification of brine for chloralkali processes, where Purolite S930Plus shows advantages under certain operating conditions over the typically used aminophosphonic type resins such as Purolite S940. Purolite S930Plus has high selectivity and capacity for hardness and strontium and has excellent osmotic stability. Purolite S930Plus is susceptible to oxidation. Hence direct treatment of brine solutions containing free chlorine should be avoided, for instance by preliminary reaction with sulphur dioxide, sulphide or, by use of a treatment with activated carbon. Brine solutions can often contain significant concentrations of chlorates. In this case it is necessary to ensure that the displacement rinse prior to the acid regeneration is efficient, so as to avoid the formation of free chlorine from contact of chlorates in the brine solution with the regeneration acid. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1514 NEW	**Chelating/scavenger resin with isothiouronium - S920Plus** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Purolite® S920Plus is a macroporous polystyrenic based chelating resin, with thiouronium groups designed for the selective removal of mercury and for the recovery of precious metals from industrial effluents. Mercury is strongly bound to the functional groups to form highly stable complexes, with high selective affinity compared with those of other heavy metals. These properties are largely unaffected by high chloride (or sulfate) content of the effluent. Effluent solutions which may typically contain 2 - 20 ppm of mercury can be treated to reduce the concentration in solution to less than 0.005 ppm. Purolite S920Plus can load up to 200g of mercury, or gold, or approximately 60g of platinum or palladium for each liter of resin, equivalent to 12.5, and 3.75 lb/ft3 respectively. Purolite S920Plus is designed for the removal of low concentrations of soluble mercury salts from waste streams and for the recovery of precious metals from rinse waters in the galvanic and electronic industries. It is also used in hydrometallurgy for the separation of precious metals from acid liquors. Mercury and precious metals are so strongly held, and run lengths are so long (thousands of hours) that it is not normally considered economic to regenerate the resin for reuse. Purolite S920Plus is more resistant to oxidation than many thiol based resins and contact with the atmosphere is not detrimental, however free chlorine and other strong oxidizing agents may damage the resin and their removal from solution by filtering through activated carbon is recommended. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1501 NEW	**Chelating/scavenger resin with N-methylglucamine - S108** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 425-630 micron; Purolite® S108 is a macroporous polystyrenic based resin with excellent kinetics and functional groups specially designed for the selective removal of salts of boron from aqueous solutions. It is effective for such solutions over a wide range of pH values, and over a wide range of boron concentrations. The presence of boron ions in water for potable and agriculture/horticulture use, even in relatively small (ppm) concentrations can give rise to major problems. Even where concentrations of other ions are reasonably high, Purolite® S108 will reduce boron concentrations by an order of magnitude. Sold in collaboration with Purolite for research purposes only.	50g 5x50g

METALS SCAVENGING AGENTS (Compounds)

06-1528 NEW	**Chelating/scavenger resin with phosphonic and sulfonic acid - S957** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 425-1000 micron; Purolite S957 is a specially developed Monophos chelating resin, which incorporates phosphonic, and sulfonic functional groups on a mechanically and osmotically resistant matrix. These combined properties give it high selectivity for iron and other transitional metals, even in acidic solutions. Purolite S957 has been especially designed for the selective removal of ferric iron from acidic solutions, such as copper electrolyte or from nickel, cobalt and zinc processing solutions. Purolite S957 can also be used in potable water applications for the selective removal of trace levels of selected metals from neutral pH waters. Its selectivity for uranium and other lanthanide elements should give good opportunities for its successful employment in other areas. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1532 NEW	**Chelating/scavenger resin with polyamine - S985** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Purolite® S985 is a high capacity, macroporous, weak base anion exchange resin with a polyacrylic matrix supporting functional groups of the polyamine type. The carefully formulated, macroporous acrylic matrix ensures excellent exchange kinetics for the removal of trace heavy metals from waste water streams and the special polyamine functionality produces very interesting operating capacities and makes the uptake of metallic cations possible even when they are present in the waste stream as organic anionic complexes. Its tough and resilient macroporous structure also affords excellent mechanical, strength and resistance to osmotic shock. Sold in collaboration with Purolite for research purposes only.	50g 5x50g
06-1518 NEW	**Chelating/scavenger resin with thiol - S924** spherical beads (wet) *(store cold)* Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1000 micron; Purolite S924 is a chelating resin, polystyrene based and designed for the selective removal of mercury. The mercury is strongly bound to the functional groups to form highly stable complexes with high selective affinity compared with those of other heavy metals. Even so the high selectivity for metals such as silver, copper, lead, cadmium, nickel and cobalt, makes this resin useful in waste treatment and hydrometallurgical processes. The high selectivity for mercury is largely unaffected by high chloride or sulphate content of the effluent. Effluent solutions that may typically contain 0.01-25ppm of mercury can be treated to reduce the concentration to significantly less than 5ppb residual mercury. Purolite S924 can load up to 150 g (16 lb/cu.ft) of mercury per litre of resin. Purolite S924 is designed for the removal of moderately low concentrations of soluble mercury salts from brine streams used to produce caustic soda and chlorine where mercury cells are used, and may be regenerated with concentrated hydrochloric acid solutions. In the process for the manufacture of caustic soda and chlorine from brine, where all or part of the production uses mercury cells, the mercury rich regenerant acid may be neutralized with the sodium hydroxide to produce a recovered brine solution that may be recycled to the mercury cell process. Mercury may be present at very low concentrations and consequently run lengths are often long (thousands of hours). It is sometimes not economic to regenerate the resin for re-use. In such cases Purolite S920 may be preferred because of its higher capacity. Purolite S924 is prone to oxidation and long-term contact with the atmosphere is detrimental. It is recommended that this resin is shipped and stored under water. Also, free chlorine and other strong oxidizing agents may damage the resin. Their removal from solution by filtering through activated carbon is recommended. Sold in collaboration with Purolite for research purposes only.	50g 5x50g

METALS SCAVENGING AGENTS (Compounds)

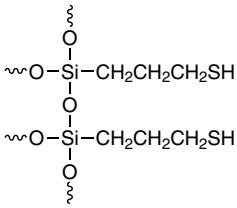
06-1512 NEW

Chelating/scavenger resin with thiourea - S914
spherical beads (wet)
(store cold)
Note: Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; Particle Size: 300-1200 micron; Purolite S914 is a macroporous type chelating resin with thiourea functionality. It has very high selectivity for mercury and platinum group metals such as platinum, gold and silver. Purolite S914 is stable over the whole pH range. The applications include mercury removal from brine and effluent in chloralkali process, mercury removal from flue gas scrubber effluent, recovery of platinum group metals from effluents amongst others. Sold in collaboration with Purolite for research purposes only.

50g
5x50g

14-1871

Deloxan® MP Metal Scavengers (Thio-Functionalized Polysiloxane)
Abrasion-proof spheres; Water content: 50-70%; SA: 300-450m²/g (BET); P.Vol. 2.5-3.5 ml/g; d. 0.55-0.65 kg/L (wet form)
Note: Sold in collaboration with Evonik for research purposes only. *Limited quantities available*



10g
50g
250g

Technical Note:

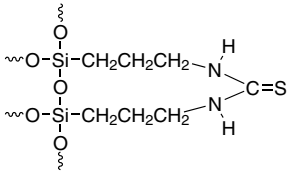
1. Deloxan® MP is a metal absorbing resin with a high affinity for precious and heavy metals, especially Pd, Pt, Rh, Ag, Au, Zn, Cu(I), Cd, Hg and Pb. The resin can absorb very low concentrations of metal ions from either aqueous or organic solutions, even in the presence of complexing agents such as phosphines, amines and nitriles. The particle size and morphology allow for easy handling and filtration.

References:

1. *Extraction and Ion Exchange,* **1991**, *9*, 2, 289

14-1870

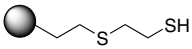
Deloxan® THP II Macroporous, Thiourea-Functionalized Polysiloxane(Metal Absorbing Resin)
Abrasion-proof spheres; Water content: 50-70%; SA: 300-450m²/g (BET); P.Vol. 2.5-3.5 ml/g; d. 0.55-0.65 kg/L (wet form)
Note: Sold in collaboration with Evonik for research purposes only. *Limited quantities available*
For detailed technical note visit strem.com.



10g
50g
250g

16-0650

2-Mercaptoethyl ethyl sulfide Silica (PhosphonicS SEM26) *(7631-86-9)*
white solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

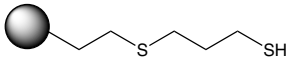


10g
50g

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.8 mmol/g
Scavenges: Fe(III), Ni(0), Cu(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Pt(II), Hg(II)

16-1700

3-Mercaptopropyl ethyl sulfide Silica (60⁺, high-cross linking) (PhosphonicS SPM36)
(7631-86-9)
white solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

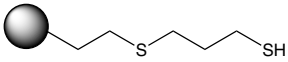


10g
50g

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.8 mmol/g
Scavenges: Fe(III), Ni(II), Cu(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV),Pt(II), Au, Hg(II), Pb(II)

METALS SCAVENGING AGENTS (Compounds)

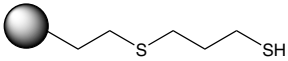
16-1706 **3-Mercaptopropyl ethyl sulfide Silica (60+, low-cross linking) (PhosphonicS SPM32)** 10g 50g



white to pale yellow solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.8 mmol/g
Scavenges: Fe(III), Ni(0), Ni(II), Cu(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV), Pt(II), Au, Hg(II), Pb(II)

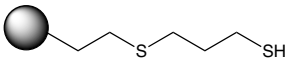
16-1702 **3-Mercaptopropyl ethyl sulfide Silica (90+, high-cross linking) (PhosphonicS SPM36f)** 10g 50g



white to pale yellow solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

Silica size: 60-200 microns
Pore size: 90Å
Loading: 0.8 mmol/g
Scavenges: Fe(III), Ni(II), Cu(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV), Pt(II), Hg(II), Pb(II)

16-1704 **3-Mercaptopropyl ethyl sulfide Silica (90+, low-cross linking) (PhosphonicS SPM32f)** 10g 50g



white to pale yellow solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

Silica size: 60-200 microns
Pore size: 90Å
Loading: 0.8 mmol/g
Scavenges: Fe(III), Ni(0), Ni(II), Cu(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV), Pt(II), Au, Hg(II), Pb(II)

14-4353 **Metals scavenging agent, Mercaptopropyl modified silica (BASF MSA-FC Si-3)** 10g 50g
(112926-00-8)
d50=83µm; white to slightly yellow pwdr.; d. 0.88g/ml
Note: Sold in collaboration with BASF for research purposes only. BASF Metals Scavenging Agent Kit component.

Technical Note:

1. Silica-based, air-stable, metal scavenging agent (MSA-FC Si-3) powder suitable for the removal of dissolved metal species from organic and aqueous polar and apolar reaction mixtures. Can be used in slurry and fixed bed type applications. Temperature stable up to 110°C. Especially suitable for use in the removal of palladium remains. Metal loading capacity is up to 13% depending on metal and process conditions. Metals scavenged: Pd [examples – H_2PdCl_4]

06-0805 **Metals scavenging agent, Phosphotungstic acid modified activated carbon (BASF MSA-FC C-1)** *(7440-44-0)* 10g 50g
d50=27µm; black pwdr.; d. 0.60g/ml
Note: Sold in collaboration with BASF for research purposes only. BASF Metals Scavenging Agent Kit component.

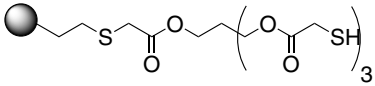
Technical Note:

1. Carbon-based, air-stable, metal scavenging agent (MSA-FC C-1) powder suitable for the removal of dissolved metal species from organic polar and apolar reaction mixtures. Can be used in slurry and fixed bed type applications. Temperature stable up to 110°C. The presence of water and small chain alcohols may impact the total uptake capacity. Metal loading capacity up to 5 wt% depending on metal and process conditions. Metals scavenged: Pd, Rh [examples - $Pd(PPh_3)_2(OAc)_2$, $Ru(DUPHOS)(COD)BF_4$, $Rh(PPh_3)_3Cl$]

13-6300 **Metals scavenging agent, Phosphotungstic acid modified alumina (BASF MSA-FC Al-1)** *(1344-28-1)* 10g 50g
d50=159µm; white pwdr.; d. 1.00 g/ml
Note: Sold in collaboration with BASF for research purposes only. BASF Metals Scavenging Agent Kit component.
For detailed technical note visit strem.com.

METALS SCAVENGING AGENTS (Compounds)

16-1540 **Pentaerythritol 2-mercaptoacetate ethyl sulfide Silica (PhosphonicS SET)**
white solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.

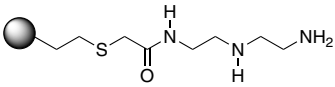


10g
50g

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.75 mmol/g
Scavenges: VO(II), Fe(III), Ni(II), Cu(II), Ga(III), Ru(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV), Pt(II), Au, Hg(II), Pb(II)

96-6750 **PhosphonicS Metals Scavenging Kit**
See page 531

16-0210 **Triamine ethyl sulfide amide Silica (PhosphonicS STA3)**
white solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metals Scavenging Kit component and applications.



10g
50g

Silica size: 60-200 microns
Pore size: 60Å
Loading: 0.9 mmol/g
Scavenges: Al(III), VO(II), Cr(III), Fe(III), Co(II), Ni(II), Cu(II), Zn(II), Ga(III), Sr(II), Ru(III), Rh(I), Rh(III), Pd(0), Pd(II), Ag(I), Cd(II), Sn(II), Sn(IV), Pt(II), Hg(II), Pb(II), UO2(II)

MOFS AND LIGANDS FOR MOF SYNTHESIS (Compounds)

08-0175 **[1,1'-Biphenyl]-4,4'-dicarboxylic acid, min. 98%** *(787-70-2)*
See page 215

29-3015 **Bis(1,4-diazabicyclo [2.2.2]octane)tetra (copper(I) iodide) $(CuI)_4(DABCO)_2$**
(928170-42-7)
See page 54

29-0550 **Bis(N,N'-dimethylpiperazine)tetra[copper(I) iodide], 98% MOF**
(1401708-91-5)
See page 55

08-1220 **2,5-Dihydroxyterephthalic acid, 98% H_4DOBDC** *(610-92-4)*
See page 217

15-7170 **2-(Diphenylphosphino)terephthalic acid, 98%** *(1537175-69-1)*
See page 309

07-0435 **1,4-Di(4'-pyrazolyl)benzene, min. 97% H_2BDP** *(1036248-62-0)*
See page 199

29-0565 **(Hexamethylenetetramine)penta[copper(I) cyanide], 98% MOF**
(1042093-98-0)
See page 58

26-3725 **Iron azobenzene tetracarboxylic, Porous [PCN-250(Fe)], CONEKTIC™ F250** *(1771755-22-6)*
See page 106

26-2340 **Iron(III) 1,3,5-benzenetricarboxylate hydrate, porous (F-free MIL-100(Fe), KRICT F100) [Iron trimesate]** *(1257379-83-1)*
See page 107

08-1235 **2,6-Naphthalenedicarboxylic acid, min. 98%** *(1141-38-4)*
See page 219

08-1165 **1,4-Phenylenediacetic acid, 97%** *(7325-46-4)*
See page 220

MOFS AND LIGANDS FOR MOF SYNTHESIS (Compounds)

07-1942	**1,4,7,10-Tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid, min. 98% DOTA** *(60239-18-1)* *See* page 207	
08-0195	**1,3,5-Tricarboxybenzene, min. 95% (Trimesic acid) BTC** *(554-95-0)* *See* page 221	
07-3110	**Tris(isobutylaminoethyl)amine, min 97%** *(331465-73-7)* *See* page 212	
30-4015	**Zinc 2-methylimidazole MOF (ZIF-8)** *(59061-53-9)* *See* page 453	
40-1105	**Zirconium 1,4-dicarboxybenzene MOF (UiO-66)** *(1072413-80-9)* *See* page 457	

MOLECULAR SIEVES (Other)

93-5414	**Molecular sieves, 1/8" pellets (Linde 3A)** *(308080-99-1)* off-white pellets	250g 1kg
93-5402	**Molecular sieves, 1/16" pellets (Linde 3A)** *(308080-99-1)* white pellets	250g 1kg
93-5401	**Molecular sieves, -600 mesh powder (Linde 3A)** *(308080-99-1)* white pwdr.	250g 1kg
93-5407	**Molecular sieves, -14+30 beads (Linde 4A)** *(70955-01-0)* off-white beads	250g 1kg
93-5406	**Molecular sieves, -8+12 beads (Linde 4A)** *(70955-01-0)* off-white beads	250g 1kg
93-5415	**Molecular sieves, -4+8 beads (Linde 4A)** *(70955-01-0)* off-white beads	250g 1kg
93-5405	**Molecular sieves, 1/8" pellets (Linde 4A)** *(70955-01-0)* off-white pellets	250g 1kg
93-5404	**Molecular sieves, 1/16" pellets (Linde 4A)** *(70955-01-0)* off-white pellets	250g 1kg
93-5403	**Molecular sieves, -600 mesh powder (Linde 4A)** *(70955-01-0)* white pwdr.	250g 1kg
93-5410	**Molecular sieves, 1/8" pellets (Linde 5A)** *(69912-79-4)* off-white pellets	250g 1kg
93-5409	**Molecular sieves, 1/16" pellets (Linde 5A)** *(69912-79-4)* off-white pellets	250g 1kg
93-5408	**Molecular sieves, -600 mesh powder (Linde 5A)** *(69912-79-4)* white pwdr.	500g 2kg
93-5413	**Molecular sieves, 1/8" pellets (Linde 13X)** *(63231-69-6)* off-white pellets	250g 1kg
93-5412	**Molecular sieves, 1/16" pellets (Linde 13X)** *(63231-69-6)* off-white pellets	250g 1kg
93-5411	**Molecular sieves, -600 mesh powder (Linde 13X)** *(63231-69-6)* off-white pwdr.	250g 1kg
14-8820 NEW	**SBA-15 Molecular Sieve** *(7631-86-9)* SA: 600-800 m^2/g	1g 5g
14-8800	**Type Y molecular sieve, ammonium ion, powder** *(1318-02-1)* white pwdr.; SA: 948m^2/g	50g 250g 1kg
14-8960	**Type Y molecular sieve, sodium ion, powder** *(1318-02-1)* white pwdr.; SA: 900m^2/g	100g 500g 2kg

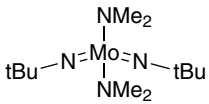
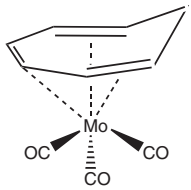
MOLYBDENUM (Elemental Forms)

42-0070	**Molybdenum foil (99.95%)** *(7439-98-7)* Mo; FW: 95.94; 0.25mm thick (~25.6g/100x 100mm); m.p. 2610°; b.p. 5560°; d. 10.2	100 x 100mm 150 x 300mm 300 x 300mm

MOLYBDENUM (Elemental Forms)

42-0075	**Molybdenum pellets (99.7%)** *(7439-98-7)* Mo; FW: 95.94; 16 x 6 mm; m.p. 2610°; b.p. 5560°; d. 10.2	100g 500g
93-4257 HAZ	**Molybdenum powder (99.9%)** *(7439-98-7)* Mo; FW: 95.94; 3-7 micron; m.p. 2610°; b.p. 5560°; d. 10.2	100g 500g
93-4256 HAZ	**Molybdenum powder (99.95%)** *(7439-98-7)* Mo; FW: 95.94; -100 mesh; m.p. 2610°; b.p. 5560°; d. 10.2	100g 500g
93-4255	**Molybdenum rod (99.95%)** *(7439-98-7)* Mo; FW: 95.94; 6.4 mm dia. (~3.6g/cm); m.p. 2610°; b.p. 5560°; d. 10.2	50g 250g
42-0080	**Molybdenum sheet (99.95%)** *(7439-98-7)* Mo; FW: 95.94; 2.5mm thick (~64g/50 x 50mm); m.p. 2610°; b.p. 5560°; d. 10.2	50 x 50mm 100 x 100mm 500 x 100mm
42-0010	**Molybdenum wire (99.97%)** *(7439-98-7)* Mo; FW: 95.94; 2.0mm dia. (32.1g/m); m.p. 2610°; b.p. 5560°; d. 10.2	100cm 500cm
93-4252	**Molybdenum wire (99.97%)** *(7439-98-7)* Mo; FW: 95.94; 0.5 mm dia.; m.p. 2610°; b.p. 5560°; d. 10.2	25m 100m
93-4254	**Molybdenum wire (99.97%)** *(7439-98-7)* Mo; FW: 95.94; 0.25 mm dia.; m.p. 2610°; b.p. 5560°; d. 10.2	25m 100m
93-4259	**Molybdenum wire (99.97%)** *(7439-98-7)* Mo; FW: 95.94; 0.05 mm dia.; m.p. 2610°; b.p. 5560°; d. 10.2	250m 1000m

MOLYBDENUM (Compounds)

02-0745	**Ammonium molybdate tetrahydrate (99.98%-Mo)** *(12027-67-7)* *See* page 6	
02-0750	**Ammonium molybdate tetrahydrate (99.999%-Mo) PURATREM** *(12027-67-7)* *See* page 6	
93-0245	**Ammonium molybdate tetrahydrate (ACS)** *(12027-67-7)* *See* page 6	
42-1000	**Ammonium tetrathiomolybdate(VI), 99% (99.99%-Mo) PURATREM** *(15060-55-6)* *See* page 7	
42-9028 NEW	**Bis(acetonitrile)tetracarbonylmolybdenum(0), 98%** *(14126-87-5)* $C_8H_6N_2O_4Mo$; FW: 290.08; yellow solid *air sensitive*	250mg 1g 5g
42-0215 NEW	**Bis(t-butylimido)bis(dimethylamino)molybdenum(VI), 98%** *(923956-62-1)* $C_{12}H_{30}MoN_4$; FW: 326.33; orange liq. *air sensitive, moisture sensitive, (store cold)* 	500mg 2g
42-0100	**Bis(cyclopentadienyl)molybdenum dichloride, 99%** *(12184-22-4)* $(C_5H_5)_2MoCl_2$; FW: 297.04; greenish-brown pwdr. *air sensitive, moisture sensitive*	1g 5g
42-0200 amp HAZ	**Bis(ethylbenzene)molybdenum [mixture of $(C_2H_5)\cdot C_6H_6\eta^x$ where x = 0-4)]** *(32877-00-2)* $[(C_2H_5)\cdot C_6H_6\cdot\cdot]_2Mo$; dark green liq.; b.p. 150-170°/1mm *air sensitive*	1g 5g 25g
27-0480	**Cobalt oxide-molybdenum oxide on alumina (3.5% CoO, 14% MoO_3)** *(1308-06-1)* *See* page 49	
42-0350 amp	**Cycloheptatriene molybdenum tricarbonyl, 99%** *(12125-77-8)* $C_7H_8Mo(CO)_3$; FW: 272.11; orange to red xtl.; m.p. 100-101° *air sensitive, (store cold)* 	1g 5g

MOLYBDENUM (Compounds)

42-0390
HAZ

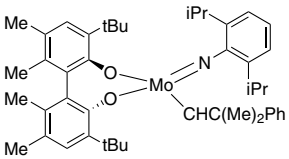
Cyclopentadienylmolybdenum(V) tetrachloride, min. 95% *(62927-99-5)*
$C_5H_5MoCl_4$; FW: 302.85; red to purple pwdr.
air sensitive, moisture sensitive
1g
5g

42-0400

Cyclopentadienylmolybdenum tricarbonyl dimer, min. 98% *(12091-64-4)*
$[C_5H_5Mo(CO)_3]_2$; FW: 490.14; red to purple xtl.; m.p. 220° dec.
air sensitive
5g
25g

42-1213
amp

2,6-Diisopropylphenylimidoneophylidene [(R)-(+)-BIPHEN]molybdenum(VI), min. 97% (R) SCHROCK-HOVEYDA CATALYST *(329735-77-5)*
$Mo(C_{10}H_{12})(C_{12}H_{17}N)(C_{24}H_{32}O_2)$; FW: 755.93; red xtl.
air sensitive, moisture sensitive, (store cold)
For detailed technical note visit strem.com.



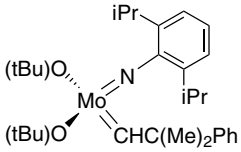
25mg
100mg

42-1214
amp

2,6-Diisopropylphenylimidoneophylidene[(S)-(-)-BIPHEN]molybdenum(VI), min. 97% (S) SCHROCK-HOVEYDA CATALYST *(205815-80-1)*
$Mo(C_{10}H_{12})(C_{12}H_{17}N)(C_{24}H_{32}O_2)$; FW: 755.93; red xtl.
air sensitive, moisture sensitive, (store cold)
For detailed technical note visit strem.com.
25mg
100mg

42-1200
amp

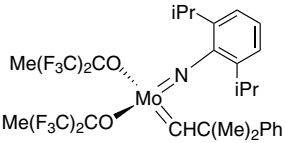
2,6-Diisopropylphenylimidoneophylidene molybdenum(VI) bis(t-butoxide) *(126949-65-3)*
$Mo(C_{10}H_{12})(C_{12}H_{17}N)(OC_4H_9)_2$; FW: 549.65; yellow to orange pwdr.
air sensitive, moisture sensitive, (store cold)
For detailed technical note visit strem.com.



100mg
500mg

42-1205
amp

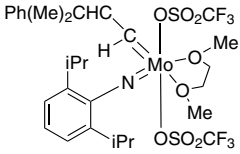
2,6-Diisopropylphenylimidoneophylidene molybdenum(VI) bis(hexafluoro-t-butoxide) SCHROCK'S CATALYST *(139220-25-0)*
$Mo(C_{10}H_{12})(C_{12}H_{17}N)[OC(CH_3)(CF_3)_2]_2$;
FW: 765.53; yellow to orange pwdr.
air sensitive, moisture sensitive, (store cold)
For detailed technical note visit strem.com.



100mg
500mg
2g

42-1210

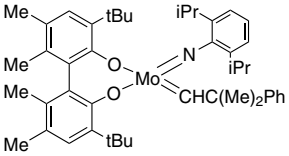
2,6-Diisopropylphenylimido neophylidenemolybdenum(VI) bis(trifluoromethanesulfonate) dimethoxyethane adduct *(126949-63-1)*
$Mo(C_{10}H_{12})(C_{12}H_{17}N)(OSO_2CF_3)_2(C_4H_{10}O_2)$;
FW: 791.68; yellow to orange pwdr.
air sensitive, moisture sensitive, (store cold)
Note: **Limited quantities available**
For detailed technical note visit strem.com.



100mg

42-1212
amp

2,6-Diisopropylphenylimidoneophylidene[racemic-BIPHEN]molybdenum(VI), min. 97% rac-SCHROCK-HOVEYDA CATALYST *(300344-02-9)*
$Mo(C_{10}H_{12})(C_{12}H_{17}N)(C_{24}H_{32}O_2)$; FW: 755.93; red xtl.
air sensitive, moisture sensitive, (store cold)
For detailed technical note visit strem.com.



100mg
500mg

42-1220

Molybdenum(II) acetate dimer, 99% *(14221-06-8)*
$Mo_2(OOCCH_3)_4$; FW: 428.06; yellow xtl.
air sensitive, (store cold)
1g
5g

93-4243

Molybdenum carbide (99.5%-Mo) *(12069-89-5)*
Mo_2C; FW: 203.91; gray pwdr.; m.p. 2687°; d. 9.18
50g
250g

42-1350
HAZ

Molybdenum carbonyl, 98% *(13939-06-5)*
$Mo(CO)_6$; FW: 264.01; white xtl.; m.p. 150-151° dec.
5g
25g
100g
500g

93-4214
amp
HAZ

Molybdenum(III) chloride (99.5%-Mo) *(13478-18-7)*
$MoCl_3$; FW: 202.32; -100 mesh dark red-brown solid; m.p. dec.; d. 3.59
air sensitive, moisture sensitive
1g
5g
25g

MOLYBDENUM (Compounds)

42-1390 HAZ	**Molybdenum(V) chloride, anhydrous, 99.6%** *(10241-05-1)* $MoCl_5$; FW: 273.20; dark blue xtl.; m.p. 194°; b.p. 268° *air sensitive, moisture sensitive*	50g 250g 1kg
93-4217	**Molybdenum(VI) dioxide bis(acetylacetonate), min. 95%** *(17524-05-9)* $MoO_2(CH_3C(O)CHC(O)CH_3)_2$; FW: 326.16; yellow to orange pwdr.; m.p. 181°	5g 25g
42-1357	**Molybdenum(VI) dioxide bis(2,2,6,6-tetramethyl-3,5-heptanedionate), min. 98% [$O_2Mo(TMHD)_2$]** *(34872-98-5)* $MoO_2(C_{11}H_{19}O_2)_2$; FW: 494.48; yellow xtl.; m.p. 129-131° *moisture sensitive*	1g 5g 25g
42-1550 NEW	**Molybdenum disilicide, 0.4-5.0 microns (99+%-Mo)** *(12136-78-6)* $MoSi_2$; FW: 152.13; black solid	50g 250g
42-1400	**Molybdenum(IV) 2-ethylhexanoate (15% Mo)** *(34041-09-3)* $Mo[OOCCH(C_2H_5)C_4H_9]_4$; FW: 668.75; reddish-brown liq.; f.p. 250°F; d. 1.11-1.15	100g 500g
93-4246	**Molybdenum(IV) oxide, 99%** *(18868-43-4)* MoO_2; FW: 127.95; purple pwdr.; d. 6.47	10g 50g
93-4215	**Molybdenum(VI) oxide, 99.5+%** *(1313-27-5)* MoO_3; FW: 143.95; pale green pwdr.; m.p. 795°; b.p. subl.; d. 4.69	50g 250g
42-1475	**Molybdenum(VI) oxide (99.998%-Mo) PURATREM** *(1313-27-5)* MoO_3; FW: 143.95; pale green pwdr.; m.p. 795°; b.p. subl.; d. 4.69	10g 50g
42-1476	**Molybdenum(VI) oxide (99.999%-Mo) PURATREM** *(1313-27-5)* MoO_3; FW: 143.95; pale green pwdr.; m.p. 795°; b.p. subl.; d. 4.69	10g 50g
93-4211	**Molybdenum(IV) selenide (99.9%-Mo)** *(12058-18-3)* $MoSe_2$; FW: 253.87; -325 mesh gray pwdr.; m.p. > 1200°; d. 6.0	5g 25g
93-4212	**Molybdenum silicide (99+%-Mo)** *(12136-78-6)* $MoSi_2$; FW: 152.13; black pwdr.; d. 6.31	25g 100g
93-4247	**Molybdenum(IV) sulfide, 97+%** *(1317-33-5)* MoS_2; FW: 160.08; black pwdr.; m.p. 1185°; d. 4.80	100g 500g
93-4209 HAZ	**Molybdenum(VI) tetrachloride oxide, min. 97%** *(13814-75-0)* $MoOCl_4$; FW: 253.78; green pwdr.; m.p. 100-101° *air sensitive, moisture sensitive, (store cold)*	5g 25g
93-4249 HAZ	**12-Molybdophosphoric acid hydrate (ACS)** *(51429-74-4)* $H_3PO_4 \cdot 12MoO_3 \cdot XH_2O$; FW: 1825.25; yellow xtl.	10g 50g
93-4216	**12-Molybdosilicic acid hydrate** *(11089-20-6)* $H_4[Si(Mo_3O_{10})_4] \cdot XH_2O$; FW: 1823.40; yellow xtl.	10g 50g
42-1600 HAZ	**Oxodiperoxy(pyridine)(1,3-dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone)molybdenum(IV), min. 95%** *(128575-71-3)* $MoO_5(C_5H_5N)(C_6H_{12}N_2O)$; FW: 383.21; pale yellow xtl.; m.p. dec. *heat sensitive, light sensitive, (store cold)* **For detailed technical note visit strem.com.**	1g 5g
42-2200	**Pentamethylcyclopentadienylmolybdenum dicarbonyl dimer, 99%** *(12132-04-6)* $[(CH_3)_5C_5Mo(CO)_2]_2$; FW: 574.38; red xtl.; m.p. 219° dec.	1g 5g
42-8000	**Tricarbonyltris(propionitrile)molybdenum (O), min. 95%** *(103933-26-2)* $Mo(CO)_3(NCCH_2CH_3)_3$; FW: 345.21; tan pwdr. *air sensitive, moisture sensitive*	250mg 1g
42-7500 HAZ	**Trichlorotris(tetrahydrofuran)molybdenum(III), min. 95%** *(31355-55-2)* $MoCl_3(C_4H_8O)_3$; FW: 418.62; light orange solid *moisture sensitive*	1g 5g

NANOMATERIALS - ALUMINUM (Compounds)

13-1400	**Aluminum oxide nanopowder** *(1344-28-1)* Al_2O_3; FW: 101.96; white pwdr.	50g 250g

Specific Surface Area (BET): ≤275 m^2/g; **True Density:** 3.9 g/cc; **Crystallite Size**: Amorphous; **Mean Aggregate Size:**1.5 µm; **Average Pore Diameter:** 28Å; **Loss on Ignition:** 2.1%; **Total Pore Volume:** ≥0.15 cc/g; **Al Content (Based on Metal):** >99.8%; **Bulk Density:** 0.5 g/cc

NANOMATERIALS - CADMIUM (Compounds)

Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes *(1306-24-7)*

air sensitive, (store cold)
Note: Sold in collaboration with CAN for research purposes. Cadmium selenide CANdot® quantum dot (core) kit components. *See* page 533

48-1011 HAZ	**Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 525nm peak emission** *(1306-24-7)* CdSe; orange liq. *air sensitive, (store cold)*	5ml 25ml
48-1017 HAZ	**Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 550nm peak emission** *(1306-24-7)* CdSe; red-orange liq. *air sensitive, (store cold)*	5ml 25ml
48-1023 HAZ	**Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 575nm peak emission** *(1306-24-7)* CdSe; red liq. *air sensitive, (store cold)*	5ml 25ml
48-1030 HAZ	**Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 600nm peak emission** *(1306-24-7)* red liq. *air sensitive, (store cold)*	5ml 25ml
48-1035 HAZ	**Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 625nm peak emission** *(1306-24-7)* red liq. *air sensitive, (store cold)*	5ml 25ml
96-0800	**Cadmium selenide CANdot® quantum dot (CdSe core) kit, 50umol/L in hexanes, 525-625nm peak emissions** *(1306-24-7)* *See* page 533	5ml 25ml

CANdot® Quantum Rods *(1306-24-7)*

Store at 2-8°C in dark under inert atmosphere. Do not freeze. Stable for >12 months
Note: Sold in collaboration with CAN for research purposes. Cadmium selenide/cadmium sulfide CANdot® quantum rod kit components. *See* page 533

48-1053 HAZ	**Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 560nm peak emission** *(1306-24-7)* CdSe/CdS; dispersed, yellow solution; *(store cold)*	0.5ml 2ml
48-1056 HAZ	**Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 590nm peak emission** *(1306-24-7)* CdSe/CdS; dispersed, orange solution; *(store cold)*	0.5ml 2ml
48-1059 HAZ	**Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 620nm peak emission** *(1306-24-7)* CdSe/CdS; dispersed, red solution; *(store cold)*	0.5ml 2ml
96-0813	**Cadmium selenide/cadmium sulfide CANdot® quantum rod kit (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 560nm, 590nm, 620nm peak emissions** *(1306-24-7)* *See* page 533	0.5ml 2ml

CdSe/ZnS - Solid Quantum Dots

Note: Each product below is a group of highly purified CdSe/ZnS quantum dots in solid form. The surface ligand is octadecylamine. The quantum dots can be dispersed in most organic solvents such as toluene, chloroform, and hexane. These quantum dots are specifically designed as emitters for optoelectronic applications such as LEDs.

48-1618 HAZ	**Cadmium selenide/Zinc sulfide quantum dots in solid form, Emission peak: 520nm, FWHM <35nm, QY >50%** orange to red pwdr.	10mg 50mg

Technical Note:
1. See 48-1614 (page 142)

48-1620 HAZ	**Cadmium selenide/Zinc sulfide quantum dots in solid form, Emission peak: 560nm, FWHM <35nm, QY >50%** orange pwdr.	10mg 50mg

Technical Note:
1. See 48-1614 (page 142)

48-1622 HAZ	**Cadmium selenide/Zinc sulfide quantum dots in solid form, Emission peak: 600nm, FWHM <25nm, QY >50%** red pwdr.	10mg 50mg

Technical Note:
1. See 48-1614 (page 142)

48-1624 HAZ	**Cadmium selenide/Zinc sulfide quantum dots in solid form, Emission peak: 630nm, FWHM <25nm, QY >50%** red pwdr.	10mg 50mg

Technical Note:
1. See 48-1614 (page 142)

NANOMATERIALS - CADMIUM (Compounds)

CdSe/ZnS - Solid Quantum Dots with Amine in water

Note: A water-soluble CdS/ZnS or CdSSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is an amine.

48-1666 HAZ	**Cadmium selenide/Zinc sulfide core/shell quantum dots with Amine in water** **Emission peak: 580 nm FWHM <25nm QY>50%** orange liq	2nmole 10nmole

Technical Note:
1. See 48-1658 (page 142)

48-1668 HAZ	**Cadmium selenide/Zinc sulfide core/shell quantum dots with Amine in water** **Emission peak: 620 nm FWHM <25nm QY>50%** red liq.	2nmole 10nmole

Technical Note:
1. See 48-1658 (page 142)

CdSe/ZnS - Solid Quantum Dots with carboxylic acid in water

Note: A water-soluble CdSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid.

48-1638 HAZ	**Cadmium selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water** **Emission peak: 580 nm FWHM <25nm QY>50%** orange liq.	4nmole 20nmole

Technical Note:
1. See 48-1630 (page 143)

48-1640 HAZ	**Cadmium selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water** **Emission peak: 620 nm FWHM <25nm QY>50%** red liq.	4nmole 20nmole

Technical Note:
1. See 48-1630 (page 143)

CdSe/ZnS - Solid Quantum Dots with PEG in water

Note: A water-soluble CdSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid.

48-1652 HAZ	**Cadmium selenide/Zinc sulfide core/shell quantum dots with PEG in water** **Emission peak: 580 nm FWHM <25nm QY>50%** orange liq.	2nmole 10nmole

Technical Note:
1. See 48-1644 (page 143)

48-1654 HAZ	**Cadmium selenide/Zinc sulfide core/shell quantum dots with PEG in water** **Emission peak: 620 nm FWHM <25nm QY>50%** red liq. Note: A water-soluble CdSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid.	2nmole 10nmole

Technical Note:
1. See 48-1644 (page 143)

CdSSe/ZnS - Solid Quantum Dots

Note: Group of highly purified CdSSe/ZnS quantum dots in solid form. The surface ligand is oleic acid. The quantum dots can be dispersed in most organic solvents such as toluene, chloroform, and hexane. These quantum dots are specifically designed as emitters for optoelectronic applications such as LEDs.

48-1602 HAZ	**Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form** **Emission peak: 450nm, FWHM <35nm, QY >50%** green pwdr.	10mg 50mg
48-1604 HAZ	**Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form** **Emission peak: 490nm, FWHM <35nm, QY >50%** green pwdr.	10mg 50mg
48-1606 HAZ	**Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form** **Emission peak: 540nm, FWHM <35nm, QY >50%** orange pwdr.	10mg 50mg
48-1608 HAZ	**Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form** **Emission peak: 600nm, FWHM <35nm, QY >50%** red pwdr.	10mg 50mg
48-1610 HAZ	**Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form** **Emission peak: 630nm, FWHM <35nm, QY >50%** red pwdr.	10mg 50mg
48-1612 HAZ	**Cadmium sulfide selenide/Zinc sulfide quantum dots in solid form** **Emission peak: 665nm, FWHM <35nm, QY >50%** brown pwdr.	10mg 50mg

NANOMATERIALS - CADMIUM (Compounds)

CdSSe/ZnS - Solid Quantum Dots with Amine in water

Note: A water-soluble CdS/ZnS or CdSSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is an amine.

48-1662 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with Amine in water
Emission peak: 490 nm FWHM <35nm QY>50%
yellow liq
2nmole
10nmole

Technical Note:
1. See 48-1658 (page 142)

48-1664 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with Amine in water
Emission peak: 525 nm FWHM <35nm QY>50%
yellow-green liq
2nmole
10nmole

Technical Note:
1. See 48-1658 (page 142)

48-1670 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with Amine in water
Emission peak: 665 nm FWHM <35nm QY>50%
dark red liq.
2nmole
10nmole

Technical Note:
1. See 48-1644 (page 143)

CdSSe/ZnS - Solid Quantum Dots with carboxylic acid in water

Note: A water-soluble CdSSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid.

48-1634 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water
Emission peak: 490 nm FWHM <35nm QY>50%
yellow liq.
4nmole
20nmole

Technical Note:
1. See 48-1630 (page 143)

48-1636 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water
Emission peak: 525 nm FWHM <35nm QY>50%
yellow-green liq.
4nmole
20nmole

Technical Note:
1. See 48-1630 (page 143)

48-1642 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with carboxylic acid in water
Emission peak: 665 nm FWHM <35nm QY>50%
dark red liq.
4nmole
20nmole

Technical Note:
1. See 48-1630 (page 143)

CdSSe/ZnS - Solid Quantum Dots with PEG in water

Note: A water-soluble CdSSe/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid.

48-1648 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with PEG in water
Emission peak: 490 nm FWHM <35nm QY>50%
yellow liq.
2nmole
10nmole

Technical Note:
1. See 48-1644 (page 143)

48-1650 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with PEG in water
Emission peak: 525 nm FWHM <35nm QY>50%
yellow-green liq.
2nmole
10nmole

Technical Note:
1. See 48-1644 (page 143)

48-1656 HAZ
Cadmium sulfide selenide/Zinc sulfide core/shell quantum dots with PEG in water
Emission peak: 665 nm FWHM <35nm QY>50%
dark red liq.
2nmole
10nmole

Technical Note:
1. See 48-1644 (page 143)

NANOMATERIALS - CADMIUM (Compounds)

CdS/ZnS - Solid Quantum Dots

48-1614 HAZ
Cadmium sulfide/Zinc sulfide quantum dots in solid form, Emission peak: 400nm, FWHM <35nm, QY >50% — 10mg, 50mg
white pwdr.
Note: 48-1614 is a group of highly purified CdS/ZnS quantum dots in solid form. The surface ligand is octadecylamine. The quantum dots can be dispersed in most organic solvents such as toluene, chloroform, and hexane. These quantum dots are specifically designed as emitters for optoelectronic applications such as LEDs.

Technical Note:
1. Group of highly purified CdS/Zns or CdSe/ZnS quantum dots in solid form. The surface ligand is octadecylamine. The quantum dots can be dispersed in most organic solvents such as toluene, chloroform, and hexane. These quantum dots are specifically designed as emitters for optoelectronic applications such as LEDs.

References:

1. *The Journal of Physical Chemistry C,* **2009**, *113*, 1886
2. *ACS Nano,* **2009**, *3*, 737
3. *Journal of Applied Physics,* **2009**, *105*, 034312
4. *IEEE Photonics Technology Letters,* **2008**, *20*, 1998
5. *Optical Letters,* **2008**, *33*, 2437
6. *Applied Physics Letters,* **2008**, *92*, 023111
7. *Journal of Experiment NanoScience,* **2007**, *2*, 13
8. *Nanotechnology,* **2007**, *18*, 025403
9. *Applied Physics Letters,* **2007**, *91*, 023102
10. *Nature Photonics,* **2007**, *1*, 717
11. *Nano Letters,* **2007**, *7*, 3803

48-1616 HAZ
Cadmium sulfide/Zinc sulfide quantum dots in solid form, Emission peak: 420nm, FWHM <35nm, QY >50% — 10mg, 50mg
yellow pwdr.
Note: 48-1616 is a group of highly purified CdS/ZnS quantum dots in solid form. The surface ligand is octadecylamine. The quantum dots can be dispersed in most organic solvents such as toluene, chloroform, and hexane. These quantum dots are specifically designed as emitters for optoelectronic applications such as LEDs.

Technical Note:
1. See 48-1614 (page 142)

CdS/ZnS - Solid Quantum Dots with Amine in water

48-1658 HAZ
Cadmium sulfide/Zinc sulfide core/shell quantum dots with Amine in water Emission peak: 400 nm FWHM <35nm QY>50% — 2nmole, 10nmole
light yellow liq.
Note: 48-1658 is a water-soluble CdS/ZnS core shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is an amine.

Technical Notes:
1. Zeta potential of QSA is from -20mV to +10 mV.
2. Organic layers consist of a monolayer of oleic acid/octadecylamine, a monolayer of amphiphilic polymer, and a monolayer of PEG.
3. Total thickness of organic layers is ~6 nm.
4. The hydrodynamic size of the QDs is about 12-14 nm larger than their inorganic core size as measured by TEM.
5. QSA is very stable in most buffer solutions in the pH range of 5-10, and can survive autoclaving processes of 121°C for 30 mins.
6. Amine density is low due to the long PEG chain.

References:

1. *Small,* **2009**, *5*, 235

48-1660 HAZ
Cadmium sulfide/Zinc sulfide core/shell quantum dots with Amine in water Emission peak: 450 nm FWHM <35nm QY>50% — 2nmole, 10nmole
yellow liq.
Note: A water-soluble CdS/ZnS or CdSSe/Zn core shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is an amine.

Technical Note:
1. See 48-1658 (page 142)

NANOMATERIALS - CADMIUM (Compounds)

CdS/ZnS - Solid Quantum Dots with carboxylic acid in water

Note: A water-soluble CdS/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid

48-1630 HAZ — **Cadmium sulfide/Zinc sulfide core/shell quantum dots with carboxylic acid in water** — 4nmole, 20nmole
Emission peak: 400 nm FWHM <35nm QY>50%
light yellow liq.

Technical Notes:
1. Zeta potential of QSA is from -30mV to -50 mV.
2. Organic layers consist of a monolayer of oleic acid/octadecylamine and a monolayer of amphiphilic polymer.
3. Total thickness of organic layers is ~4 nm.
4. The hydrodynamic size of the QDs is about 8-10 nm larger than their inorganic core size as measured by TEM.
5. QSH is very stable in most buffer solutions in the pH range of 5-10, and can survive autoclaving processes of 121°C for 30 mins.

References:
1. *Small,* **2009**, *5*, 235

48-1632 HAZ — **Cadmium sulfide/Zinc sulfide core/shell quantum dots with carboxylic acid in water** — 4nmole, 20nmole
Emission peak: 450 nm FWHM <35nm QY>50%
yellow liq.

Technical Note:
1. See 48-1630 (page 143)

CdS/ZnS - Solid Quantum Dots with PEG in water

48-1644 HAZ — **Cadmium sulfide/Zinc sulfide core/shell quantum dots with PEG in water** — 2nmole, 10nmole
Emission peak: 400 nm FWHM <35nm QY>50%
light yellow liq.
Note: A water-soluble alloy CdSSe/ZnS or CdSe/Zn core/shell quantum dots with amphiphilic polymer. Their reacttive group is a carboxylic acid.

Technical Notes:
1. Zeta potential of QSA is from -30mV to -50 mV.
2. Total thickness of organic layers is ~4 nm.
3. The organic layers consist of a monolayer of oleic acid/octadeylamine and s monolayer of amphiphilic polymer.
4. The hydrodynamic size of the quantum dots is about 8-10 nm larger than their inorganic core size as measured by TEM.
5. The product is stable in most buffer solutions in the pH range of 5-10.

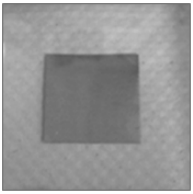
48-1646 HAZ — **Cadmium sulfide/Zinc sulfide core/shell quantum dots with PEG in water** — 2nmole, 10nmole
Emission peak: 450 nm FWHM <35nm QY>50%
yellow liq.
Note: A water-soluble CdS/ZnS core/shell quantum dots with amphiphilic polymer and PEG coating. Reactive group is a carboxylic acid.

Technical Note:
1. See 48-1644 (page 143)

NANOMATERIALS - CARBON (Elemental Forms)

Carbon, Graphene

06-0274 — **Graphene film, monolayer, on copper foil (1cm x 1cm)** — 2pcs
(1034343-98-0)
C; foil



100% coverage, >95% single atomic layer
Average grain (crystal/domain) size: >~100 micron
Average sheet resistance (on non-conductive substrate): 400 OPS (+/- 200 OPS)
Average transmission: T >96% (on transparent substrate, i.e. ~4% lower than substrate T)

06-0310 NEW — **Graphene film, monolayer, on Si/SiO_2 wafer (1cm x1cm), by CVD** — 1pc
(1034343-98-0)
C; FW: 12.011; wafer

06-0323 NEW — **Graphene oxide (0.8-1.2nm thick x 1-15 microns wide, made by the Stauden-maier Method)** — 250mg, 1g
black pwdr.; SA: 5-10 m^2/g

NANOMATERIALS - CARBON (Elemental Forms)

Carbon, Graphene

06-2545 NEW **Graphene oxide (4mg/ml water dispersion)** *(1034343-98-0)* — 50ml, 250ml
yellow-brown liq. dispersion

Physical Properties:
Form: Dispersion of graphene oxide sheets; *Sheet dimension*: Variable; *Color*: Yellow-brown; *Dispersibility*: Polar solvents; *Solvent*: Water; *pH*: 2.2-2.5; *Concentration*: 4 mg/mL; *Monolayer content (measured in 0.5 mg/mL)*: >95%*
*Note: 4 mg/mL tends to agglomerate the GO flakes and dilution followed by slight sonication is required in order to obtain a higher percentage of monolayer flakes
Elemental Analysis: (sample preparation: 2g of 4 wt% GO in water were dried under vacuum at 60°C overnight)
Carbon: 49-56%; *Hydrogen*: 0-1%; *Nitrogen*: 0-1%; *Oxygen*: 41-50%; *Sulfur*: 0-2%
Quality Control:
Amount of residue on evaporation
pH control
Elemental analysis
Applications: Graphene/polymer composite materials, batteries, biomedical, solar cells, supercapacitors, support for metallic catalysts, low permeability materials, biosensors, multifunctional materials, graphene research
References:

1. *J. Mater. Chem.*, **2011**, *21*, 9762.
2. *Environ. Sci. Technol.*, **2013**, *47*, 3715.
3. *Phys. Chem. Chem. Phys.*, **2013**, *15*, 2321.

06-2550 NEW **Graphene oxide, reduced** *(1034343-98-0)* — 250mg, 1g
black pwdr.

Physical Properties:
Form: powder; *Reduction method*: chemically reduced; *Sheet dimension*: variable; *Color*: black; *Solubility*: insoluble; *Dispersability*: <0.1 mg/mL in NMP, DMF, DMSO; *Humidity (Karl Fisher, TGA)*: 3.7-4.2%; *Electrical conductivity*: 666,7 S/m (measured in a 20 nm film thickness); *BET surface area*: 422.69 - 499.85 m^2/g; *Density*: 1.91 g/cm^3
Elemental Analysis: (sample preparation: 2g of 4 wt% GO in water were dried under vacuum at 60°C overnight)
Carbon: 77-87%; *Hydrogen*: 0-1%; *Nitrogen*: 0-1%; *Oxygen*: 13-22%; *Sulfur*: 0%
Quality Control: Elemental analysis
Applications: Batteries, biomedical, solar cells, supercapacitors, printable graphene electronics, graphene research
References:

1. *Nano Letters*, **2010**, *10*, 92.
2. *J. Phys. Chem. Lett.*, **2013**, *4*, 1347.

06-0318 NEW **Graphene powder (1-5 layers thick x 0.5-5 microns wide, surface area 650-750 m^2/g)** *(1034343-98-0)* — 250mg, 1g
C; FW: 12.011; black pwdr.

06-0313 NEW **Graphene powder (single layer, surface area 400-1000 m^2/g)** *(1034343-98-0)* — 50mg
C; FW: 12.011; black pwdr.

06-2510 NEW **Monolayer Graphene on Cu (10 mm x 10 mm)** *(1034343-98-0)* — 4pcs
C; FW: 12.011; wafer

Physical Properties:
Growth Method: Chemical Vapor Deposition (CVD synthesis); *Appearance*: Transparent; *Transparency*: >97%; *Coverage*: 98%; *Layers*: 1; *Thickness (theoretical)*: 0.345 nm; *FET Electron Mobility on Al_2O_3*: 2000 cm^2/Vs; *FET Electron Mobility on SiO_2*: 4000 cm^2/Vs; *Sheet Resistance on SiO_2/Si*: 410-490 Ω/sq (1 cm x 1 cm); *Grain size*: Up to 10 µm
Substrate Cu foil:
Thickness: 18 µm
Pretreated for easier bottom layer removal: Monolayer graphene on the back side of Copper is partially removed, but not completely, so an additional treatment like RIE is needed before transfer to eliminate the bottom layer totally
Applications: Flexible batteries, electronics, aerospace, MEMS and NEMS, Microactuators, Conductive coatings
Quality Control: Raman Spectroscopy and Optical Microscopy
References:

1. *J. Electrochem. Soc.*, **2012**, *159*, A752.
2. *J. Mater. Chem. A.*, **2013**, *1*, 3177.

NANOMATERIALS - CARBON (Elemental Forms)

Carbon, Graphene

06-2518 **Monolayer Graphene on Cu (60 mm x 40 mm)** *(1034343-98-0)* 1pc
NEW
C; FW: 12.011; wafer

Physical Properties:
Growth Method: Chemical Vapor Deposition (CVD synthesis); *Appearance*: Transparent; *Transparency*: >97%; *Coverage*: 95%; *Layers*: 1; *Thickness (theoretical)*: 0.345 nm; *FET Electron Mobility on Al_2O_3*: 2000 cm^2/Vs; *FET Electron Mobility on SiO_2*: 4000 cm^2/Vs; *Sheet Resistance on SiO_2/Si*: 410-490 Ω/sq (1 cm x 1 cm); *Grain size*: Up to 10 µm
Substrate Cu foil:
Thickness: 18 µm
Pretreated for easier bottom layer removal: Monolayer graphene on the back side of Copper is partially removed, but not completely, so an additional treatment like RIE is needed before transfer to eliminate the bottom layer totally
Applications: Flexible batteries, electronics, aerospace, MEMS and NEMS, Microactuators, Conductive coatings
Quality control: Raman Spectroscopy and Optical Microscopy
References:
1. *J. Electrochem. Soc.*, **2012**, *159*, A752.
2. *J. Mater. Chem. A.*, **2013**, *1*, 3177.

06-2523 **Monolayer Graphene on Cu with PMMA coating (60mm x 40mm)** 1pc
NEW
(1034343-98-0)
C; FW: 12.011; wafer

Physical Properties:
Growth Method: Chemical Vapor Deposition (CVD synthesis); *Appearance*: Transparent; *Transparency*: >97%; *Coverage*: 95%; *Layers*: 1; *Thickness (theoretical)*: 0.345 nm; *FET Electron Mobility on Al_2O_3*: 2000 cm^2/Vs; *FET Electron Mobility on SiO_2*: 4000 cm^2/Vs; *Sheet Resistance on SiO_2/Si*: 410-490 Ω/sq (1 cm x 1 cm); *Grain size*: Up to 10 µm
Substrate Cu foil:
Thickness: 18 µm
Pretreated for easier bottom layer removal: Monolayer graphene on the back side of Copper is partially removed, but not completely, so an additional treatment like RIE is needed before transfer to eliminate the bottom layer totally
Applications: Flexible batteries, electronics, aerospace, MEMS and NEMS, Microactuators, Conductive coatings
Quality control: Raman Spectroscopy and Optical Microscopy
References:
1. *J. Electrochem. Soc.*, **2012**, *159*, A752.
2. *J. Mater. Chem. A.*, **2013**, *1*, 3177.

06-2534 **Monolayer Graphene on SiO_2/Si (10mm x 10mm)** *(1034343-98-0)* 4pc
NEW
C; wafer

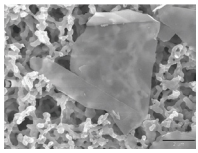
Physical Properties:
Growth Method: Chemical Vapor Deposition (CVD synthesis); *Appearance*: Transparent; *Transparency*: >97%; *Coverage*: 95%; *Layers*: 1; *Thickness (theoretical)*: 0.345 nm; *FET Electron Mobility on Al_2O_3*: 2000 cm^2/Vs; *FET Electron Mobility on SiO_2*: 4000 cm^2/Vs; *Sheet Resistance on SiO_2/Si*: 410-490 Ω/sq (1 cm x 1 cm); *Grain size*: Up to 10 µm
Substrate Cu foil:
Dry Oxide Thickness: 285-315 nm; *Type/Dopant*: P/Bor; *Orientation*: <100>; *Resistivity*: <0.005 Ohm·cm; *Thickness*: 505-545 µm; *Front surface*: single side polished; *Back surface*: etched; *Particles*: <10@0.3 µm
Applications: Flexible batteries, electronics, aerospace, MEMS and NEMS, Microactuators, Conductive coatings
Quality control: Raman Spectroscopy and Optical Microscopy
References:
1. *J. Electrochem. Soc.*, **2012**, *159*, A752
2. *J. Mater. Chem. A.*, **2013**, *1*, 3177

NANOMATERIALS - CARBON (Elemental Forms)

Graphene Nanoplatelets

06-0222 NEW
Graphene nanoplatelets, (2-10nm thick x ~5 microns wide) *(1034343-98-0)*
C; black solid
5g
25g

06-0210
Graphene nanoplatelets (6-8 nm thick x 5 microns wide) *(1034343-98-0)*
C; black platelet
Note: Graphene nanoplatelets are unique nanoparticles consisting of short stacks of graphene sheets having a platelet shape. They have an average thickness of approximately 6 - 8 nanometers and a typical surface area of 120 to 150 m^2/g. The unique size and platelet morphology of the graphene nanoplatelets makes these particles especially effective at providing barrier properties and improving mechanical properties, while their pure graphitic composition makes them excellent electrical and thermal conductors.
For detailed technical note visit strem.com.



25g
100g

06-0215
Graphene nanoplatelets (6-8 nm thick x 15 microns wide) *(1034343-98-0)*
C; black platelet
25g
100g

Technical Note:
1. See 06-0210 (page 146)

06-0220
Graphene nanoplatelets (6-8 nm thick x 25 microns wide) *(1034343-98-0)*
C; black platelet
25g
100g

Technical Note:
1. See 06-0210 (page 146)

06-0225
Graphene nanoplatelets aggregates (sub-micron particles, surface area 300m^2/g) *(1034343-98-0)*
black platelet
Note: Graphene nanoplatelet aggregates are unique nanoparticles consisting of short stacks of graphene sheets having a platelet shape. They typically consist of aggregates of sub-micron platelets that have a particle diameter of less than 2 microns and a typical particle thickness of a few nanometers, depending on the surface area.

The unique size and platelet morphology of the graphene nanoplatelets makes these particles especially effective at providing barrier properties and improving mechanical properties, while their pure graphitic composition makes them excellent electrical and thermal conductors.
25g
100g

06-0230
Graphene nanoplatelets aggregates (sub-micron particles, surface area 500m^2/g) *(1034343-98-0)*
black platelet
25g
100g

Technical Note:
1. See 06-0225 (page 146)

06-0235
Graphene nanoplatelets aggregates (sub-micron particles, surface area 750m^2/g) *(1034343-98-0)*
black platelet
25g
100g

Technical Note:
1. See 06-0225 (page 146)

NANOMATERIALS - CARBON (Elemental Forms)

Graphene Quantum Dots *(1034343-98-0)*

light sensitive, (store cold)

Note: Particle diameter: <5 nm. Sold in collaboration with Dotz Nano Ltd. for research purposes only. Suggested use within 6 months of purchase. Do not freeze. Store in DARK.

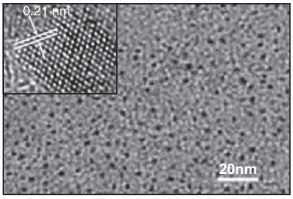
06-0330 NEW **Graphene Quantum Dots (GQDs), Aqua-Green Luminescent** *(1034343-98-0)* 100mg
C; dark red-brown pwdr.

Suggested Applications:
Graphene quantum dots (GQDs), sheets of few-layered graphene and lateral dimensions smaller than 100nm possess strong quantum confinement and edge effects. Thus, they possess unique physical properties such as strong photoluminescence, which can be tailored for specific applications by controlling their size, shape, defects and functionality.

In contrast to classic QDs, such as metal or silicon quantum dots, GQDs are biocompatible, photostable and inherit superior thermal, electrical and mechanical properties from the graphene. These features can greatly contribute to various state-of-the-art applications: optical brighteners, taggants for security applications[1], bioimaging markers[2], fluorescent polymers[3], antibacterial[4], antibiofouling[5], and disinfection systems[6], heavy metals[7], humidity and pressure[8] sensors, batteries[9], flash memory devices[10], photovoltaic devices[11] and light-emitting diodes[12].

Item #	Photoluminescence			
	QY+ *	λ_{max} *	Max emission	FWHM *
06-0330 / 06-0332	>17%	485 nm	525 nm	70 nm
06-0334 / 06-0336	>65%	350 nm	445 nm	65 nm
06-0338 / 06-0340	>25%	420 nm	490 nm	80 nm

Abbreviations	
QY+	Quantum Yield
λ_{max}	Maximum excitation wavelength
FWHM	Full width at half maximum



References:
1. http://onlinelibrary.wiley.com/doi/10.1002/anie.201206791/abstract
2. http://onlinelibrary.wiley.com/doi/10.1002/ppsc.201400219/abstract
3. http://pubs.acs.org/doi/abs/10.1021/acsami.5b06057
4. http://pubs.acs.org/doi/abs/10.1021/acsami.6b01765
5. http://www.nature.com/articles/srep20142
6. http://pubs.acs.org/doi/abs/10.1021/nn501640q
7. http://www.sciencedirect.com/science/article/pii/S0013468615000468
8. http://pubs.acs.org/doi/abs/10.1021/nl4003443
9. http://pubs.acs.org/doi/abs/10.1021/nl504038s
10. http://iopscience.iop.org/article/10.1088/0957-4484/25/25/255203/meta
11. http://onlinelibrary.wiley.com/doi/10.1002/anie.200906291/abstract
12. http://link.springer.com/article/10.1007/s10853-012-7016-8

06-0332 NEW **Graphene Quantum Dots (GQDs) in water, Aqua-Green Luminescent** *(1034343-98-0)* 100ml
C; cloudy orange liq.

Technical Note:
1. See 06-0330 (page 147)

06-0334 NEW **Graphene Quantum Dots (GQDs), Blue Luminescent** *(1034343-98-0)* 100mg
C; dark brown pwdr.

Technical Note:
1. See 06-0330 (page 147)

NANOMATERIALS - CARBON (Elemental Forms)

Graphene Quantum Dots *(1034343-98-0)*

light sensitive, (store cold)
Note: Particle diameter: <5 nm. Sold in collaboration with Dotz Nano Ltd. for research purposes only. Suggested use within 6 months of purchase. Do not freeze. Store in DARK.

06-0336 **Graphene Quantum Dots (GQDs) in water, Blue Luminescent** *(1034343-98-0)* 100ml
NEW
C; cloudy colorless liq.
Technical Note:
1. See 06-0330 (page 147)

06-0338 **Graphene Quantum Dots (GQDs), Cyan Luminescent** *(1034343-98-0)* 100mg
NEW
C; dark brown pwdr.
Technical Note:
1. See 06-0330 (page 147)

06-0340 **Graphene Quantum Dots (GQDs) in water, Cyan Luminescent** *(1034343-98-0)* 100ml
NEW
C; cloudy brown liq.
Technical Note:
1. See 06-0330 (page 147)

96-7410 **Graphene Quantum Dots (GQDs) Master Kit** *(1034343-98-0)*
See page 536

96-7425 **Graphene Quantum Dots (GQDs) Mini Kit (Powders)** *(1034343-98-0)*
See page 536

96-7420 **Graphene Quantum Dots in water (GQDs) Mini Kit (Liquids)** *(1034343-98-0)*
See page 537

Carbon Nanotubes

06-0440 **Carbon nanotube array, multi-walled, on quartz (diameter= 100nm, length=30 microns)** *(308068-56-6)* 1pc
black microfibers; (diameter=100nm, length=30microns)

Technical Note:
1. Arrays grown on 10x10x1mm quartz substrate using a single source CVD process that yields vertically aligned MWNTs (< 1% catalyst impurity). Arrays are 30µm tall (± 3µm) and are composed of MWNTs 100nm in diameter (± 10nm). Arrays up to 150µm an be provided on request.

06-0470 **Carbon nanotubes, multi-walled (diameter = ~140nm, length = ~7 microns) (>90% nanotubes)** *(308068-56-6)* 1g 5g
black pwdr.
Technical Note:
1. Produced by chemical vapor deposition. Typical metal content is <0.1%.

06-0475 **Carbon nanotubes, multi-walled (diameter = ~20-25nm, length = ~1-5 microns) (85% nanotubes)** *(308068-56-6)* 250mg 1g
black pwdr.
Technical Note:
1. Produced by chemical vapor deposition. Typical metal content is 4-5 wt %.

06-0720 **Carbon nanotubes, multi-walled, arc-produced (diameter = 2-50nm, length = >2 microns) (55-65wt% nanotubes)** *(308068-56-6)* 250mg 1g
black pwdr.
Technical Note:
1. Arc-produced, multi-walled carbon nanotubes contain 55-65 wt% nanotubes and 35-45wt% graphite nanoparticles. The tubes have a diameter distribution of 2-50 nm, and a typical length of >2 microns (straight tubes). The chemical composition is 100% carbon, with no metal impurities. Because the nanotubes are grown at very high temperatures (3000-4000°C), the product contain far less defects than nanotubes produced by other methods. The nanotubes are stable in air up to 700°C.

06-0504 **Carbon nanotubes, multi-walled, as produced cathode deposit** *(308068-56-6)* 1g 5g
pieces

06-0505 **Carbon nanotubes, multi-walled, core material** *(308068-56-6)* 1g 5g
pieces (20-40% nanotubes)

06-0506 **Carbon nanotubes, multi-walled, ground core material** *(308068-56-6)* 250mg 1g 5g
-270 mesh pwder. (20-40%nanotubes)

NANOMATERIALS - CARBON (Elemental Forms)

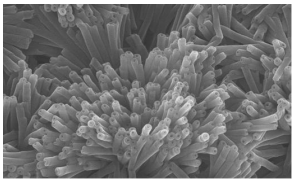
Carbon Nanotubes

06-0508 **Carbon nanotubes, single-walled/double-walled, 90%** *(308068-56-6)* 250mg
pwdr. 1g

Technical Note:

1. This product is nanotubes, single-walled/double-walled, 90%. The tubes are 1-2nm in diameter with lengths of 5-30 microns. Ash is <1.5wt%.

06-1060 **Polydiacetylene nanotube (PDNT-12-8-22Br)** 100mg
blue solid 500mg
Note: Sold in collaboration with LIG Sciences for research purposes only. US Patent No. 7,666,911.



Technical Note:

1. Polydiacetylene Nanotubes (PDNT) are self-assembled diacetylene nanotubes comprised of cross-linking of conjugated double and triple bonds. They are produced using a proprietary molecular self-assembly process that results in remarkably uniform, pure, air-stable blue nanotubes (ID 34nm, OD 98nm and length 1-3µm). PDNT nanotubes exhibit thermochromism either on different substrates or in solvents. This unique thermo- and mechano-chromic behavior has been demonstrated to be completely reversible for hundreds cycles.

NANOMATERIALS - CERIUM (Compounds)

58-0870 **Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in octa-** 50g
HAZ **noic acid and Kensol 50H (CEF-KE02)** 250g
rose-colored mixture; f.p. 230°; d. 0.84
(store cold)
Note: Store at 5 to 25°C. Do not freeze. Suggested use within 12 months of receipt.
Sold in collaboration with Cerion for research purposes only.

% Solids: 2.0 +/- 0.05%
Mean Number Weighted Particle Diameter: 2.5 ,Äì 5.0 nm (by Dynamic Light Scattering)
Polydispersity Index: <0.25
Chemical Composition (particles): 40-58 wt% CeO2 balance Fe2O3% by XRF
Residual Water: <0.35 wt% (by Karl Fischer)
Flashpoint: 230ºF/110ºC

58-0865 **Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in water** 25g
HAZ **at pH 4.75 +-0.25 (CEF-W420)** 100g
$CeO2/Fe_2O_3$; red-brown mixture; d. 1.23 500g
(store cold)
Note: Store at 5 to 25°C. Do not freeze. Suggested use within 12 months of receipt.
Sold in collaboration with Cerion for research purposes only.

pH: 4.75 +/- 0.25
Useable pH Range: 3 - 5
Mean Number Weighted Particle Diameter: <5 nm (by Dynamic Light Scattering)
Polydispersity Index: <0.25
Chemical Composition (particles by XRF): 40 - 58wt% CeO_2, balance Fe_2O_3

58-0850 **Cerium(IV) oxide [contains some Ce(III)] in water at pH = 9.0 +-0.5 (CEO-W290)** 25g
HAZ *(1306-38-3)* 100g
CeO_2; FW: 172.12; <5.0 nm, reddish-brown mixture; d. 1.23 500g
(store cold)
Note: Store at 5 to 25°C. Do not freeze. Suggested use within 12 months of receipt.
Sold in collaboration with Cerion for research purposes only.

% Solids: 20.0 +/- 0.5%
pH: 9.0 +/- 0.5
Useable pH Range: 6-10
Mean Number Weighted Particle Diameter: 2.0 nm (by Dynamic Light Scattering)
Polydispersity Index: <0.25
Chemical Composition (particles): >99.5% CeO_2
Thermal Stability: Stable for >72 hours at 60ºC

NANOMATERIALS - CERIUM (Compounds)

58-0860 HAZ — **Cerium(IV) oxide [contains some Ce(III)] in water at pH = 3.5 +-0.75 (CEO-W320)** *(1306-38-3)* — 25g, 100g, 500g
CeO_2; FW: 172.12; red-brown mixture; d. 1.23
(store cold)
Note: Store at 5 to 25°C. Do not freeze. Suggested use within 12 months of receipt.
Sold in collaboration with Cerion for research purposes only.

% Solids: 20 +/- 0.5%
pH: 3.5 +/- 0.75
Useable pH Range: 2-5
Mean Number Weighted Particle Diameter: 3.0 nm (by Dynamic Light Scattering)
Polydispersity Index: <0.25
Chemical Composition (particles): >99.5% CeO_2

58-1400 — **Cerium(IV) oxide nanopowder** *(1306-38-3)* — 25g, 100g
CeO_2; FW: 172.12; yellow pwdr.

NANOMATERIALS - COPPER (Elemental Forms)

29-0092 HAZ — **Copper nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-50-8)* — 25ml, 100ml
brown liq.
Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

NANOMATERIALS - GOLD (Elemental Forms)

Gold AURO*lite*™ Heterogeneous Catalysts

(store cold)
Note: Sold in collaboration with Project AuTEK for research purposes. Reverse engineering and product modification prohibited. Only open before use, store cold in dark. See web for more details.

79-0160 — **Gold 1% on aluminum oxide extrudates (AUROlite™ Au/Al_2O_3)** *(7440-57-5)* — 10g, 50g
dark purple extrudates ~1.2mm dia. x 5mm (avg)

Technical Note:
1. Useful product for the catalytic oxidation of a variety of substrates including carbon monoxide, aldehydes, alkenes, methane and ethanol. Average gold crystallite size is ~2-3nm.

Analysis: Au 1 wt% ± 0.1%; Al_2O_3 98 wt%; Na+, Cl- <1500ppm
Bulk density: 0.6–0.8 g/ml

References:

1. *J. Catal.,* **2007**, *252*, 119
2. *J. Catal.,* **2008**, *260*, 86
3. *Green Chem.,* **2008**, *10*, 168
4. *Gold Bulletin,* **2008**, *41*, 296
5. *Appl. Catal. B.,* **2013**, *132*, 195
6. *Chem. Rev.,* **2012**, *112*, 4469

79-0165 — **Gold 1% on titanium dioxide extrudates (AUROlite™ Au/TiO_2)** *(7440-57-5)* — 10g, 50g
dark purple/gray extrudates 1.5mm dia. x 5mm (avg)

Technical Note:
1. Useful product for the catalytic oxidation of a variety of substrates including carbon monoxide, aldehydes, alkenes, methane and ethanol. Average gold crystallite size is ~2-3nm.

Analysis: Au 1 wt% ± 0.1%; TiO_2 98 wt%; Na+, Cl- <1500ppm
Bulk density: 0.85–0.95 g/ml

References:

1. *J.Catal.,* **2007**, *252*, 119
2. *J.Catal.,* **2008**, *260*, 86
3. *Green Chem.,* **2008**, *10*, 168
4. *Gold Bulletin,* **2008**, *41*, 296
5. *Appl. Catal. B.,* **2013**, *132*, 195
6. *Chem. Rev.,* **2012**, *112*, 4469

NANOMATERIALS - GOLD (Elemental Forms)

Gold AURO*lite*™ Heterogeneous Catalysts

(store cold)
Note: Sold in collaboration with Project AuTEK for research purposes. Reverse engineering and product modification prohibited. Only open before use, store cold in dark. See web for more details.

79-0170	**Gold 1% on zinc oxide granulate (AUROlite™ Au/ZnO)** *(7440-57-5)* dark purple granulate 1-2mm dia. Note: PCT WO2005115612.	10g 50g

Technical Note:
1. Useful product for the catalytic oxidation of a variety of substrates including carbon monoxide, aldehydes, alkenes, methane and ethanol. Average gold crystallite size is ~2-3nm.

Analysis: Au 1 wt% ± 0.1%; ZnO 88 wt% (contains Al2O3); Na+, Cl- <1500ppm
Bulk density: 1-1.2 g/ml

References:

1. *J.Catal.,* **2007**, *252*, 119
2. *J.Catal.,* **2008**, *260*, 86
3. *Green Chem.,* **2008**, *10*, 168
4. *Gold Bulletin,* **2008**, *41*, 296
5. *Appl. Catal. B.,* **2013**, *132*, 195
6. *Chem. Rev.,* **2012**, *112*, 4469

Gold - Colloid

Note: Made to order. Long term shelf life not established.

79-0080	**Gold/tetra-n-octylammonium chloride colloid** *(7440-57-5)* $Au/(C_8H_{17})_4NCl$; 2.6 nm ±1.1 nm; brown-orange solid *(store cold)*	250mg 1g

Technical Note:
1. Soluble in toluene. Precursor for CO-oxidation catalysts.

Gold Nanochain

79-0134	**Gold Nanochain [AuNP-Chain: 1-2 µm (Gum Arabic)]** *(7440-57-5)* maroon-red liq. *(store cold)*	25ml

Properties: Water soluble, stable at pH 7.0; **Chain length:**1-2 µm; **Shape**: Chain; **UV-Vis (nm):**760 nm; **Stability**: Stable for 90 days; Size: 7 ±3mm
Ordering Specifications: Minimum 2 weeks required to process the order.
Supplied in aqueous solutions. Contains gum arabic stabilizer. Suitable for spin coating, self-assembly and monolayer formation. Sensor design, nanoelectronics and MEMS applications.

Gold Nanoparticles - Solid and Functionalized

79-0235	**Gold nanoparticles powder, 6nm, organic solvent-dispersible** *(7440-57-5)* black pwdr. Note: 79-0235 is an organic soluble solid. The surface ligand is dodecanethiol. The hydrodynamic size of the nanoparticles is about 8-10nm larger than their inorganic core size measured by TEM.	5mg 25mg
79-0238	**Gold nanoparticles with amine surface functional group, 6nm, in water** *(7440-57-5)* dark red liq. Note: 79-0238 is a group of water-soluble gold nanoparticles with amphiphilic polymer and PEG coating. The reactive group is an amine.	5mg 25mg

Technical Notes:
1. Zeta potential of 79-0238 is from -10mV to 0 mV.
2. Total thickness of organic layers is ~6 nm.
3. The organic layers consist of a monolayer of dodecanethiol, a monolayer of amphipilic polymer and a monolayer of PEG.
4. The hydrodynamic size of the nanocrystals is about 12-14 nm larger than their inorganic core size as measured by TEM.
5. 79-0238 is very stable in buffer solutions in the pH range of 4-10 and can survive the autoclaving (121°C for 30 mins.).
6. The long term stability is not as good as that of 79-0240.
7. Check expiration date before conjugating.
8. 79-0238 can be conjugated to carbonyl or thiol-containing molecules.

NANOMATERIALS - GOLD (Elemental Forms)

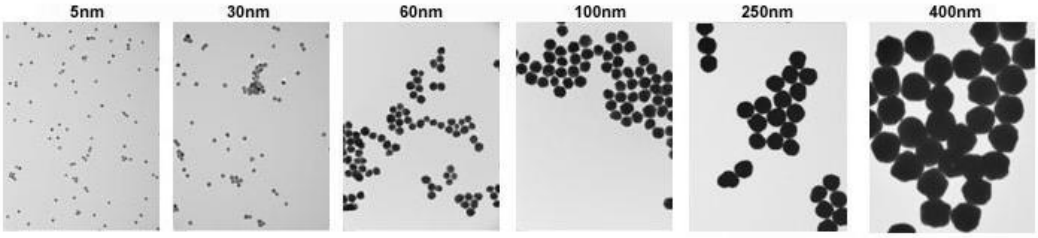
Gold Nanoparticles - Solid and Functionalized

79-0240 **Gold nanoparticles with carboxylic acid surface functional group, 6nm, in water** *(7440-57-5)* — 10mg, 50mg
dark red liq.
Note: 79-0240 is a group of water-soluble gold nanoparticles with amphiphilic polymer. The reactive group is a carboxylic acid.

Technical Notes:
1. Zeta potential is from -30mV to -50 mV.
2. Total thickness of organic layers is ~4 nm.
3. The organic layers consist of a monolayer of dodecanethiol and a monolayer of amphihpilic polymer.
4. The hydrodynamic size of the nanoparticles is about 8-10 nm larger than their inorganic core size as measured by TEM.
5. 79-0240 is very stable in buffer solutions in the pH range of 4-10 and can survive the autoclaving (121°C for 30 min.)
6. 79-0240 can be conjugated to protein, peptide, and other amine-containing molecules.

Gold Nanoparticles - Reactant Free

>99% free of residual reactant in 0.1mM phosphate buffer.
Store away from direct sunlight at 4°C. Do not freeze. Shelf life 6 months.
light sensitive; (store cold)



Gold Nanoparticles (1 OD, stabilized suspension in phosphate-buffered saline) reactant free — 25ml, 100ml
(7440-57-5) (store cold)

Catalog #	Diameter	Color and form	Absorption max.
79-0180*	5nm	red liq.	515-520nm
79-0184*	10nm	red liq.	520nm
79-0186*	15nm	red liq.	520nm
79-0188*	20nm	red liq.	524nm
79-0190*	30nm	red liq.	526nm
79-0192*	40nm	red liq.	530nm
79-0194	50nm	red liq.	535nm
79-0196	60nm	pink to bright-red liq.	539nm
79-0198	80nm	pink to bright-red liq.	
79-0202	80nm	pink to bright-red liq.	
79-0204	90nm	pink to bright-red liq.	
79-0206	100nm	pink to bright-red liq.	
79-0208	150nm	pink to bright-red liq.	
79-0220	200nm	pink to bright-red liq.	
79-0222	250nm	pink to bright-red liq.	
79-0224	300nm	pink to bright-red liq.	
79-0228	400nm	pink to bright-red liq.	

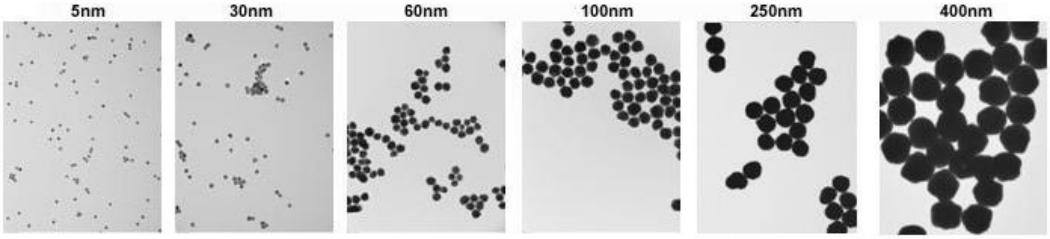
*Gold Nanoparticles Kit, Reactant Free component. *See* page 535

96-1545 **Gold Nanoparticles Kit, Reactant-Free (5nm-40nm diameter, OD 1, suspension in phosphate-buffered saline, 515-530nm abs. max.)** *(7440-57-5)*
See page 535

NANOMATERIALS - GOLD (Elemental Forms)

Gold Nanoparticles - Stabilizing Surfactant (1 OD, supplied in 0.1mM stabilizing surfactant)

Store away from direct sunlight at 4°C. Do not freeze. Shelf life 6 months.
light sensitive, (store cold)



Gold Nanoparticles (1 OD, supplied in 0.1mM stabilizing surfactant) *(7440-57-5)* 25ml
(store cold) 100ml

Catalog #	Diameter	Color and form	Absorption max.
79-0182	5nm	red liq.	515-520nm
79-0210	10nm	red liq.	515-520nm
79-0212	15nm	red liq.	520nm
79-0214	20nm	red liq.	524nm
79-0216	30nm	red liq.	526nm
79-0218	40nm	red liq.	530nm
79-0260	50nm	pink to bright-red liq.	535nm
79-0262	60nm	pink to bright-red liq.	540nm
79-0264	70nm	pink to bright-red liq.	548nm
79-0266	80nm	pink to bright-red liq.	553nm
79-0268	90nm	pink to bright-red liq.	564nm
79-0270	100nm	pink to bright-red liq.	572nm
79-0272	150nm	pink to bright-red liq.	
79-0274	200nm	pink to bright-red liq.	
79-0276	250nm	pink to bright-red liq.	
79-0278	300nm	pink to bright-red liq.	
79-0280	400nm	pink to bright-red liq.	

*Gold Nanoparticles Kit, stabilized suspension citrate buffer component. *See* <d=Anchor 4A7132

96-1547 **Gold Nanoparticles Kit (5nm-40nm diameter, OD 1, stabilized suspension citrate buffer)** *(7440-57-5)*
See page 534

NANOMATERIALS - GOLD (Elemental Forms)

Gold Nanoparticles - Spherical

Concentration: 0.03mg/ml (±10%)
Storage Conditions: *(store cold),* store at ~4ºC (do not freeze)
Shelf Life: 6 months

79-6040	**Spherical Gold Nanoparticles (30 nm)** *(7440-57-5)* orange pink liq. Note: Spherical Gold Nanoparticles Kit component.	5ml 25ml
79-6045	**Spherical Gold Nanoparticles (50 nm)** *(7440-57-5)* pink liq. Note: Spherical Gold Nanoparticles Kit component.	5ml 25ml
79-6050	**Spherical Gold Nanoparticles (70 nm)** *(7440-57-5)* pink liq. Note: Spherical Gold Nanoparticles Kit component.	5ml 25ml
79-6055	**Spherical Gold Nanoparticles (90 nm)** *(7440-57-5)* violet liq. Note: Spherical Gold Nanoparticles Kit component.	5ml 25ml
96-1540	**Gold Nanospheres Kit (30-90 nm)** *(7440-57-5)* *See* page 535	

Gold Nanoparticles - Sugar Coated

79-0124	**Sugar Coated Gold Nanoparticles [AuNP: 1-2 nm (Lactose)]** *(7440-57-5)* maroon-red liq. *(store cold)*	5ml

Properties: Water soluble; **Size**: 22-38, 4-16, 6-10 or 1-2 nm; **Shape**: Sphere; **UV-Vis (nm):** 535, 535, 540 or 540 nm;
Stability: After generation from kit components - Stable for 1 day.
Supplied as kit. Suitable for in vitro use and sensor design applications.

79-0122	**Sugar Coated Gold Nanoparticles [AuNP: 6-10 nm (Maltose)]** *(7440-57-5)* maroon-red liq. *(store cold)*	5ml

Properties: Water soluble; **Size**: 22-38, 4-16, 6-10 or 1-2 nm; **Shape**: Sphere; **UV-Vis (nm):** 535, 535, 540 or 540 nm;
Stability: After generation from kit components - Stable for 1 day.
Supplied as kit. Suitable for in vitro use and sensor design applications.

Gold Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation

Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

79-0412 HAZ	**Gold nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-57-5)* red liq.	25ml 100ml
79-0416 HAZ	**Gold nanoparticles, pure, (<20nm) in isopropanol at 100mg/L (surfactant and reactant-free)** *(7440-57-5)* red liq.	25ml 100ml
79-0426 HAZ	**Gold nanoparticles, pure, (50-70nm) in isopropanol at 100mg/L (surfactant and reactant-free)** *(7440-57-5)* red liq. Note: Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***	25ml 100ml
79-0410	**Gold nanoparticles, pure, (<20nm) in water at 100mg/L (surfactant and reactant-free, OD>1, stabilized with < 0.01 mmol/l of citrate)** *(7440-57-5)* red. liq.	25ml 100ml
79-0418	**Gold nanoparticles, pure, (<20nm) in water at 500mg/L (surfactant and reactant-free, OD>5, stabilized with < 0.01 mmol/l of citrate)** *(7440-57-5)* dark red liq.	25ml 100ml

NANOMATERIALS - GOLD (Elemental Forms)

Gold Nanoparticles - Surfactant and Reactant-Free (Supported), Manufactured via Laser Ablation

(7440-57-5), (store cold)

Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.

79-0921 **Gold nanoparticles, 1% on carbon black (surfactant and reactant-free)**
(7440-57-5)
See page 70

79-0916 **Gold nanoparticles, 1% on Titania (anatase) (surfactant and reactant-free)**
(7440-57-5)
See page 70

79-0905 **Gold nanoparticles, 1% on Titania (rutile) (surfactant and reactant-free)**
(7440-57-5)
See page 70

79-0926 **Gold nanoparticles, 5% on carbon black (surfactant and reactant-free)**
(7440-57-5)
See page 70

79-0935 **Gold nanoparticles, 10% on Titania (anatase) (surfactant and reactant-free)**
(7440-57-5)
See page 70

79-0930 **Gold nanoparticles, 10% on Titania (rutile) (surfactant and reactant-free)**
(7440-57-5)
See page 71

Gold Nanoparticles - Water Soluble

(store cold)

79-0110 **Water Soluble Gold Nanoparticles [AuNP: 3nm (Citrate)]** *(7440-57-5)* 25ml
wine-red liq. 100ml

Properties: Water soluble; **Size:** 3 nm, 5 nm, 10 or 15 nm; **Shape:** Sphere; **UV-Vis (nm):** 520, 525, 520 or 525 nm; **Stability:** Stable for 90 days in aqueous media.
Supplied in aqueous solutions. Contains citrate stabilizer. Suitable for spin coating, self-assembly and monolayer formation.

79-0112 **Water Soluble Gold Nanoparticles [AuNP: 5nm (Citrate)]** *(7440-57-5)* 25ml
wine-red liq. 100ml

Properties: Water soluble; **Size**: 3 nm, 5 nm, 10 or 15 nm; **Shape**: Sphere; **UV-Vis (nm):** 520, 525, 520 or 525 nm; **Stability**: Stable for 90 days in aqueous media.
Supplied in aqueous solutions. Contains citrate stabilizer. Suitable for spin coating, self-assembly and monolayer formation.

79-0114 **Water Soluble Gold Nanoparticles [AuNP: 10 nm (Citrate)]** *(7440-57-5)* 25ml
wine-red liq. 100ml

Technical Note:
1. See 79-0110 (page 155)

79-0116 **Water soluble Gold Nanoparticles [AuNP: 15 nm (Citrate)]** *(7440-57-5)* 25ml
wine-red liq. 100ml

Technical Note:
1. See 79-0110 (page 155)

79-0126 **Water Soluble Gold Nanoparticles [AuNP: 11-20 nm (Gelatin)]** *(7440-57-5)* 25ml
wine-red liq. 100ml

Properties: Water soluble; **Size**: 11-20 nm; **Shape**: Sphere; **UV-Vis (nm):** 540 nm; **Stability**: Stable for 90 days in aqueous media. Suitable for spin coating, self-assembly and monolayer formation. Suitable for in vitro use and sensor design applications.

79-0108 **Water Soluble Gold Nanoparticles [AuNP: 12-16 nm (Starch)]** *(7440-57-5)* 25ml
maroon-red liq. 100ml

Properties: Water soluble, stable at pH 7.0; **Size:** 30-40 nm; **Shape:** Sphere; **UV-Vis (nm):** 535 nm; **Stability:** Stable for 30 days in aqueous media.
Supplied in aqueous solutions. Contains starch stabilizer. Suitable for spin coating, self-assembly and monolayer formation.
References:
1. *Appl. Phys. Lett.,* **2006**, *88*, 153114
2. *J. Am. Chem. Soc.,* **2006**, *128*, 11342

NANOMATERIALS - GOLD (Elemental Forms)

Gold Nanorods

79-0136 **Gold Nanorods [AuNP-Rod: Aspect Ratio: 3-3.5 (CTAB)]** *(7440-57-5)* 5ml
maroon-red liq.
(store cold)

Properties: Water soluble; **Aspect Ratio:** 3-3.5; **Shape**: Rod; **UV-Vis (nm):** 680 nm; **Stability**: Stable for 14 days
Supplied in aqueous solutions. Contains CTAB stabilizer. Ready for biomolecule conjugation. Suitable for in vitro use and sensor design applications.

Gold Nanorods (Axial Diameter - 25nm) *(7440-57-5)* 5ml 25ml

Storage Conditions: *(store cold)* Store at 4°C. Do not freeze. Shelf Life: 6 months

Catalog #	79-6000	79-6005	79-6010	79-6015
Concentration	171 ug/ml (±10%)	235 ug/ml (±10%)	150 ug/ml (±10%)	91 ug/ml (±10%)
Axial diameter (nm)	25 (±10%)	25 (±10%)	25 (±10%)	25 (±10%)
Longitudinal Size (nm)	34 (±10%)	47 (±10%)	60 (±10%)	73 (±10%)
Peak Longitudinal Surface Plasmon Resonance Wavelength (nm)	550	600	650	700
Peak Axial Surface Plasmon Resonance Wavelength (nm)	530	530	530	530
Color and Form	red liq.	blue liq.	blue liq.	gray liq.

79-6000 **Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 550 nm)** *(7440-57-5)*
79-6005 **Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 600 nm)** *(7440-57-5)*
79-6010 **Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 650 nm)** *(7440-57-5)*
79-6015 **Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 700 nm)** *(7440-57-5)*
96-1530 **Gold Nanorods Kit (Axial Diameter - 25 nm, wavelength 550-700 nm)** *(7440-57-5)*
See page 535

Gold Nanorods (Axial Diameter - 10nm) *(7440-57-5)* 5ml 25ml

Storage Conditions: *(store cold)* Store at 4°C. Do not freeze. Shelf Life: 6 months

Catalog #	79-6020	79-6025	79-6030	79-6035
Concentration	30 ug/ml (±10%)	34 ug/ml (±10%)	35 ug/ml (±10%)	36 ug/ml (±10%)
Axial diameter (nm)	10 (±10%)	10 (±10%)	10 (±10%)	10 (±10%)
Longitudinal Size (nm)	29 (±10%)	35 (±10%)	38 (±10%)	41 (±10%)
Peak Longitudinal Surface Plasmon Resonance Wavelength (nm)	700	750	780	808
Peak Axial Surface Plasmon Resonance Wavelength (nm)	512	512	512	512
Color and Form	pale red-brown liq.	pale red liq.	pale red solution	pale red liq.

79-6020 **Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 700 nm)** *(7440-57-5)*
79-6025 **Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 750 nm)** *(7440-57-5)*
79-6030 **Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 780 nm)** *(7440-57-5)*
79-6035 **Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 808 nm)** *(7440-57-5)*
96-1535 **Gold Nanorods Kit (Axial Diameter - 10 nm, wavelength 700-808 nm)** *(7440-57-5)*
See page 535

NANOMATERIALS - GOLD (Elemental Forms)

Gold Nanorods, CTAB Free

light sensitive, (store cold)

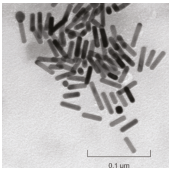
Note: Rods are synthesized without CTAB. Store at 4°C - 8°C. Do not freeze. At storage temperature the product may appear opaque. Follow the procedure for re-dispersing surfactants as described in the technical note. Complete this process before use to dissolve precipitated stabilizer. Sold in Collaboration with SONA Nanotech for research purposes only. Gold Gemini Nanorods Kit component.

79-7010 **Gold Gemini Nanorods, CTAB Free (Wavelength 650 nm)** *(7440-57-5)* 5ml
NEW Au; violet liq. 25ml

Technical Note:

Item #	LPSR Maximum (nm)	Length (nm)	Width (nm)	Aspect Ratio	Color & Form
79-7010	640 - 670	25 - 31	13 - 18	1.7 - 1.9	violet liq.
79-7015	685 - 715	37 - 43	13 - 18	2.4 - 2.8	blue liq.
79-7020	735 - 765	37 - 44	10 - 13	3.4 - 3.7	red-purple liq.
79-7025	785 - 815	40 - 50	10 - 13	3.8 - 4.1	red-orange liq.
79-7030	835 - 865	48 - 55	9 - 12	4.6 - 5.3	maroon-purple liq.

Concentration: >30 µg/ml
pH: 5.5 - 7.5
Stabilizer: Amphiphilic Agents
Solvent: Stabilized with amphiphilic agents in conductivity grade water (18.0 MΩ cm^{-1})
Optical Density: 1.0 - 1.2
Shelf Life: 12 months



79-7015 **Gold Gemini Nanorods, CTAB Free (Wavelength 700 nm)** *(7440-57-5)* 5ml
NEW Au; blue liq. 25ml

Technical Note:
1. *See* 79-7010 (page 157)

79-7020 **Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm)** *(7440-57-5)* 5ml
NEW Au; red-purple liq. 25ml

Technical Note:
1. *See* 79-7010 (page 157)

79-7025 **Gold Gemini Nanorods, CTAB Free (Wavelength 800 nm)** *(7440-57-5)* 5ml
NEW Au; red-orange liq. 25ml

Technical Note:
1. *See* 79-7010 (page 157)

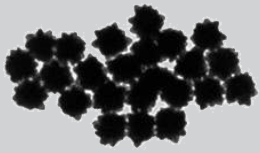
79-7030 **Gold Gemini Nanorods, CTAB Free (Wavelength 850 nm)** *(7440-57-5)* 5ml
NEW Au; maroon-purple liq. 25ml

Technical Note:
1. *See* 79-7010 (page 157)

96-1549 **Gold Gemini Nanorods Kit, CTAB Free (Wavelength 650-850 nm)**
See page 534

NANOMATERIALS - GOLD (Elemental Forms)

Gold NanoUrchins (1 OD, 0.1 mM in phosphate-buffered saline) >95.0% reactant free 20ml 100ml
blue liq.
light sensitive, (store cold)
Note: Store away from direct sunlight at 4°C. Do not freeze.
Shelf life 6 months.



Product #	Diameter	Color and form	Absorption max
79-0310	50nm	blue liq.	585nm
79-0313	60nm	blue liq.	585nm
79-0315	70nm	blue liq.	600nm
79-0318	80nm	blue liq.	620nm
79-0320	90nm	blue liq.	630nm
79-0323	100nm	blue liq.	680nm

NANOMATERIALS - GOLD (Compounds)

79-2015 **Diphenyl(m-sulfonatophenyl)phosphine-gold nanocluster (water soluble) (1-3 nm)** 100mg 500mg
dark red solid; particle size: 1-3 nm
Note: Made to order. Long term shelf life not established.

79-2035 **Hexachlorododecakis[diphenyl(m-sulfontophenyl)phosphine] pentapentacontagold, dodecasodium salt (water soluble) Schmid Au_{55} Cluster** 10mg
(115804-59-6)
$Na_{12}\{Au_{55}[P(C_6H_5)_2(C_6H_4SO_3)]_{12}Cl_6\}$; FW: 15417.85; black solid

79-2030 **Hexachlorododecakis(triphenylphosphine)pentapentacontagold Schmid Au_{55} Cluster** *(104619-10-5)* 10mg 50mg
$A_{55}[P(C_6H_5)_3]_{12}Cl_6$; FW: 14193.30; black solid

NANOMATERIALS - IRIDIUM (Compounds)

Antimony Tin Oxide/Iridium Het-WOC core/shell nanopowder (conductive and acid-stable) 50g 250g
blue pwdr.; ATO Composition: 90% SnO_2, 10% Sb_2O_3 (w/w)
Note: Sold under license from Catalytic Innovations, LLC for research purposes only. US Patent Publication No. US20150021194 A1.

Product #	Particle Size	BET Surface Area	Resistivity	
77-0030	20nm	50 - 60m²/g	0.3 - 0.7 Ω•cm	*See* page 85
77-0035	50nm	40 - 50m²/g	0.05 - 0.08 Ω•cm	*See* page 85
77-0040	100nm	5 - 10m²/g	0.05 - 0.08 Ω•cm	*See* page 85

NANOMATERIALS - IRON (Compounds)

Iron Magnetic Fluids

26-0032 **Iron(II,III) oxide (Magnetite) aqueous magnetic fluid [3.5 vol%, Ms = 15-16 kA/m]** 2ml 10ml
(1317-61-9)
Fe_3O_4; black solid (water suspension)

26-0036 **Iron(II,III) oxide (Magnetite) aqueous magnetic fluid [7.0 vol%, Ms = 30-31 kA/m]** 2ml 10ml
(1317-61-9)
Fe_3O_4; black solid (water suspension)

26-0022 HAZ **Iron(II,III) oxide (Magnetite) magnetic fluid in kerosene with oleic acid [7-9 vol%, Ms = 35-45 kA/m]** *(1317-61-9)* 2ml 10ml
black, viscous liq.

26-0024 HAZ **Iron(II,III) oxide (Magnetite) magnetic fluid in kerosene with oleic acid [15-18 vol%, Ms = 50-70 kA/m]** *(1317-61-9)* 2ml 10ml
black, viscous liq.

NANOMATERIALS - IRON (Compounds)

Iron Nanoparticles

Note: Store at 5 to 25°C. Do not freeze. Suggested use within 12 months of receipt. Sold in collaboration with Cerion for research purposes only.

26-2758	**Iron(III) oxyhydroxide in water at pH = 3.0 +- 0.5 (FEO-W320)** *(20344-49-4)*	25g
HAZ	FeO(OH); FW: 88.85; d. 1.19	100g
	(store cold)	500g

% Solids: 20.0 +/- 0.5 as Fe_2O_3
pH: 3.0 +/- 0.5
Mean Number Weighted Particle Diameter: <5.0 nm (by Dynamic Light Scattering)
Polydispersity Index: <0.25
Chemical Composition (particles): >99.5% FeOOH

Iron Nanoparticles - Solid form (with amine surface functional group)

Note: A water-soluble iron oxide nanoparticles with amphiphilic polymer and PEG coating. The reactive group is an amine.

26-2711	**Iron oxide nanoparticles in water, 10nm, with amine surface functional group**	5mg
	(1309-37-1); brown liq.	25mg

Technical Notes:
1. Zeta potential is -10mv to +10mV.
2. The organic layers consist of a monolayer of oleic acid and a monolayer of ampiphilic polymer.
3. The overall thickness of the organic layers about 6 nm.
4. The hydrodynamic size of the nanoparticles is about 12-14 nm larger than their inorganic core size measured by TEM.
5. Very stable in most buffer solutions in the pH range of 4-10. Solution can survive autoclaving process (121°C for 30 minutes).
6. Light precipitation may occur during storage. Check expiration date before conjugation.
7. The amine density is low due to the long PEG chain.
8. Can be conjugated to carbonyl or thio-containing molecules.

References:

1. *Clinical Cancer Research,* **2009**, *15*, 4722
2. *Gastroenterlogy,* **2009**, *136*, 1514
3. *Small,* **2009**, *5*, 235
4. *The Analysis,* **2008**, *133*, 154
5. *The Journal of Physical Chemistry C,* **2008**, *112*, 8127
6. *International Journal of Nanomedicine,* **2008**, *3*, 311
7. *Journal of Biomedical Nanotechnology,* **2008**, *4*, 439

26-2713	**Iron oxide nanoparticles in water, 20nm, with amine surface functional group**	5mg
	(1309-37-1); black liq.	25mg

Technical Note:
1. See 26-2711 (page 159)

26-2715	**Iron oxide nanoparticles in water, 30nm, with amine surface functional group**	5mg
	(1309-37-1); black liq.	25mg

Technical Note:
1. See 26-2711 (page 159)

Iron Nanoparticles - Solid form (with carboxylic acid surface functional group)

Note: A water-soluble iron oxide nanoparticles with amphiphilic polymer coating. The reactive group is a carboxylic acid.

26-2705	**Iron oxide nanoparticles in water, 10nm, with carboxylic acid surface functional group**	10mg
	(1309-37-1)	50mg
	brown liq.	

Technical Notes:
1. Zeta potential of 26-2705 -30mv to -50mV.
2. The organic layers consist of a monolayer of oleic acid and a monolayer of ampiphilic polymer.
3. The overall thickness of the organic layers about 4 nm.
4. The hydrodynamic size of the nanoparticles is about 8-10 nm, larger than their inorganic core size measured by TEM.
5. Very stable in most buffer solutions in the pH range of 4-10. Solution can survive autoclaving process (121°C for 30 minutes).

References:

1. *Clinical Cancer Research,* **2009**, *15*, 4722
2. *Gastroenterlogy,* **2009**, *136*, 1514
3. *Small,* **2009**, *5*, 235
4. *The Analysis,* **2008**, *133*, 154
5. *The Journal of Physical Chemistry C,* **2008**, *112*, 8127
6. *International Journal of Nanomedicine,* **2008**, *3*, 311
7. *Journal of Biomedical Nanotechnology,* **2008**, *4*, 439

NANOMATERIALS - IRON (Compounds)

Iron Nanoparticles - Solid form (with carboxylic acid surface functional group)

Note: A water-soluble iron oxide nanoparticles with amphiphilic polymer coating. The reactive group is a carboxylic acid.

26-2707 **Iron oxide nanoparticles in water, 20nm, with carboxylic acid surface functional group** 10mg
(1309-37-1) 50mg
black liq.

Technical Note:
1. See 26-2705 (page 159)

26-2709 **Iron oxide nanoparticles in water, 30nm, with carboxylic acid surface functional group** 10mg
(1309-37-1) 50mg
black liq.

Technical Note:
1. See 26-2705 (page 159)

Iron Nanoparticles - Solid form (organic solvent-dispersible)

Note: A water-soluble iron oxide nanoparticles with amphiphilic polymer and PEG coating. No linkable reactive group on the surface.

26-2728 **Iron oxide nanoparticles, 10nm, organic solvent-dispersible (in chloroform)** 50mg
(1309-37-1) 500mg
brown liq.

Technical Notes:
1. Zeta potential is -10mv to 0.
2. Total thickness of organic layers is ~6 nm.
3. The hydrodynamic size of the nanoparticles is about 12-14 nm larger than their inorganic core size as measured by TEM.
4. The colloidal stability is exceptionally high.
5. Stable in most buffer solutions in the pH range of 4-10. Solution can survive autoclaving process (121°C for 30 minutes).

References:

1. *Clinical Cancer Research,* **2009**, *15*, 4722
2. *Gastroenterlogy,* **2009**, *136*, 1514
3. *Small,* **2009**, *5*, 235
4. *The Analysis,* **2008**, *133*, 154
5. *The Journal of Physical Chemistry C,* **2008**, *112*, 8127
6. *International Journal of Nanomedicine,* **2008**, *3*, 311
7. *Journal of Biomedical Nanotechnology,* **2008**, *4*, 439

26-2730 **Iron oxide nanoparticles, 20nm, organic solvent-dispersible (in chloroform)** 50mg
(1309-37-1) 500mg
black liq.

Technical Note:
1. See 26-2728 (page 160)

26-2732 **Iron oxide nanoparticles, 30nm, organic solvent-dispersible (in chloroform)** 50mg
(1309-37-1) 500mg
black liq.

Technical Note:
1. See 26-2728 (page 160)

Iron Nanoparticles - Solid form (in water with PEG)

Note: A water-soluble iron oxide nanoparticles with amphiphilic polymer and PEG coating. No linkable reactive group on the surface.

26-2722 **Iron oxide nanoparticles in water, 10nm, with PEG** *(1309-37-1)* 5mg
brown liq. 25mg

Technical Notes:
1. Zeta potential is -10mv to 0.
2. Total thickness of organic layers is ~6 nm.
3. The hydrodynamic size of the nanoparticles is about 12-14nm larger than their inorganic core size as measured by TEM.
4. The colloidal stability is exceptionally high.
5. Stable in most buffer solutions in the pH range of 4-10. Solution can survive autoclaving process (121°C for 30 minutes).

References:

1. *Clinical Cancer Research,* **2009**, *15*, 4722
2. *Gastroenterlogy,* **2009**, *136*, 1514
3. *Small,* **2009**, *5*, 235
4. *The Analysis,* **2008**, *133*, 154
5. *The Journal of Physical Chemistry C,* **2008**, *112*, 8127
6. *International Journal of Nanomedicine,* **2008**, *3*, 311
7. *Journal of Biomedical Nanotechnology,* **2008**, *4*, 439

NANOMATERIALS - IRON (Compounds)

Iron Nanoparticles - Solid form (in water with PEG)

Note: A water-soluble iron oxide nanoparticles with amphiphilic polymer and PEG coating. No linkable reactive group on the surface.

26-2724	**Iron oxide nanoparticles in water, 20nm, with PEG** *(1309-37-1)* black liq.	5mg 25mg

Technical Note:
1. See 26-2722 (page 160)

26-2726	**Iron oxide nanoparticles in water, 30nm, with PEG** *(1309-37-1)* black liq.	5mg 25mg

Technical Note:
1. See 26-2722 (page 160)

NANOMATERIALS - LEAD (Compounds)

Lead Sulfide Quantum Dots

Note: Sold in collaboration with CAN for R&D purposes. Suggest use within 6 months of purchase. Do not freeze. Store in DARK.

82-1081 HAZ	**Lead sulfide CANdot® quantum dot (PbS core - ~3nm), 10 mg/mL in toluene, 1000nm peak emission** *(1314-87-0)* PbS; FW: 239.25; dark-red liq.	2ml 10ml
82-1083 HAZ	**Lead sulfide CANdot® quantum dot (PbS core - ~4.5nm), 10 mg/mL in toluene, 1200nm peak emission** *(1314-87-0)* PbS; FW: 239.25; dark-red liq.	1ml 5ml
82-1085 HAZ	**Lead sulfide CANdot® quantum dot (PbS core - ~6nm), 10 mg/mL in toluene, 1400nm peak emission** *(1314-87-0)* PbS; FW: 239.25; dark-red liq.	1ml 5ml
82-1090 HAZ	**Lead sulfide CANdot® quantum dot (PbS core - ~8nm), 10 mg/mL in toluene, 1600nm peak emission** *(1314-87-0)* PbS; FW: 239.25; dark-red liq.	1ml 5ml

NANOMATERIALS - MAGNESIUM (Compounds)

12-1405	**Magnesium oxide nanopowder** *(1309-48-4)* MgO; FW: 40.31; white pwdr. Note: APS 20nm; SSA 50m²/g	25g 100g

NANOMATERIALS - NICKEL (Elemental Forms)

28-0008 HAZ	**Nickel/tetra-n-octylammonium bromide colloid, purified (65-70% Ni)** *(7440-02-0)* $Ni/(C_8H_{17})_4NBr$; 2.8 nm (average); black pwdr. *pyrophoric* Note: Made to order. Suggest use within 3 months of receipt. Long term shelf life not established.	100mg 500mg

Technical Note:
1. Soluble in THF, toluene, acetone and methylene chloride. Insoluble in ethanol, ether and pentane.

References:

1. *J. Mol. Catal.,* **1994**, *86*, 129
2. *Eur. J. Inorg. Chem.,* **2001**, *2455*
3. *Catalysis and Electrocatalysis at Nanoparticles Surfaces, Chapter* **10**, *p*, 343, 377. Marcel Dekker, NY, **2003**.
4. *Advanced Catalysts and Nanostructured Materials, Chapter* **7**, *Academic*, Press, San Diego, **1996**, 165-196.

NANOMATERIALS - PALLADIUM (Elemental Forms)

Palladium Heterogeneous Catalyst

46-1710	**Palladium, 0.6% on activated carbon, 50% water-wet paste (NanoSelect LF 100)** *(7440-05-3)* *See* page 223	
46-1711	**Palladium, 0.5% on titanium silicate, 50% water-wet paste (NanoSelect LF 200)** *(7440-05-3)* *See* page 225	

NANOMATERIALS - PALLADIUM (Elemental Forms)

Palladium Nanoparticles

46-0407 **Palladium Nanoparticles [PdNP: 2-4 nm (gum Arabic)]** *(7440-05-3)* 25ml
yellowish-brown liq. 100ml
(store cold)

Properties: Water soluble; **Size**: 2-4 nm; **Shape**: Sphere; **Specification**: Stable for 60 days.
Supplied in aqueous media, contains gum arabix stabilizer. Suitable for in vitro use and sensor design applications. Suitable for spin coating, self-assembly and monolayer formation. Potential new Catalysts.

46-0409 **Palladium Nanoparticles [PdNP: 2-3 nm (Gelatin)]** *(7440-05-3)* 25ml
yellowish-brown liq. 100ml
(store cold)

Properties: Water soluble; **Size**: 2-3 nm; **Shape**: Sphere; **Specification**: Stable for 60 days.
Supplied in aqueous media, contains gelatin stabilizer. Suitable for in vitro use and sensor design applications. Suitable for spin coating, self-assembly and monolayer formation. Potential new Catalysts.

Palladium Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation

Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

46-4012 HAZ **Palladium nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-05-3)* 25ml
grey-brown liq. 100ml

46-4010 **Palladium nanoparticles, pure, (<20nm) in water at 100mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-05-3)* 25ml
grey-brown liq. 100ml

46-4018 **Palladium nanoparticles, pure, (<20nm) in water at 500mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-05-3)* 25ml
black liq. 100ml

46-4022 HAZ **Palladium nanoparticles, pure, (50-70nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-05-3)* 25ml
grey liq. 100ml
Note: Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***

NANOMATERIALS - PALLADIUM (Compounds)

28-0015 **Nickel/palladium alloy nanoparticle on graphene (G-$Ni_{33}Pd_{67}$)**
See page 222

NANOMATERIALS - PLATINUM (Elemental Forms)

Platinum Colloids

Note: Made to order. Suggest use within 3 months of receipt. Long term shelf life not established.

78-0055 HAZ **Platinum/tetra-n-octylammonium chloride colloid, purified (70-85% Pt)** 250mg
(7440-06-4) 1g
$Pt/(C_8H_{17})_4NCl$; 2.8 nm ±0.5 nm; grayish-black pwdr
pyrophoric

Technical Note:
1. Soluble in THF. Insoluble in toluene, acetone, ether and ethanol.

References:

1. *J. Mol. Catal.,* **1994**, *86*, 129
2. *Eur. J. Inorg. Chem.,* **2001**, 2455.
3. *Synthetic Methods of Organometallic and Inorganic Chemistry*, Vol.10, Chapter 20, p. 209-223, Theime Verlag, NY, 2002.
4. *Catalysis and Electrocatalysis at Nanoparticles Surfaces*, Chapter 10, p. 343, 377, Marcel Dekker, NY, 2003.

78-0062 HAZ **Platinum-ruthenium/tetra-n-octylammonium chloride colloid (~7 wt% Pt, ~3.5 wt% Ru)** *(7440-06-4)* 250mg
1g
$Pt_{50}Ru_{50}/(C_8H_{17})_4NCl$; 1.7 nm ±0.5 nm; waxy, black residue

Technical Note:
1. Very soluble in THF. Soluble in toluene. Precursor for fuel cell catalysts.

References:

1. *J. Mol. Catal.,* **1994**, *86*, 129
2. *Synthetic Methods of Organometallic and Inorganic Chemistry,* Vol. 10, Chapter 20, p. 209-223, Theime Verlag, NY, 2002.
3. *Catalysis and Electrocatalysis at Nanoparticles Surfaces*, Chapter 10, p. 343-377, Marcel Dekker, NY, 2003.

NANOMATERIALS - PLATINUM (Elemental Forms)

Platinum Fuel Cell Catalysts

78-1685 **Dealloyed Pt-Co core-shell fuel cell catalyst on carbon**
See page 333

78-1688 **Dealloyed Pt-Cu core-shell fuel cell catalyst on carbon**
See page 333

Platinum Nanoparticles

Note: Made to order. Suggest use within 3 months of receipt. Long term shelf life not established.

78-0007 **Platinum, 97% (2-5 nanometers)** *(7440-06-4)* 250mg
HAZ Pt; black pwdr. 1g
pyrophoric

References:
1. *J. Mol. Catal.*, **1994**, *86*, 129

78-0405 **Platinum Nanoparticles [PtNP: 2-3 nm (gum Arabic)]** *(7440-06-4)* 25ml
yellowish-brown liq. 100ml
(store cold)

Properties: Water soluble; **Size**: 2-3 nm; **Shape**: Sphere; **UV Vis (nm):**405-410 nm; **Specification**: Stable for 60 days Supplied in aqueous media, contains gum arabic stabilizer. Suitable for in vitro use and sensor design applications. Suitable for spin coating, self-assembly and monolayer formation. Potential new Catalysts.

Platinum Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation

Note: Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 6 months. Sold in collaboration with Particular® for research purposes only.

78-1405 **Platinum nanoparticles, pure, (<20nm) in water at 30mg/L (surfactant and reactant-free, stabilized with <0.01 mmol/l of citrate)** *(7440-06-4)* 100ml
grey-brown liq.

78-1402 **Platinum nanoparticles, pure, (<20nm) in water at 100mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-06-4)* 25ml 100ml
grey-brown liq.

78-1404 **Platinum nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-06-4)* 25ml 100ml
HAZ
grey-brown liq.
Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

78-1408 **Platinum nanoparticles, pure, (<20nm) in isopropanol at 100mg/L (surfactant and reactant-free)** *(7440-06-4)* 25ml 100ml
HAZ
grey-brown liq.
Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

78-1410 **Platinum nanoparticles, pure, (<20nm) in water at 500mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-06-4)* 25ml 100ml
black liq.

78-1414 **Platinum nanoparticles, pure, (50-70nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-06-4)* 25ml 100ml
HAZ
grey liq.
Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***

78-1418 **Platinum nanoparticles, pure, (50-70nm) in isopropanol at 100mg/L (surfactant and reactant-free)** *(7440-06-4)* 25ml 100ml
HAZ
grey liq.
Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***

NANOMATERIALS - PLATINUM (Elemental Forms)

Platinum Nanoparticles - Surfactant and Reactant-Free (Supported), Manufactured via Laser Ablation

Note: Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 6 months.
Sold in collaboration with Particular® for research purposes only.

78-3015 **Platinum nanoparticles, 1% on carbon black (surfactant and reactant-free)**
(7440-06-4)
See page 335

78-3020 **Platinum nanoparticles, 5% on carbon black (surfactant and reactant-free)**
(7440-06-4)
See page 335

78-3030 **Platinum nanoparticles, 10% on carbon black (surfactant and reactant-free)**
(7440-06-4)
See page 335

78-3032 **Platinum nanoparticles, 20% on carbon black (surfactant and reactant-free)**
(7440-06-4)
See page 335

78-3035 **Platinum nanoparticles, 30% on carbon black (surfactant and reactant-free)**
(7440-06-4)
See page 335

78-3012 **Platinum nanoparticles, 1% on Titania (anatase) (surfactant and reactant-free)**
(7440-06-4)
See page 335

78-3005 **Platinum nanoparticles, 1% on Titania (rutile) (surfactant and reactant-free)**
(7440-06-4)
See page 336

78-3026 **Platinum nanoparticles, 10% on Titania (anatase) (surfactant and reactant-free)**
(7440-06-4)
See page 336

78-3023 **Platinum nanoparticles, 10% on Titania (rutile) (surfactant and reactant-free)**
(7440-06-4)
See page 336

NANOMATERIALS - RHODIUM (Elemental Forms)

Rhodium Colloid

Note: Made to order. Suggest use within 3 months of receipt. Long term shelf life not established.

45-1550 **Rhodium colloid (polyethyleneglycol-dodecylether hydrosol) (~9 wt% Rh)** 1g
(7440-16-6) 5g
Rh/alkoxyethers; ~2 nm; brown-black viscous substance
Note: *Limited quantities available*

Technical Note:
1. Soluble in ether, alcohol, and water.

References:
1. *Eur. J. Inorg. Chem.*, **2001**, *2455*

45-1660 **Rhodium/tetra-n-octylammonium chloride colloid, purified (70-75% Rh)** 250mg
HAZ *(7440-16-6)* 1g
$Rh/(C_8H_{17})_4NCl$; 2.0 nm ±0.5 nm; gray pwdr
pyrophoric
Note: Made to order. Suggest use within 3 months of receipt. Long term shelf life not established.

Technical Note:
1. Very soluble in THF, soluble in acetone, slightly soluble in toluene, insoluble in ether.

References:
1. *J. Mol. Catal.*, **1994**, *86*, 129
2. *Eur. J. Inorg. Chem.*, **2001**, *2455*
3. *Catalysis and Electrocatalysis at Nanoparticles Surfaces, Chapter* **10**, *p*, 343, 377. Marcel Dekker, NY, **2003**.
4. *Advanced Catalysts and Nanostructured Materials, Chapter* **7**, *Academic*, Press, San Diego, **1996**, 165-196.

NANOMATERIALS - RHODIUM (Elemental Forms)

Rhodium Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation
Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

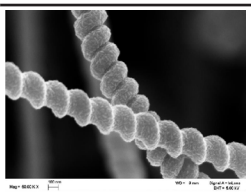
45-1324 HAZ	**Rhodium nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-16-6)* grey-brown liq.	25ml 100ml
45-1328 HAZ	**Rhodium nanoparticles, pure, (<20nm) in isopropanol at 100mg/L (surfactant and reactant-free)** *(7440-16-6)* grey-brown liq.	25ml 100ml
45-1322	**Rhodium nanoparticles, pure, (<20nm) in water at 100mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-16-6)* grey-brown liq.	25ml 100ml
45-1330	**Rhodium nanoparticles, pure, (<20nm) in water at 500mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-16-6)* black liq.	25ml 100ml

NANOMATERIALS - RUTHENIUM (Elemental Forms)

Ruthenium Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation 25ml 100ml
Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

44-2812 HAZ	**Ruthenium nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-18-8)* grey-brown liq. Note: ***Limited quantities available***	25ml 100ml
44-2822 HAZ	**Ruthenium nanoparticles, pure, (50-70nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-18-8)* grey liq. Note: Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***	25ml 100ml

NANOMATERIALS - SILICON (Elemental Forms)

14-0655	**Silicon powder (amorphous), min. 97%** *(7440-21-3)* *See* page 405	
14-0650 HAZ	**Silicon powder (nanocrystalline), min. 97%** *(7440-21-3)* Si; brown pwdr.; SA: <20 m^2/g *air sensitive* **For detailed technical note visit strem.com.**	5g 25g
14-6052	**Silica Nanosprings™ coated with zinc oxide and grown on fiber glass substrate (3.5 x 8cm)** *(7631-86-9)* white to beige plate Note: ***Limited quantities available.*** 	1pc

NANOMATERIALS - SILVER (Elemental Forms)

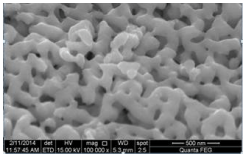
Silver Nanoparticles - Reactant-Free — 20ml, 100ml
light sensitive, (store cold)
Note: Store away from direct sunlight at 4°C. Do not freeze. Shelf life 6 months.

Product #	Diameter	Color and form	Absorption max
47-0655	10nm	yellow liq.	390-400nm
47-0658	20nm	yellow liq.	405nm
47-0660	30nm	yellow liq.	410nm
47-0663	40nm	yellow liq.	416nm
47-0665	50nm	yellow liq.	425nm
47-0668	60nm	yellow liq.	430nm
47-0670	80nm	yellow liq.	457nm
47-0672	100nm	yellow liq.	490nm

Silver Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation
Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

47-0712 HAZ	**Silver nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-22-4)* yellowish-brown liq.	25ml 100ml
47-0710	**Silver nanoparticles, pure, (<20nm) in water at 100mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-22-4)* yellow liq.	25ml 100ml
47-0718	**Silver nanoparticles, pure, (<20nm) in water at 500mg/L (surfactant and reactant-free, stabilized with < 0.01 mmol/l of citrate)** *(7440-22-4)* yellowish-grey liq.	25ml 100ml
47-0722 HAZ	**Silver nanoparticles, pure, (50-70nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-22-4)* yellowish-brown liq. Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***	25ml 100ml

Silver Nanoporous Catalyst

47-0645 NEW HAZ	**Silver Nano-Porous Catalyst (promoted with zirconium oxide)** Ag; grey pwdr. Note: Sold under license from OXENERGY for research purposes only. US Patent No 8,142,938. **For detailed technical note visit strem.com.**		1g 5g 25g

Specifications:
*Average cluster (particle) size, micron:*12-17; *Average cluster porosity, %:*38-42; *Average pore size, nm:* 30-50; *Specific surface area, m²/g:/ 6.0-7.0; Apparent density, g/ml:* 0.9-1.1

NANOMATERIALS - TIN (Compounds)

50-0518 NEW	**Tin(IV) oxide, nanoparticle (30-60 nm), (99.7%-Sn)** *(18282-10-5)* SnO_2; FW: 150.69; white pwdr.; SA: 18.55 m²/g; m.p. 1630°; d. 6.95	25g 100g

NANOMATERIALS - TITANIUM (Elemental Forms)

Titanium Nanoparticles - Surfactant and Reactant-Free (Pure), Manufactured via Laser Ablation

Note: Made to order. Manufactured by laser ablation. Store at room temperature (up to 25°C). Do not freeze. Shelf life 12 months. Sold in collaboration with Particular® for research purposes only.

22-0192 HAZ	**Titanium nanoparticles, pure, (<20nm) in acetone at 100mg/L (surfactant and reactant-free)** *(7440-32-6)* grey liq. Note: ***Limited quantities available***	25ml 100ml
22-0198	**Titanium nanoparticles, pure, (50-70nm) in ethylene glycol at 100mg/L (surfactant and reactant-free)** *(7440-32-6)* grey liq. Note: Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***	25ml
22-0203 HAZ	**Titanium nanoparticles, pure, (50-70nm) in isopropanol at 100 mg/L (surfactant and reactant-free)** *(7440-32-6)* grey liq. Note: Particle size of 50-70 nm is measured via DLS, colloid may also contain significant fractions of smaller particles. ***Limited quantities available***	100ml

NANOMATERIALS - TITANIUM (Compounds)

22-1400	**Titanium(IV) oxide nanopowder Anatase** *(1317-80-2)* TiO_2; FW: 79.90; white pwdr.	5g 25g

Specific Surface Area (BET): ≥500 m^2/g; **True Density:** 3.7 g/cc; **Crystallite Size:** Amorphous; **Mean Aggregate Size**: 5 µm; **Average Pore Diameter:** 32Å; **Loss on Ignition:** ≤12%; **Total Pore Volume:** ≥0.4 cc/g; **Moisture Content:** ≤4%; **Bulk Density:** 0.6 g/cc; **Ti Content (Based on Metal):**> 99.999%

NANOMATERIALS - ZINC (Elemental Forms)

30-1500 HAZ	**Nano Zinc Metallic Powder** *(7440-66-6)* Zn; gray pwdr.; Average particle size: 75-125 nm; Morphology: spherical; SA: 4-6 m^2/g *moisture sensitive*	1g 5g

Technical Note:

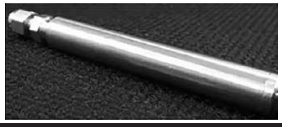
1. Nano zinc powder is a highly reactive metal with a small particle size and high surface area. The product is exceptionally reactive with organic halides forming organozinc compounds, and in azo-cooupling reactions. The nano zinc can be deagglomerized into primary nanoparticles of 35nm by sonication.

NANOMATERIALS - ZINC (Compounds)

30-1405	**Zinc oxide nanopowder** *(1314-13-2)* ZnO; FW: 81.37; white pwdr.	25g 100g

NANOMATERIALS - OTHER

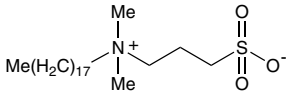
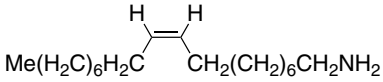
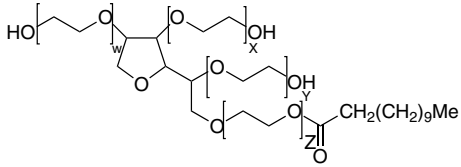
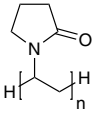
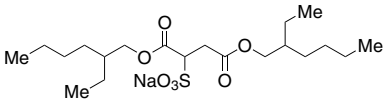
96-0900	**Enzymatic Flow Reactor** **(2.5 inch tube x 0.25 inch I.D.)** *See* page 617	



NANOMATERIALS (Surfactants & Ligands for nano synthesis)

07-0440	**L-Cysteine ethyl ester hydrochloride, 98%** *(868-59-7)* $HSCH_2CH(NH_2)COOC_2H_5 \cdot HCl$; FW: 185.67; white solid; m.p. 123-125° Note: Surfactant for nanomaterial synthesis.	25g 100g
02-5043	**3-(Decyldimethylammonio)propanesulfonate (Sulfobetaine 10)** *(15163-36-7)* $[CH_3(CH_2)_9N]^+[(CH_3)_2(CH_2)_3SO_3]^-$; FW: 307.49; white solid Note: Surfactant for nanomaterial synthesis.	1g 5g
07-1677	**Didodecylamine, min. 97%** *(3007-31-6)* $[CH_3(CH_2)_{10}CH_2]_2NH$; FW: 353.67; white xtl. Note: Surfactant for nanomaterial synthesis.	1g
02-5055	**N-Dodecyl-N,N-dimethyl-3-ammonio-1-propanesulfonate (Sulfobetaine 12)** *(14933-08-5)* $CH_3(CH_2)_{11}N^+(CH_3)_2CH_2CH_2CH_2SO_3^-$; FW: 335.55; white pwdr. Note: Surfactant for nanomaterial synthesis.	10g 50g

NANOMATERIALS (Surfactants & Ligands for nano synthesis)

02-5045 HAZ	**Hexadecyltrimethylammonium bromide, 99+% CTAB** *(57-09-0)* $[CH_3(CH_2)_{15}N(CH_3)_3^+Br^-$; FW: 364.45; white solid; m.p. 248-251° Note: Surfactant for nanomaterial synthesis.	50g 250g
03-1180	**Lithium dodecyl sulfate, min. 98%** *(2044-56-6)* $CH_3(CH_2)_{11}OSO_3^-Li^+$; FW: 272.33; white solid Note: Surfactant for nanomaterial synthesis.	1g 5g
02-5056	**N-Octyldecyl-N,N-dimethyl-3-ammonio-1-propanesulfonate (Sulfobetaine 18)** *(13177-41-8)* FW: 419.70; white solid Note: Surfactant for nanomaterial synthesis. 	5g 25g
06-4010	**Oleic acid, 99%** *(112-80-1)* $CH_3(CH_2)_7{=}CH(CH_2)_7COOH$; FW: 282.46; liq.; m.p. 13°; b.p. 194-195° (1.2mm); d. 0.89 Note: Surfactant for nanomaterial synthesis.	5g 25g
07-1665	**Oleylamine, min. 70%** *(112-90-3)* $CH_3(CH_2)_7CH{=}CH(CH_2)_7CH_2NH_2$; FW: 267.49; colorless liq.; m.p. 18-26°; b.p. 348-350°; d. 0.813 Note: Surfactant for nanomaterial synthesis.	5g 25g
07-1668	**Oleylamine, min. 95%** *(112-90-3)* $CH_3(CH_2)_7CH{=}CH(CH_2)_7CH_2NH_2$; FW: 267.49; colorless liq.; m.p. 18-26°; b.p. 348-350°; d. 0.813 Note: Surfactant for nanomaterial synthesis. 	5g 25g
09-5950	**Perfluorotetradecanoic acid, min. 97%** *(376-06-7)* $CF_3(CF_2)_{12}COOH$; FW: 714.11; white solid; m.p. 130-135°; b.p. 270° (740mm); d. 0.89 Note: Surfactant for nanomaterial synthesis.	1g
06-5075	**Polyethylene glycol dodecyl ether (Brij™ 35)** *(9002-92-0)* $CH_3(CH_2)_{10}CH_2(OCH_2CH_2)nOH$ (n~23); FW: ~1199.54; liq. (white solid @ room temperature); m.p. 41-45° Note: Surfactant for nanomaterial synthesis.	250g 1kg
08-1650	**Polyethylene glycol sorbitan monolaurate (TWEEN® 20)** *(9005-64-5)* FW: ~1228; viscous liq.; d. 1.095 Note: Surfactant for nanomaterial synthesis. 	5g 25g
07-1815	**Polyvinylpyrrolidone (average mol. Wt. 10,000) PVP10** *(9003-39-8)* $(C_6H_9NO)n$; white pwdr. Note: Surfactant for nanomaterial synthesis. 	50g 250g
07-1817	**Polyvinylpyrrolidone (average mol.wt. 40,000) PVP40** *(9003-39-8)* $(C_6H_9NO)n$; white pwdr. Note: Surfactant for nanomaterial synthesis.	50g 250g
11-2750	**Sodium dioctylsulfosuccinate (AOT), min. 95%** *(577-11-7)* $C_{20}H_{36}NaO_7S$; FW: 444.56; white pwdr.; m.p. 176° Note: Surfactant for nanomaterial synthesis. 	50g 250g
11-1140	**Sodium dodecylsulfate, 98+%** *(151-21-3)* $CH_3(CH_2)_{11}OSO_3Na$; FW: 288.38; white xtl.; m.p. 204-207°	25g 100g
11-1285	**Sodium dodecylsulfate, min. 99%** *(151-21-3)* $CH_3(CH_2)_{11}OSO_3^-Na^+$; FW: 288.38; white solid; m.p. 204-207° Note: Surfactant for nanomaterial synthesis.	50g 250g

NANOMATERIALS (Surfactants & Ligands for nano synthesis)

11-1280	**Sodium oleate, 99%** *(143-19-1)* $CH_3(CH_2)_7CH{=}CH(CH_2)_7COO^-Na^+$; FW: 304.44; white pwdr.; m.p. 232-235° Note: Surfactant for nanomaterial synthesis.	5g 25g
02-5065 HAZ	**Tetramethylammonium hydroxide pentahydrate, min. 95%** *(10424-65-4)* $(CH_3)_4N(OH)\cdot 5H_2O$; FW: 181.23; white solid; m.p. 67-70° Note: Surfactant for nanomaterial synthesis.	10g 50g
02-5040	**Tetraoctylammonium chloride, min. 97%** *(3125-07-3)* $[CH_3(CH_2)_7]_4N^+Cl^-$; FW: 502.34; white xtl. Note: Surfactant for nanomaterial synthesis.	1g
08-2180	**DL-α-Tocopherol methoxypolyethylene glycol succinate solution (2 wt% in water) TPGS-750-M** *See* page 221	
15-6655	**Tri-n-octylphosphine, min. 97% TOP** *(4731-53-7)* *See* page 329	
15-6660	**Trioctylphosphine oxide, min. 90% TOPO** *(78-50-2)* *See* page 329	
15-6661	**Trioctylphosphine oxide, 99% TOPO** *(78-50-2)* *See* page 329	
15-6375	**Tris(3-hydroxypropyl)phosphine, min. 80%** *(4706-17-6)* *See* page 332	

NEODYMIUM (Elemental Forms)

93-6041	**Neodymium chips (99.9% REO)** *(7440-00-8)* Nd; FW: 144.24; chips; m.p. 1024°; b.p. 3027°; d. 7.00 *air sensitive, moisture sensitive*	10g 50g
93-6045	**Neodymium foil (99.9% REO)** *(7440-00-8)* Nd; FW: 144.24; 0.75 mm thick (~2.7g/25 x 25mm) (packed in mineral oil); m.p. 1024°; b.p. 3027°; d. 7.00 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-6042	**Neodymium ingot (99.9% REO)** *(7440-00-8)* Nd; FW: 144.24; (packed in mineral oil); m.p. 1024°; b.p. 3027°; d. 7.00 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	25g 100g
60-0175 HAZ	**Neodymium powder (99.8% REO)** *(7440-00-8)* Nd; FW: 144.24; -40 mesh; m.p. 1024°; b.p. 3027°; d. 7.00 *air sensitive, moisture sensitive*	5g 25g

NEODYMIUM (Compounds)

93-6020	**Neodymium(III) acetate hydrate (99.9%-Nd) (REO)** *(6192-13-8)* $Nd(OOCCH_3)_3\cdot XH_2O$; FW: 321.38; light purple xtl.	50g 250g
93-6002	**Neodymium(III) bromide, anhydrous (99.9%-Nd) (REO)** *(13536-80-6)* $NdBr_3$; FW: 383.97; off-white pwdr.; m.p. 684°; b.p. 1540° *hygroscopic*	5g 25g
93-6003	**Neodymium(III) carbonate hydrate (99.9%-Nd) (REO)** *(38245-38-4)* $Nd_2(CO_3)_3\cdot XH_2O$; FW: 468.51; light purple pwdr.	25g 100g
93-6022	**Neodymium(III) chloride, anhydrous (99.9%-Nd) (REO)** *(10024-93-8)* $NdCl_3$; FW: 250.60; bluish-pink pwdr.; m.p. 784°; d. 4.134 *hygroscopic*	10g 50g
93-6030	**Neodymium(III) chloride hexahydrate (99.9%-Nd) (REO)** *(13477-89-9)* $NdCl_3\cdot 6H_2O$; FW: 250.60 (358.69); purple xtl.; m.p. 124°; d. 2.282	10g 50g 250g
60-6030	**Neodymium(III) chloride hydrate (99.997%-Nd) (REO) PURATREM** *(13477-89-9)* $NdCl_3\cdot XH_2O$; FW: 250.60; purple xtl. *hygroscopic*	10g 50g
60-2400	**Neodymium(III) 2-ethylhexanoate (10-15% Nd)** *(73227-23-3)* $Nd[OOCCH(C_2H_5)C_4H_9]_3$; FW: 573.86; viscous liq.	5g 25g
93-6023	**Neodymium(III) fluoride, anhydrous (99.9%-Nd) (REO)** *(13709-42-7)* NdF_3; FW: 201.24; purple pwdr.; m.p. 1410°; b.p. 2300°; d. 6.506 *hygroscopic*	25g 100g

NEODYMIUM (Compounds)

93-6005	**Neodymium(III) hexafluoroacetylacetonate dihydrate (99.9%-Nd) (REO)** *(47814-18-6)* $Nd(CF_3COCHCOCF_3)_3 \cdot 2H_2O$; FW: 765.39 (801.42); purple xtl.	5g
93-6007	**Neodymium(III) iodide, anhydrous (99.9%-Nd)** *(13813-24-6)* NdI_3; FW: 524.94; light green pwdr.; m.p. 775° *hygroscopic*	1g 5g
93-6008 HAZ	**Neodymium(III) nitrate hexahydrate (99.9%-Nd) (REO)** *(16454-60-7)* $Nd(NO_3)_3 \cdot 6H_2O$; FW: 330.26 (438.35); purple xtl. *hygroscopic*	25g 100g
93-6024 HAZ	**Neodymium(III) nitrate hexahydrate (99.999%-Nd) (REO) PURATREM** *(16454-60-7)* $Nd(NO_3)_3 \cdot 6H_2O$; FW: 330.26 (438.35); purple xtl. *hygroscopic*	5g 25g
93-6034	**Neodymium(III) oxalate decahydrate (99.9%-Nd) (REO)** *(14551-74-7)* $Nd_2(C_2O_4)_3 \cdot 10H_2O$; FW: 552.55 (732.71); rose xtl.	10g 50g
93-6031	**Neodymium(III) oxide (99.9%-Nd) (REO)** *(1313-97-9)* Nd_2O_3; FW: 336.48; blue pwdr.; m.p. 2272°; d. 7.24	50g 250g
93-6009	**Neodymium(III) oxide (99.99+%-Nd) (REO) PURATREM** *(1313-97-9)* Nd_2O_3; FW: 336.48; blue pwdr.; m.p. 2272°; d. 7.24	5g 25g
93-6010 HAZ	**Neodymium(III) perchlorate, 50% aqueous solution (99.9%-Nd) (REO)** *(13498-06-1)* $Nd(ClO_4)_3$; FW: 442.67; lilac colored liq.	10g 50g
93-6012 HAZ	**Neodymium(III) i-propoxide (99.9%-Nd) (REO)** *(19236-15-8)* $Nd[OCH(CH_3)_2]_3$; FW: 321.51; light blue pwdr. *moisture sensitive*	1g 5g
93-6017	**Neodymium(III) trifluoroacetylacetonate (99.9%-Nd)** *(37473-67-9)* $Nd(CF_3COCHCOCH_3)_3$; FW: 603.48; bluish-pink xtl.; m.p. 140-142°	1g 5g
60-5200	**Neodymium(III) trifluoromethanesulfonate, min. 98% (Neodymium triflate)** *(34622-08-7)* $Nd(CF_3SO_3)_3$; FW: 591.45; purple pwdr. *hygroscopic*	5g 25g
60-5000 amp HAZ	**Tris(cyclopentadienyl)neodymium, 99% (99.9%-Nd) (REO)** *(1273-98-9)* $(C_5H_5)_3Nd$; FW: 339.53; blue to purple pwdr.; b.p. subl. 220°/0.01mm *air sensitive, moisture sensitive*	1g 5g 25g
60-5500	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)neodymium(III), 99% (99.9%-Nd) (REO) [Nd(FOD)$_3$]** *(17978-76-6)* $Nd(C_3F_7COCHCOC_4H_9)_3$; FW: 1029.77; blue-pink solid	1g 5g
60-6000 amp	**Tris(i-propylcyclopentadienyl)neodymium (99.9%-Nd) (REO)** *(69021-85-8)* $(C_3H_7C_5H_4)_3Nd$; FW: 465.77; purple solid *air sensitive, moisture sensitive*	1g 5g
60-7500 amp	**Tris(tetramethylcyclopentadienyl)neodymium (99.9%-Nd) (REO)** *(164528-22-7)* $[(CH_3)_4C_5H]_3Nd$; FW: 507.85; yellow-green solid *air sensitive, moisture sensitive*	1g 5g
60-8750	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)neodymium(III), 99% (99.9%-Nd) (REO) [Nd(TMHD)$_3$]** *(15492-47-4)* $Nd(C_{11}H_{19}O_2)_3$; FW: 694.06; light purple xtl.; m.p. 209-212°; b.p. dec. 270° (subl. 150°/0.1mm)	1g 5g

NICKEL (Elemental Forms)

28-0001	**Nickel foil (99%)** *(7440-02-0)* Ni; FW: 58.71; 0.127mm thick x 30mm wide; m.p. 1453°; b.p. 2732°; d. 8.90	20cm 100cm
28-0002	**Nickel foil (99%)** *(7440-02-0)* Ni; FW: 58.71; 0.127mm thick x 30cm wide (~67.8g/20 x 30cm); m.p. 1453°; b.p. 2732°; d. 8.90	20 x 30cm 100 x 30cm 500 x 30cm
28-0003	**Nickel foil (99%)** *(7440-02-0)* Ni; FW: 58.71; 0.0254mm thick x 30cm wide (~13.6g/20 x 30cm); m.p. 1453°; b.p. 2732°; d. 8.90	20 x 30cm 100 x 30cm
93-2873	**Nickel foil (99.5%)** *(7440-02-0)* Ni; FW: 58.71; 0.79 mm thick x 100 mm wide; m.p. 1453°; b.p. 2732°; d. 8.90	100 x 100mm 500 x 100mm

NICKEL (Elemental Forms)

93-2875	**Nickel foil (99.9%)** *(7440-02-0)* Ni; FW: 58.71; 0.025 mm thick; m.p. 1453°; b.p. 2732°; d. 8.90	150 x 150mm 300 x 300mm
28-1910 HAZ	**Nickel (skeletal), molybdenum promoted (1 wt%) (supplied under water) (Actimet® 8040P)** *(7440-02-0)* black pwdr. (d50=35 µm) Note: Sold in collaboration with BASF for research purposes only.	50g 250g

Technical Note:
1. Actimet® 8040P catalyst is particularly useful for the hydrogenation of nitriles and nitro groups to amines.

28-0005	**Nickel pellets (99.9%)** *(7440-02-0)* Ni; FW: 58.71; 5-12mm; m.p. 1453°; b.p. 2732°; d. 8.90	250g 1kg
93-2883 HAZ	**Nickel powder (99.5%)** *(7440-02-0)* Ni; FW: 58.71; -100 mesh; m.p. 1453°; b.p. 2732°; d. 8.90	100g 500g
93-2867 HAZ	**Nickel powder (99.9%)** *(7440-02-0)* Ni; FW: 58.71; -300 mesh; m.p. 1453°; b.p. 2732°; d. 8.90	100g 500g
93-2880 HAZ	**Nickel powder (99.9%)** *(7440-02-0)* Ni; FW: 58.71; 3-7 micron; m.p. 1453°; b.p. 2732°; d. 8.90	100g 500g
28-1900 HAZ	**Nickel, 64% powder on silica, reduced and stabilized (Ni-5249P)** *(7440-02-0)* black pwdr. (d50=5 µm); SA: 55m²/g Note: Sold in collaboration with BASF for research purposes only.	50g 250g

Technical Note:
1. Ni-5249P catalyst can be used in the slurry phase hydrogenation of nitro groups, fatty nitriles, saturated aromatics and double bonds. Also used for the hydrogenation of glucose, dextrose or sorbitol.

93-2881	**Nickel rod (99+%)** *(7440-02-0)* Ni; FW: 58.71; 6.35 mm dia.; m.p. 1453°; b.p. 2732°; d. 8.90	30cm 120cm
93-2882	**Nickel rod (99+%)** *(7440-02-0)* Ni; FW: 58.71; 3.2 mm dia.; m.p. 1453°; b.p. 2732°; d. 8.90	30cm 120cm
93-2876	**Nickel tubing (99.5%)** *(7440-02-0)* Ni; FW: 58.71; 6.35 mm O.D. x 0.35 mm wall; m.p. 1453°; b.p. 2732°; d. 8.90	30cm 120cm
28-1916 HAZ	**Nickel (skeletal), unpromoted (supplied under water) (Actimet® M)** *(7440-02-0)* black pwdr. (d50=35 µm) Note: Sold in collaboration with BASF for research purposes only.	50g 250g

Technical Note:
1. Actimet® M catalyst is a versatile catalyst that is recommended for use in the hydrogenation of aromatics and other olefinic compounds. Also useful for the reduction of carbonyl groups and the ammonolysis of alcohols.

93-2871	**Nickel wire (99%)** *(7440-02-0)* Ni; FW: 58.71; 0.5 mm dia.; m.p. 1453°; b.p. 2732°; d. 8.90	25m 100m
93-2869	**Nickel wire (99+%)** *(7440-02-0)* Ni; FW: 58.71; 1 mm dia.; m.p. 1453°; b.p. 2732°; d. 8.90	10m 50m
28-1500	**Nickel wire (99.995%)** *(7440-02-0)* Ni; FW: 58.71; 1mm dia.; m.p. 1453°; b.p. 2732°; d. 8.90	25cm 100cm
93-2865	**Nickel wire cloth, 34 x 34 mesh** *(7440-02-0)* Ni; FW: 58.71; 0.13 mm wire dia. x 600 mm wide; m.p. 1453°; b.p. 2732°; d. 8.90	300 x 600mm 1200 x 600mm
28-0008	**Nickel/tetra-n-octylammonium bromide colloid, purified (65-70% Ni)** *(7440-02-0)* *See* page 161	
28-1890 HAZ	**Sponge nickel catalyst (50% aqueous slurry)** *(7440-02-0)* Ni (50% slurry in water); FW: 58.71; 50% in water; SA: 80-100 m²/g; d. 8.90 (as nickel metal) *air sensitive*	100g 500g

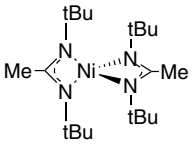
NICKEL (Compounds)

28-0010 HAZ	**Bis(1,5-cyclooctadiene)nickel (0), 98+%** *(1295-35-8)* $(C_8H_{12})_2Ni$; FW: 275.08; yellow xtl.; m.p. 60° dec. (under N_2) *air sensitive, (store cold)* **For detailed technical note visit strem.com.**	2g 10g
28-1301 HAZ	**Bis(cyclopentadienyl)nickel, 99% (Nickelocene)** *(1271-28-9)* $(C_5H_5)_2Ni$; FW: 188.90; dark green xtl.; m.p. 173-174° *air sensitive, (store cold)*	5g 25g 100g

NICKEL (Compounds)

28-0045
amp

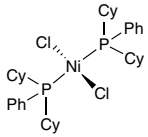
Bis(N,N'-di-t-butylacetamidinato)nickel(II), (99.999%-Ni) PURATREM *(940895-79-4)*
$C_{20}H_{42}N_4Ni$; FW: 397.27; dark, purple-black xtl.; m.p. 87°
air sensitive, moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2.
For detailed technical note visit strem.com.



250mg
1g
5g

28-1330

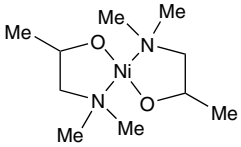
trans-Bis(dicyclohexylphenylphosphino)nickel(II) chloride, 99% *(19232-03-2)*
$C_{36}H_{54}Cl_2NiP_2$; FW: 678.40; purple pwdr.
For detailed technical note visit strem.com.



250mg
1g

28-0025
NEW

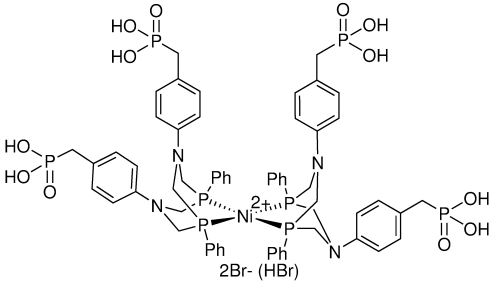
Bis[1-(N,N-dimethylamino)-2-propanolato] nickel(II), 99% NiDMAP *(200284-92-0)*
$C_{10}H_{24}N_2NiO_2$; FW: 263.00; green xtl.



500mg
2g

28-1720
NEW

Bis{P,P'-1,5-diphenyl-3,7-bis[(4-hydrogenphosphonate)phenyl]-1,5,3,7-diazadiphosphocine} nickel(II) bromide (hydrogen bromide adduct) *(1514896-39-9)*
$C_{60}H_{69}Br_3N_4NiO_{12}P_8$; FW: 1584.41; red-brown xtls.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



5mg
25mg

28-0030

1,2-Bis(diphenylphosphino)ethane nickel(II) chloride, 99% *(14647-23-5)*
$[(C_6H_5)_2PCH_2CH_2P(C_6H_5)_2]NiCl_2$; FW: 528.04; orange xtl.

2g
10g
50g

28-0080

1,3-Bis(diphenylphosphino)propane nickel(II) chloride, 99% *(15629-92-2)*
$[(C_6H_5)_2PCH_2CH_2CH_2P(C_6H_5)_2]NiCl_2$; FW: 542.08; red xtl.
For detailed technical note visit strem.com.

5g
25g

28-0083
amp
HAZ

Bis(ethylcyclopentadienyl)nickel, min. 98% *(31886-51-8)*
$[(C_2H_5)C_5H_4]_2Ni$; FW: 244.99; green liq.
air sensitive, (store cold)

1g
5g

28-0085
amp
HAZ

Bis(pentamethylcyclopentadienyl)nickel, 98% (Decamethylnickelocene)
(74507-63-4)
$[(CH_3)_5C_5]_2Ni$; FW: 329.17; greenish-black xtl.
air sensitive, (store cold)

1g
5g

28-0086
amp
HAZ

Bis(i-propylcyclopentadienyl)nickel, min. 98% *(57197-55-4)*
$[(C_3H_7)C_5H_4]_2Ni$; FW: 273.04; green liq.
air sensitive, (store cold)

1g
5g

28-0087
amp
HAZ

Bis(tetramethylcyclopentadienyl)nickel, min. 98% *(79019-60-6)*
$[(CH_3)_4C_5H]_2Ni$; FW: 301.10; green-black xtl.
air sensitive, (store cold)

1g
5g

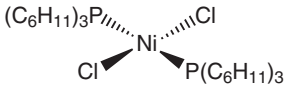
28-0088

Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)nickel(II), min. 98% (99.9%-Ni) $[Ni(TMHD)_2]$ *(14481-08-4)*
$Ni(C_{11}H_{19}O_2)_2$; FW: 425.23; purple xtl.; m.p. 223-225°; b.p. subl. 90-110°/0.1mm
hygroscopic

1g
5g
25g

NICKEL (Compounds)

28-0091 **Bis(tricyclohexylphosphine)nickel(II) chloride, 99%** *(19999-87-2)*
$[(C_6H_{11})_3P]_2NiCl_2$; FW: 690.46; dark red-purple xtls.
For detailed technical note visit strem.com.

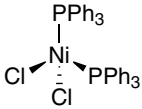


1g
5g

28-0092 **Bis(triphenylphosphine)nickel(II) bromide, 99%** *(14126-37-5)*
$[(C_6H_5)_3P]_2NiBr_2$; FW: 743.12; green xtl.; m.p. 219-223°

10g
50g

28-0095 **Bis(triphenylphosphine)nickel(II) chloride, 99%** *(14264-16-5)*
$[(C_6H_5)_3P]_2NiCl_2$; FW: 654.20; green xtl.
For detailed technical note visit strem.com.

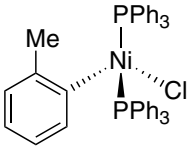


5g
25g

28-0100 **Bis(triphenylphosphine)nickel dicarbonyl, 98%** *(13007-90-4)*
$[(C_6H_5)_3P]_2Ni(CO)_2$; FW: 639.29; light yellow xtl.; m.p. 210-215° dec.
air sensitive

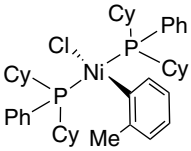
5g
25g
100g

28-0096 NEW **Bis(triphenylphosphino)(2-methylphenyl)chloronickel(II), 99%** *(27057-09-6)*
$C_{43}H_{37}ClNiP_2$; FW: 709.85; yellow pwdr.
For detailed technical note visit strem.com.



250mg
1g

28-0150 **Chlorobis(dicyclohexylphenylphosphino)(2-methylphenyl)nickel(II), 99%** *(1419179-26-2)*
$C_{43}H_{61}ClNiP_2$; FW: 734.04; yellow pwdr.
For detailed technical note visit strem.com.

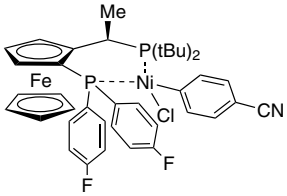


100mg
500mg

28-0110 NEW **Chlorobis(triphenylphosphino)phenylnickel(II), 98%** *(33571-43-6)*
$C_{42}H_{35}ClNiP_2$; FW: 695.78; yellow pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.

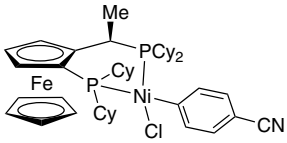
500mg
2g

28-0178 **Chloro(4-cyanophenyl){(R)-1-[(S)-2-(bis(4-fluorophenyl)phosphinoferrocenyl]ethyl(-di-t-butylphosphine)}nickel(II)**
$C_{39}H_{42}ClF_2FeNNiP_2$; FW: 774.69
Note: Sold in collaboration with Solvias for research purposes only.



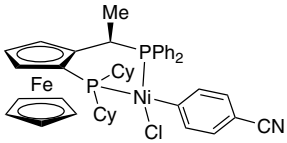
100mg
500mg

28-0172 **Chloro(4-cyanophenyl){(R)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl]ethyl (dicyclohexylphosphine)}nickel(II)**
$C_{43}H_{60}ClFeNNiP_2$; FW: 802.88
Note: Sold in collaboration with Solvias for research purposes only.



100mg
500mg

28-0175 **Chloro(4-cyanophenyl){(R)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl]ethyl (diphenylphosphine)}nickel(II)**
$C_{43}H_{48}ClFeNNiP_2$; FW: 790.79
Note: Sold in collaboration with Solvias for research purposes only.

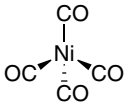


100mg
500mg

NICKEL (Compounds)

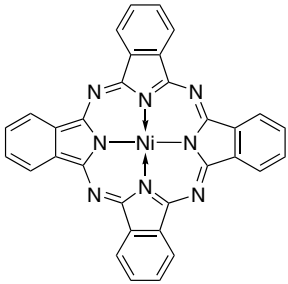
28-0170	**Chloro(4-cyanophenyl){(R)-1-[(S)-2-(diphenylphosphino)ferrocenyl]ethyl(di-t-butyl) phosphine} nickel(II)** *(1807948-77-1)* $C_{39}H_{44}ClFeNNiP_2$; FW: 738.71 Note: Sold in collaboration with Solvias for research purposes only.	100mg 500mg
28-0518 NEW	**Chloro(2-methylphenyl) [1,1'-bis(diphenylphosphino)ferrocene]nickel (II), 98%** *(1501945-23-8)* $C_{41}H_{35}ClFeNiP_2$; FW: 739.66; yellow pwdr. *air sensitive* **For detailed technical note visit strem.com.**	100mg 500mg
28-1090 NEW	**Chloro(2-methylphenyl)[1,3,5,7-tetramethyl-8-(2-di-o-tolylphosphinophenyl)-2,4,6-trioxa-8-phosphaadamantane]nickel(II), Stradiotto PAd-DalPhos Nickel Catalyst** *(1902911-45-8)* $C_{37}H_{41}ClNiO_3P_2$; FW: 689.81; brown pwdr. Note: Patent No. 62/171,370 **For detailed technical note visit strem.com.**	250mg 1g
28-0165 NEW	**Chloro(2-methylphenyl)(N,N,N',N'-tetramethyl-1,2-ethylenediamine)nickel(II), 99% (contains about 5% o-chlorotoluene) NiCl(o-tolyl)(TMEDA)** *(1702744-45-3)* $C_{13}H_{23}ClN_2Ni$; FW: 301.48; dark-orange pwdr. *air sensitive* **For detailed technical note visit strem.com.**	500mg 2g 10g
28-0500	**Dichloro[1,1'-bis(diphenylphosphino)ferrocene]nickel(II), 98%** *(67292-34-6)* $[(C_5H_4P(C_6H_5)_2)_2Fe]NiCl_2$; FW: 684.00; green micro xtl. **For detailed technical note visit strem.com.**	1g 5g
93-2823	**Hexaamminenickel(II) chloride, 98%** *(10534-88-0)* $[Ni(NH_3)_6]Cl_2$; FW: 231.80; purple xtl.; d. 1.468	25g 100g
93-2824	**Hexaamminenickel(II) iodide, 98%** *(13859-68-2)* $[Ni(NH_3)_6]I_2$; FW: 414.70; yellow pwdr.; d. 2.101	25g 100g
28-0900	**Methallylnickel chloride dimer** *(12145-60-7)* $[C_4H_7NiCl]_2$; FW: 298.49; orange-brown xtl. *air sensitive, moisture sensitive, (store cold)*	250mg 1g
93-2803	**Nickel(II) acetate tetrahydrate, 98+%** *(6018-89-9)* $Ni(OOCCH_3)_2{\cdot}4H_2O$; FW: 176.80 (248.86); green xtl.; m.p. dec.; d. 1.744 *hygroscopic*	250g 1kg
28-1100	**Nickel(II) acetate tetrahydrate (99.999%-Ni) PURATREM** *(6018-89-9)* $Ni(OOCCH_3)_2{\cdot}4H_2O$; FW: 176.80 (248.86); green xtl.; m.p. dec.; d. 1.744	5g 25g
28-1130	**Nickel(II) acetylacetonate, anhydrous, min. 95%** *(3264-82-2)* $Ni(CH_3COCHCOCH_3)_2$; FW: 256.93; light green pwdr.; m.p. 238° dec. *hygroscopic* **For detailed technical note visit strem.com.**	25g 100g
28-1110	**Nickel(II) acetylacetonate hydrate** *(120156-44-7)* $Ni(CH_3COCHCOCH_3)_2{\cdot}XH_2O$; FW: 256.93; light green pwdr. **For detailed technical note visit strem.com.**	100g 500g
93-2859	**Nickel boride (99%-Ni)** *(12007-00-0)* NiB; FW: 69.52; -325 mesh silver gran.; d. 7.39	10g 50g

NICKEL (Compounds)

28-1140	**Nickel(II) bromide, anhydrous (99+%-Ni)** *(13462-88-9)* $NiBr_2$; FW: 218.51; yellow to yellow-brown solid; m.p. 963°; d. 5.098 *hygroscopic*	50g 250g
28-1145 HAZ	**Nickel(II) bromide, dimethoxyethane adduct, min. 97%** *(28923-39-9)* $NiBr_2 \cdot CH_3O(CH_2)_2OCH_3$; FW: 308.62; peach pwdr. *moisture sensitive*	1g 5g
93-2807	**Nickel(II) bromide hydrate** *(207569-11-7)* $NiBr_2 \cdot XH_2O$; FW: 218.51; yellow to green xtl.; m.p. 300° dec.	50g 250g
93-2808	**Nickel(II) carbonate, basic hydrate** *(39380-74-0)* $NiCO_3 \cdot 2Ni(OH)_2 \cdot XH_2O$; FW: 320.16; green pwdr.	50g 250g 1kg
28-1150 HAZ	**Nickel carbonyl** *(13463-39-3)* $Ni(CO)_4$; FW: 170.73; colorless liq.; m.p. -19.3°; b.p. 43°; f.p. -4°F; d. 1.32 *heat sensitive, pyrophoric* 	100g 450g
93-2809 HAZ	**Nickel(II) chloride, anhydrous, 98%** *(7718-54-9)* $NiCl_2$; FW: 129.62; yellow pwdr.; m.p. 1001°; d. 3.55 *hygroscopic*	50g 250g
93-2801 HAZ	**Nickel(II) chloride, dimethoxyethane adduct, min. 97%** *(29046-78-4)* $NiCl_2 \cdot CH_3O(CH_2)_2OCH_3$; FW: 219.72; yellow pwdr. *moisture sensitive*	1g 5g 25g
93-2810 HAZ	**Nickel(II) chloride hexahydrate (99.9+%-Ni)** *(7791-20-0)* $NiCl_2 \cdot 6H_2O$; FW: 129.62 (237.70); green xtl.	250g 1kg
28-1160 HAZ	**Nickel(II) chloride hexahydrate (99.999+%-Ni) PURATREM** *(7791-20-0)* $NiCl_2 \cdot 6H_2O$; FW: 129.62 (237.70); green xtl.	10g 50g
93-2813	**Nickel(II) cyclohexanebutyrate (AAS)** *(3906-55-6)* $Ni[OOC(CH_2)_3C_6H_{11}]_2$; FW: 397.20; green to blue xtl.	5g
93-2815	**Nickel(II) dimethylglyoxime, 99%** *(13478-93-8)* $Ni(HC_4H_6N_2O_2)_2$; FW: 288.94; reddish-purple pwdr.; m.p. 250° subl.	10g 50g
93-2830	**Nickel(II) 2-ethylhexanoate, 78% in 2-ethylhexanoic acid (10-15% Ni)** *(4454-16-4)* $Ni[OOCCH(C_2H_5)C_4H_9]_2$; FW: 345.13; viscous liq.; f.p. 155°F; d. 1.08	50g 250g
93-2818	**Nickel(II) fluoride, anhydrous, 99%** *(10028-18-9)* NiF_2; FW: 96.71; light green pwdr.; d. 4.63 *hygroscopic*	10g 50g
93-2819	**Nickel(II) fluoride tetrahydrate, 98+%** *(13940-83-5)* $NiF_2 \cdot 4H_2O$; FW: 96.71 (168.77); green pwdr.	25g 100g
93-2821	**Nickel(II) hexafluoroacetylacetonate hydrate, 98%** *(14949-69-0)* $Ni(CF_3COCHCOCF_3)_2 \cdot XH_2O$; FW: 472.81; green xtl.; m.p. 211-213°	1g 5g
93-2847 HAZ	**Nickel(II) hydroxide** *(12054-48-7)* $Ni(OH)_2$; FW: 92.72; green pwdr.; m.p. 230° dec.	250g 1kg
93-2826	**Nickel(II) hydroxyacetate** *(41587-84-2)* $Ni(OOCCH_2OH)_2$; FW: 208.75; green pwdr.	5g 25g
93-2827	**Nickel(II) iodide, anhydrous (99.5%-Ni)** *(13462-90-3)* NiI_2; FW: 312.52; -60 mesh black pwdr.; m.p. 797°; d. 5.834 *hygroscopic*	10g 50g
93-2828	**Nickel(II) iodide hydrate** *(7790-34-3)* $NiI_2 \cdot XH_2O$; FW: 312.52; green xtl.	25g 100g
28-1690	**Nickel(II) meso-tetraphenylporphine** *(14172-92-0)* $(C_{44}H_{28}N_4)Ni$; FW: 671.44; purple xtl.	1g 5g
93-2829 HAZ	**Nickel(II) naphthenate, ~60% in toluene (6-8% Ni)** *(61788-71-4)* viscous liq.	50g 250g
93-2860 HAZ	**Nickel(II) nitrate hexahydrate (99.9+%-Ni)** *(13478-00-7)* $Ni(NO_3)_2 \cdot 6H_2O$; FW: 182.72 (290.81); green flake; m.p. 56.7°; d. 2.05	250g 1kg
28-1440 HAZ	**Nickel(II) nitrate hexahydrate (99.9985%-Ni) PURATREM** *(13478-00-7)* $Ni(NO_3)_2 \cdot 6H_2O$; FW: 182.72 (290.81); green xtl.; m.p. 56.7°; d. 2.05	25g 100g

NICKEL (Compounds)

93-2831	**Nickel(II) oxalate dihydrate** *(6018-94-6)* $NiC_2O_4 \cdot 2H_2O$; FW: 146.73 (182.76); green to blue pwdr.	50g 250g
28-1470	**Nickel(II) oxalate dihydrate (99.998%-Ni) PURATREM** *(6018-94-6)* $NiC_2O_4 \cdot 2H_2O$; FW: 146.73 (182.76); light green pwdr.	10g 50g
93-2833	**Nickel(II) oxide (99.99%-Ni) PURATREM** *(1313-99-1)* NiO; FW: 74.71; green pwdr.; m.p. 1990°; d. 6.67	25g 100g
28-1475	**Nickel(II) oxide (99.998%-Ni) PURATREM** *(1313-99-1)* NiO; FW: 74.71; greenish-black pwdr.; m.p. 1990°; d. 6.67	10g 50g
93-2861	**Nickel(II) oxide, black (99.9+%)** *(1313-99-1)* NiO; FW: 74.71; -325 mesh black pwdr.; m.p. 1990°; d. 6.67	100g 500g
93-2832	**Nickel(II) oxide, green, 99%** *(1313-99-1)* NiO; FW: 74.71; -325 mesh green pwdr.; m.p. 1990°; d. 6.67	50g 250g
93-2834 HAZ	**Nickel(II) perchlorate hexahydrate, 99%** *(13520-61-1)* $Ni(ClO_4)_2 \cdot 6H_2O$; FW: 257.61 (365.70); green xtl.; m.p. 140° *hygroscopic*	50g 250g
28-1600	**Nickel(II) phthalocyanine, min. 94%** *(14055-02-8)* $(C_{32}H_{16}N_8)Ni$; FW: 571.23; purple pwdr.	5g 25g



93-2845	**Nickel(II) stearate** *(2223-95-2)* $Ni(O_2C_{18}H_{35})_2$; FW: 625.67; waxy green solid; d. 1.13	100g
93-2839	**Nickel(II) sulfate hexahydrate, 98+% (ACS)** *(10101-97-0)* $NiSO_4 \cdot 6H_2O$; FW: 154.78 (262.86); green xtl.; d. 2.07	500g 2kg
93-2856	**Nickel(II) sulfate hexahydrate (99.99%-Ni) PURATREM** *(10101-97-0)* $NiSO_4 \cdot 6H_2O$; FW: 154.78 (262.86); green xtl.; d. 2.07	25g 100g
93-2840	**Nickel(II) sulfide (99.9%-Ni)** *(16812-54-7)* Ni_3S_2/NiS; -200 mesh black pwdr.; m.p. 797°; d. 5.3-5.65	5g 25g
93-2841	**Nickel(II) tetrafluoroborate hexahydrate, 99%** *(15684-36-3)* $Ni(BF_4)_2 \cdot 6H_2O$; FW: 232.23 (340.32); green xtl.; d. 1.47	50g 250g
93-2843	**Nickel(II) trifluoroacetylacetonate dihydrate, 98%** *(14324-83-5)* $Ni(CF_3COCHCOCH_3)_2 \cdot 2H_2O$; FW: 364.87 (400.90); green pwdr.	5g 25g
28-1700	**Nickel(II) trifluoromethanesulfonate, min. 98% (Nickel triflate)** *(60871-84-3)* $Ni(CF_3SO_3)_2$; FW: 356.83; pale green pwdr. *hygroscopic*	1g 5g
19-2000	**Potassium hexafluoronickelate(IV), 99%** *(17218-47-2)* *See* page 342	

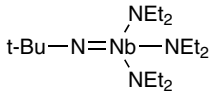
NIOBIUM (Elemental Forms)

41-0050	**Niobium foil (99.8%)** *(7440-03-1)* Nb; FW: 92.91; 1.0mm thick (~42.9g/50 x100mm); m.p. 2468°; b.p. 4742°; d. 8.57	50 x 100mm 100 x 200mm 500 x 200mm
41-0055	**Niobium foil (99.8%)** *(7440-03-1)* Nb; FW: 92.91; 0.25mm thick (~10.7g/50 x 100mm); m.p. 2468°; b.p. 4742°; d. 8.57	50 x 100mm 100 x 200mm
41-0060	**Niobium foil (99.8%)** *(7440-03-1)* Nb; FW: 92.91; 0.127mm thick (50 x 100mm); m.p. 2468°; b.p. 4742°; d. 8.57	1pc 5pcs
93-4135	**Niobium foil (99.8%)** *(7440-03-1)* Nb; FW: 92.91; 0.05mm thick x 100mm wide; m.p. 2468°; b.p. 4742°; d. 8.57	100 x 100mm 500 x 100mm
93-4133	**Niobium powder (99.8%, Ta-0.1-1%)** *(7440-03-1)* Nb; FW: 92.91; -60 mesh; m.p. 2468°; b.p. 4742°; d. 8.57	25g 100g

NIOBIUM (Elemental Forms)

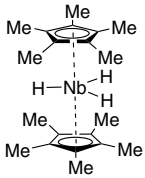
93-4132 HAZ	**Niobium powder (99.8%)** *(7440-03-1)* Nb; FW: 92.91; -325 mesh; m.p. 2468°; b.p. 4742°; d. 8.57	25g 100g
41-0065	**Niobium rod (99.8%)** *(7440-03-1)* Nb; FW: 92.91; 12.5mm dia. (~11g/cm); m.p. 2468°; b.p. 4742°; d. 8.57	2cm 10cm
41-0070	**Niobium rod (99.8%)** *(7440-03-1)* Nb; FW: 92.91; 6.35 mm dia. (~2.7g/cm); m.p. 2468°; b.p. 4742°; d. 8.57	5cm 25cm 100cm
93-4130	**Niobium turnings (99.8%)** *(7440-03-1)* Nb; FW: 92.91; irregular pieces; m.p. 2468°; b.p. 4742°; d. 8.57	25g 100g

NIOBIUM (Compounds)

41-0450 NEW HAZ	**(t-Butylimido)tris(diethylamino)niobium(V), min. 98%** *(210363-27-2)* $C_{16}H_{39}N_4Nb$; FW: 380.41; yellow to brown orange, low melting solid *air sensitive, moisture sensitive* 	1g 5g
41-0500 HAZ	**Cyclopentadienylniobium(V) tetrachloride, 98%** *(33114-15-7)* $C_5H_5NbCl_4$; FW: 299.82; red to brown pwdr.; m.p. 180° dec. *moisture sensitive*	1g 5g
93-4107 HAZ	**Niobium(V) bromide (99.9%-Nb)** *(13478-45-0)* $NbBr_5$; FW: 492.49; -100 mesh reddish-brown pwdr.; m.p. 150°; b.p. 361.6° *moisture sensitive*	10g 50g
93-4126 HAZ	**Niobium(V) chloride (99+%-Nb)** *(10026-12-7)* $NbCl_5$; FW: 270.17; yellow xtl.; m.p. 204-206°; b.p. 254°; d. 2.75 *moisture sensitive*	50g 250g
41-1250 HAZ	**Niobium(V) chloride (99.99%-Nb) (20-200ppm Ta) PURATREM** *(10026-12-7)* $NbCl_5$; FW: 270.17; yellow xtl.; m.p. 204-206°; b.p. 254°; d. 2.75 *moisture sensitive*	5g 25g 100g
93-4104 amp HAZ	**Niobium(V) ethoxide (99.9+%-Nb)** *(3236-82-6)* $Nb(OC_2H_5)_5$; FW: 318.22; yellow to orange liq.; m.p. 6°; b.p. 142°/0.1mm; d. 1.32 *moisture sensitive*	5g 25g
41-1260	**Niobium(IV) 2-ethylhexanoate** *(206564-87-6)* $Nb[OOCCH(C_2H_5)C_4H_9]_4$; FW: 665.73; yellow viscous liq. *moisture sensitive*	10g 50g
93-4121 HAZ	**Niobium(V) fluoride, 99.5%** *(7783-68-8)* NbF_5; FW: 187.91; white pwdr.; m.p. 72°; b.p. ~220°; d. 3.92 *moisture sensitive* Note: Packaged in PFA/FET bottle.	5g 25g
41-4110	**Niobium(IV) oxide, 99+%** *(12034-59-2)* NbO_2; FW: 124.91; -200 mesh pwdr.; d. 5.9	2g 10g 50g
93-4111	**Niobium(V) oxide (99.5%-Nb)** *(1313-96-8)* Nb_2O_5; FW: 265.82; white pwdr.; m.p. 1520°; d. 4.47	50g 250g
93-4109	**Niobium(V) oxide (99.9%-Nb)** *(1313-96-8)* Nb_2O_5; FW: 265.82; white pwdr.; m.p. 1520°; d. 4.47	50g 250g
41-5200	**Niobium(V) oxide (99.995%-Nb) (50-100ppm Ta) PURATREM** *(1313-96-8)* Nb_2O_5; FW: 265.82; white pwdr.; m.p. 1520°; d. 4.47	25g 100g
41-5300 HAZ	**Pentakis(dimethylamino)niobium(V), 99%** *(19824-58-9)* $Nb[N(CH_3)_2]_5$; FW: 313.29; purple-black xtl. *moisture sensitive*	1g 5g
41-6500 HAZ	**Tetrachlorobis(tetrahydrofuran)niobium(IV)** *(61247-57-2)* $NbCl_4(C_4H_8O)_2$; FW: 378.94; yellow to orange pwdr.; m.p. 93° (dec.) *moisture sensitive*	5g 25g
41-7000	**Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato)niobium(IV), 99% [Nb(TMHD)$_4$]** *(41706-15-4)* $Nb(C_{11}H_{19}O_2)_4$; FW: 826.00; black xtl.; m.p. 219-220°; b.p. dec. 325°	1g 5g 25g

NIOBIUM (Compounds)

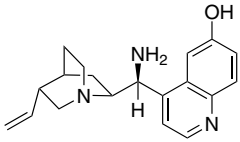
41-0510 HAZ
Trihydridobis(pentamethylcyclopentadienyl)niobium(V) *(93558-77-1)*
$[(CH_3)_5C_5]_2NbH_3$; FW: 366.38; light-brown pwdr.
air sensitive



100mg
500mg

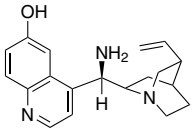
NITROGEN (Compounds)

07-1712
(8α, 9S)-(+)-9-Amino-cinchonan-6'-ol, min. 90% *(960050-59-3)*
$C_{19}H_{23}N_3O$; FW: 309.41; off-white to pale brown pwdr.
(store cold)
For detailed technical note visit strem.com.



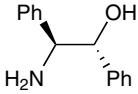
50mg
250mg

07-1717
(9R)-(+)-9-Amino-cinchonan-6'-ol, min. 90% *(960050-60-6)*
$C_{19}H_{23}N_3O$; FW: 309.41; off-white to pale brown pwdr.
(store cold)
For detailed technical note visit strem.com.



50mg
250mg

07-0040 NEW
(1R,2S)-2-Amino-1,2-diphenylethanol, min. 98% *(23190-16-1)*
$C_{14}H_{15}NO$; FW: 213.28; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



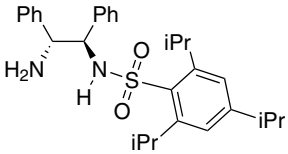
5g
25g

07-0041 NEW
(1S,2R)-2-Amino-1,2-diphenylethanol, min. 98% *(23364-44-5)*
$C_{14}H_{15}NO$; FW: 213.28; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

5g
25g

Technical Note:
1. See 07-0040 (page 178)

07-2345
N-[(1R,2R)-2-Amino-1,2-diphenyl)ethyl]-2,4,6-tris(1-methylethyl)benzenesulfonamide, 98% (R,R)-TipsDPEN *(852212-92-1)*
$C_{29}H_{38}N_2O_2S$; FW: 478.69; white to tan pwdr.
Note: Manufactured under license of Takasago patent.

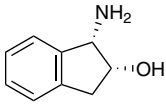


1g
5g

07-2346
N-[(1S,2S)-2-Amino-1,2-diphenyl)ethyl]-2,4,6-tris(1-methylethyl)benzenesulfonamide, 98% (S,S)-TipsDPEN *(247923-41-7)*
$C_{29}H_{38}N_2O_2S$; FW: 478.69; white solid
Note: Manufactured under license of Takasago patent.

1g
5g

07-0200
(1S,2R)-(-)-cis-1-Aminoindan-2-ol, 98% *(126456-43-7)*
$C_9H_{11}NO$; FW: 149.19; white to off-white pwdr.; m.p. 117-121°
Note: CATHy™ Catalyst Kit component.
For detailed technical note visit strem.com.



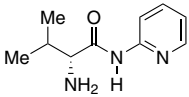
1g
5g
25g

07-0201
(1R,2S)-(+)-cis-1-Aminoindan-2-ol, 98% *(136030-00-7)*
$C_9H_{11}NO$; FW: 149.19; white to off-white pwdr.; m.p. 117-121°
Note: CATHy™ Catalyst Kit component.

1g
5g
25g

Technical Note:
1. See 07-0200 (page 178)

07-0519 NEW
(2R)-2-Amino-3-methyl-N-2-pyridinylbutanamide, min. 98% *(1568043-19-5)*
$C_{10}H_{15}N_3O$; FW: 193.25; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



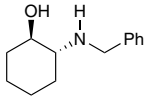
100mg
500mg

NITROGEN (Compounds)

07-0518 NEW
(2S)-2-Amino-3-methyl-N-2-pyridinylbutanamide, min. 98% *(167261-43-0)*
$C_{10}H_{15}N_3O$; FW: 193.25; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
100mg
500mg

Technical Note:
1. See 07-0519 (page 178)

07-0637 NEW
(1R,2R)-2-Benzylamino-1-cyclohexanol, min. 98%
(141553-09-5)
$C_{13}H_{19}NO$; FW: 205.30; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

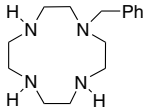


500mg
2g

07-0638 NEW
(1S,2S)-2-Benzylamino-1-cyclohexanol, min. 98% *(322407-34-1)*
$C_{13}H_{19}NO$; FW: 205.30; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
500mg
2g

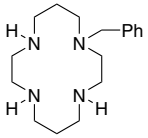
07-0090
1-Benzyl-3-methylimidazolium phosphate, 99%
See page 81

07-1939
N-Benzyl-1,4,7,10-tetraazacyclododecane, min. 98%
(112193-83-6)
$C_{15}H_{26}N_4$; FW: 262.39; white to yellow pwdr.



250mg
1g

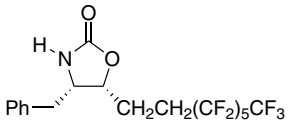
07-1957
N-Benzyl-1,4,8,11-tetraazacyclotetradecane, min. 98%
(132723-93-4)
$C_{17}H_{30}N_4$; FW: 290.45; white to yellow pwdr.



100mg
500mg

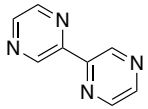
07-0096
(4R,5S)-(+)-4-Benzyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99% *(1391512-50-7)*
$C_{18}H_{14}F_{13}NO_2$; FW: 523.29; white pwdr.; m.p. 90-95°
Note: Sold under license for research purposes only. Patent PCT US/60/661,914.
For detailed technical note visit strem.com.
100mg
500mg

07-0095
(4S,5R)-(-)-4-Benzyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99% *(857637-92-4)*
$C_{18}H_{14}F_{13}NO_2$; FW: 523.29; white pwdr.; m.p. 90-95°
Note: Sold under license for research purposes only. Patent PCT US/60/661,914.
For detailed technical note visit strem.com.



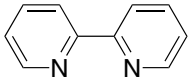
100mg
500mg

07-0750 NEW
2,2'-Bipyrazine, 95% *(10199-00-5)*
$C_8H_6N_4$; FW: 158.16; light-brown solid
air sensitive
Note: Ligand for photocatalyst synthesis.



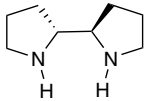
250mg
1g

07-0290 HAZ
2,2'-Bipyridine, 99+% BIPY *(366-18-7)*
$C_{10}H_8N_2$; FW: 156.19; white to pale-pink pwdr.; m.p. 69-70°; b.p. 273°



25g
100g

07-0092
(2R,2'R)-(-)-2,2'-Bipyrrolidine, 99% *(137037-20-8)*
$C_8H_{16}N_2$; FW: 140.23; colorless liq.
air sensitive

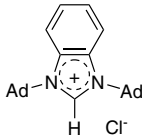


250mg
1g
5g

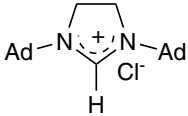
07-0093
(2S,2'S)-(+)-2,2'-Bipyrrolidine, 99% *(124779-66-4)*
$C_8H_{16}N_2$; FW: 140.23; colorless liq.
air sensitive
250mg
1g
5g

NITROGEN (Compounds)

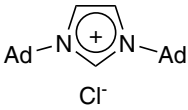
07-4005 **1,3-Bis(1-adamantyl)benzimidazolium chloride, min. 97%** *(852634-41-4)*
$C_{27}H_{35}ClN_2$; FW: 423.03; yellow to orange solid
air sensitive
500mg
2g



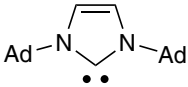
07-4007 **1,3-Bis(1-adamantyl)-4,5-dihydroimidazolium chloride, min. 97%** *(871126-33-9)*
$C_{23}H_{35}ClN_2$; FW: 374.99; white to off-white solid
air sensitive
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.
500mg
2g



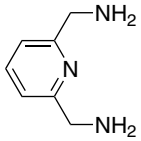
07-0322 **1,3-Bis(1-adamantyl)imidazolium chloride, min. 97%** *(131042-78-9)*
$[C_{23}H_{33}N_2]^+Cl^-$; FW: 372.97; white xtl.; m.p. 345-346°
hygroscopic
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.
250mg
1g



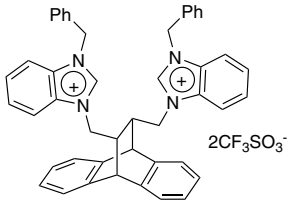
07-0324 HAZ **1,3-Bis(1-adamantyl)imidazol-2-ylidene, min. 98% ARDUENGO'S CARBENE** *(131042-77-8)*
$C_{23}H_{32}N_2$; FW: 336.51; white xtl.; m.p. 240-241°
air sensitive, moisture sensitive, (store cold)
Note: NHC Ligand Kit 2: "Free" Carbenes Kit component.
250mg



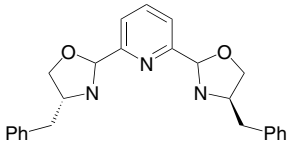
07-0650 NEW **2,6-Bis(aminomethyl)pyridine, min. 85%** *(34984-16-2)*
$C_7H_{11}N_3$; FW: 137.18; low melting yellow solid
air sensitive
1g
5g



07-0076 **11,12-Bis[N-benzyl-1H-imidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)**
$[C_{38}H_{36}N_4](CF_3SO_3)_2$; FW: 846.86; white to off-white pwdr.
Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.
100mg
500mg



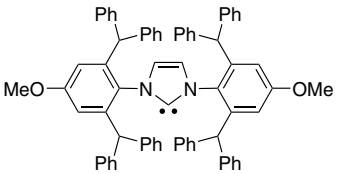
07-0390 NEW **2,6-Bis[(4R)-benzyl-2-oxazolin-2-yl]pyridine, min. 98%** *(365215-38-9)*
$C_{25}H_{23}N_3O_2$; FW: 397.47; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.
25mg
100mg



07-0391 NEW **2,6-Bis[(4S)-benzyl-2-oxazolin-2-yl]pyridine, min. 98%** *(151670-69-8)*
$C_{25}H_{23}N_3O_2$; FW: 397.47; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
25mg
100mg

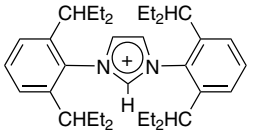
Technical Note:
1. See 07-0390 (page 180)

07-0216 HAZ **N,N'-Bis(2,6-bis(diphenylmethyl)-4-methoxyphenyl)imidazol-2-ylidene, min. 98% IPr*OMe** *(1416368-06-3)*
$C_{69}H_{56}N_2O_2$; FW: 945.20; white pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.
250mg
1g



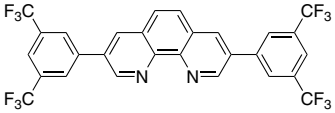
NITROGEN (Compounds)

07-0358 **1,3-Bis[2,6-bis(1-ethylpropyl)phenyl] imidazolium chloride, 98% IPentHCl** *(1440435-00-6)*
$C_{35}H_{53}ClN_2$; FW: 537.26; white pwdr.



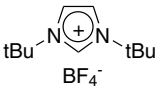
500mg
2g

07-0481 NEW **3,8-Bis[3,5-bis(trifluoromethyl)phenyl]-1,10-phenanthroline** *(1228032-35-6)*
$C_{28}H_{12}F_{12}N_2$; off-white pwdr.



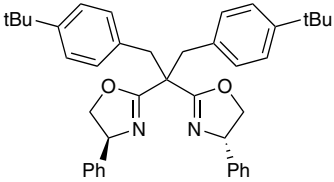
100mg
500mg

07-0598 **1,3-Bis(t-butyl)imidazolium tetrafluoroborate, min. 97% ItBuHBF$_4$** *(263163-17-3)*
$[C_{11}H_{21}N_2]^+BF_4^-$; FW: 268.10; white to cream-colored solid
hygroscopic
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.



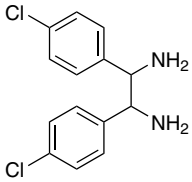
500mg
2g

07-1235 **(4S,4'S)-2,2'-(1,3-Bis[4-(t-butyl)phenyl) propane-2,2-diyl]bis(4-phenyl-4,5-dihydrooxazole) (S)-BTBBPh-SaBOX** *(1428328-51-1)*
$C_{41}H_{46}N_2O_2$; FW: 598.81; white pwdr.
For detailed technical note visit strem.com.



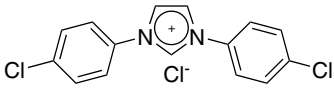
250mg
1g

07-0487 **meso-1,2-Bis(4-chlorophenyl)ethylenediamine, min. 98%** *(74641-30-8)*
$C_{14}H_{14}Cl_2N_2$; FW: 281.18; white to yellow pwdr.
air sensitive



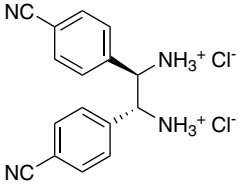
100mg
500mg

07-0490 **1,3-Bis(4-chlorophenyl)imidazolium chloride, min. 97%** *(141556-46-9)*
$[C_{15}H_{11}Cl_2N_2]^+Cl^-$; FW: 325.62; cream-colored pwdr.; m.p. 251-252°
hygroscopic



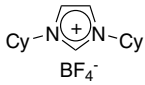
250mg

07-0220 **(1R,2R)-(+)-1,2-Bis(4-cyanophenyl) ethylenediamine dihydrochloride, min. 98%** *(117903-80-7)*
$C_{16}H_{14}N_4 \cdot 2HCl$; FW: 335.23; white to off-white pwdr.
hygroscopic



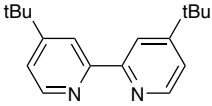
100mg
500mg

07-0597 **1,3-Bis(cyclohexyl)imidazolium tetrafluoroborate, min. 97% ICyHBF$_4$** *(286014-38-8)*
$[C_{15}H_{25}N_2]^+BF_4^-$; FW: 320.18; white to cream-colored solid
hygroscopic



500mg
2g

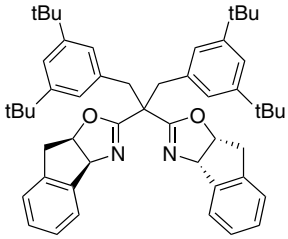
07-0273 NEW **4,4'-Bis(di-t-butyl)-2,2'-bipyridine, 97% DTBBPY** *(72914-19-3)*
$C_{18}H_{24}N_2$; FW: 268.40; white xtl.
hygroscopic
For detailed technical note visit strem.com.



1g
5g

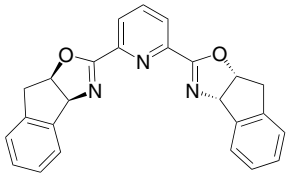
NITROGEN (Compounds)

07-1228
(3aS,3a'S,8aR,8a'R)-2,2'-(1,3-Bis(3,5-di-t-butylphenyl)propane-2,2-diyl)bis(8,8a-dihydro-3aH-indeno[1,2-d]oxazole) (S,R)-BDTBIn-SaBOX *(1435467-29-0)*
$C_{51}H_{62}N_2O_2$; FW: 735.05; white solid
For detailed technical note visit strem.com.



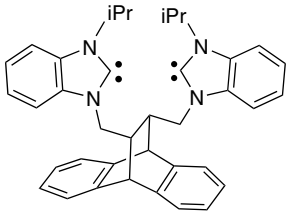
100mg
500mg

07-0280
(-)-2,6-Bis[(3aS,8aR)-3a,8a-dihydro-8H-indeno[1,2-d]oxazolin-2-yl]pyridine, min. 97% Indenyl-PYBOX *(185346-09-2)*
$C_{25}H_{19}N_3O_2$; FW: 393.44; white to off-white pwdr.; m.p. 265° dec.
For detailed technical note visit strem.com.



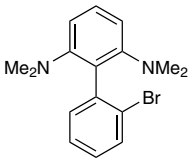
250mg
1g

07-0088
HAZ
11,12-Bis[1,3-dihydro-3-(i-propyl)-2H-benzimidazol-2-ylidene-3-methylene]-9,10-dihydro-9,10-ethanoanthracene *(958004-05-2)*
$C_{38}H_{38}N_4$; FW: 550.74; white to off-white pwdr.
air sensitive, moisture sensitive
Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.



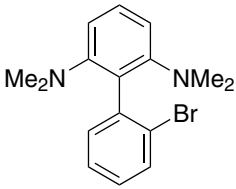
100mg
500mg

07-0230
1,3-Bis(dimethylamino)benzene, 98% *(22440-93-3)*
$C_{10}H_{16}N_2$; FW: 164.25; colorless liq.
air sensitive, light sensitive, (store cold)



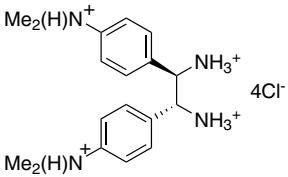
1g
5g

07-0428
2,6-Bis(dimethylamino)-2'-bromo-1,1'-biphenyl, min. 98% *(1160556-63-7)*
$C_{16}H_{19}BrN_2$; FW: 319.24; brown solid



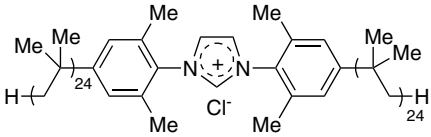
250mg
1g

07-0226
(1R,2R)-(+)-1,2-Bis(4-dimethylaminophenyl) ethylenediamine tetrahydrochloride, min. 98% *(866267-84-7)*
$C_{18}H_{26}N_4 \cdot 4HCl$; FW: 444.27; white to yellow pwdr.
hygroscopic



100mg
500mg

07-4042
amp
HAZ
1,3-Bis{2,3-dimethyl-4-[polyisobutyl(24)]phenyl}-4,5-dihydroimidazolium tetrafluoroborate (50% in hexanes/polyisobutylene)
$C_{211}H_{407}N_2BF_4$; FW: 3059; yellow liq.



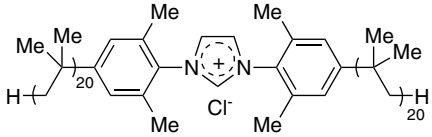
500mg

NITROGEN (Compounds)

07-4045
amp
HAZ

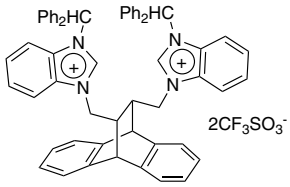
1,3-Bis{2,3-dimethyl-4-[polyisobutyl(20)]phenyl}imidazolium chloride (50% in hexanes/polyisobutylene)
$C_{179}H_{343}N_2Cl$; FW: 2557; orange liq.
For detailed technical note visit strem.com.

500mg



07-0078

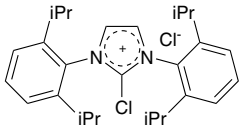
11,12-Bis[N-(2,2-diphenyl-1-ethyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate), min. 95%
$[C_{60}H_{52}N_4](CF_3SO_3)_2$; FW: 1127.22; white to off-white pwdr.
Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.



100mg
500mg

07-0620
NEW

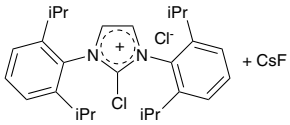
1,3-Bis(2,6-di-i-propylphenyl)-2-chloroimidazolium chloride, 98+% *(1228185-09-8)*
$C_{27}H_{36}Cl_2N_2$; FW: 459.49; colorless solid
hygroscopic
For detailed technical note visit strem.com.



250mg
1g

07-4055
NEW

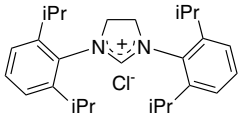
1,3-Bis(2,6-di-i-propylphenyl)-2-chloroimidazolium chloride/cesium fluoride admixture (1.0/6.7 molar ratio or 1/2.2 weight ratio) PhenoFluor®Mix *(1228185-09-8)*
$[C_{27}H_{36}Cl_2N_2][CsF]_{6\cdot7}$; off-white solid
hygroscopic
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard4
For detailed technical note visit strem.com.



250mg
1g

07-4009

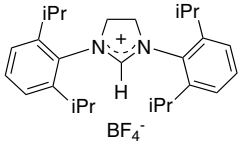
1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazolium chloride, min. 97%
(258278-25-0)
$C_{27}H_{39}ClN_2$; FW: 427.06; white to off-white solid
air sensitive
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.



500mg
2g

07-0587

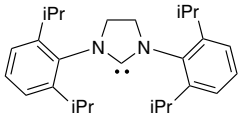
1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazolium tetrafluoroborate, min. 95%
(282109-83-5)
$C_{27}H_{39}N_2^+BF_4^-$; FW: 478.43; white pwdr.
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.
For detailed technical note visit strem.com.



1g
5g

07-0593
HAZ

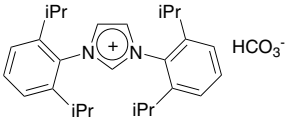
1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidine, min. 98%
(258278-28-3)
$C_{27}H_{38}N_2$; FW: 390.60; white to off-white pwdr.
air sensitive, moisture sensitive, (store cold)
Note: NHC Ligand Kit 2: "Free" Carbenes Kit component.



500mg
2g

07-0484
NEW

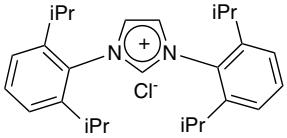
1,3-Bis(2,6-di-i-propylphenyl)imidazolium bicarbonate, min. 97% IPrH.HCO_3 *(1663476-15-0)*
$[C_{27}H_{37}N_2]^+HCO_3^-$; FW: 450.61; white to off-white pwdr.
hygroscopic
For detailed technical note visit strem.com.



500mg
2g

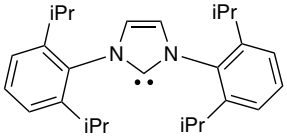
NITROGEN (Compounds)

07-0590 **1,3-Bis(2,6-di-i-propylphenyl) imidazolium chloride, min. 97%** *(250285-32-6)*
$C_{27}H_{37}N_2^+Cl^-$; FW: 425.06; white to off-white pwdr.
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.
For detailed technical note visit strem.com.



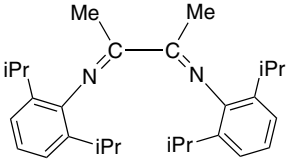
500mg
2g

07-0595 **1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene, min. 98%** *(244187-81-3)*
$C_{27}H_{36}N_2$; FW: 388.59; white to off-white pwdr.
air sensitive, moisture sensitive
Note: NHC Ligand Kit 2: "Free" Carbenes Kit component.
For detailed technical note visit strem.com.



250mg
1g

07-0285 **2,3-Bis(2,6-di-i-propylphenylimino) butane, 98%** *(74663-77-7)*
$[(C_3H_7)_2C_6H_3\text{-}N{=}C(CH_3)\text{-}]_2$; FW: 404.60; yellow xtl.; m.p. 104-106°



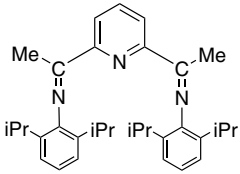
500mg
2g

Technical Note:
1. Ligand used in the preparation of highly active nickel and palladium catalysts for the polymerization of ethylene and α-olefins.

References:

1. *J. Am. Chem. Soc.,* **1995**, *117*, 6414
2. *Angew. Chem. Int. Ed.,* **2001**, *40*, 534
3. *Organometallics,* **2003**, *22*, 24, 5033

07-0289 **2,6-Bis[1-(2,6-di-i-propylphenylimino)ethyl] pyridine, 98%** *(204203-14-5)*
$C_{33}H_{43}N_3$; FW: 481.69; pale yellow pwdr.



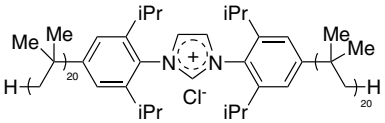
500mg
2g

Technical Note:
1. Active ethylene polymerization catalyst with iron and cobalt.

References:

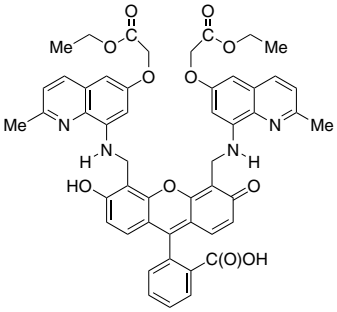
1. *J. Am. Chem. Soc.,* **1998**, *120*, 4049
2. *Angew. Chem. Int. Ed.,* **2001**, *40*, 534

07-4050 amp HAZ **1,3-Bis{2,6-di-i-propyl-4-[poly-isobutyl(20)]phenyl}imidazolium chloride (50% in hexanes/poly-isobutylene)**
$C_{187}H_{359}N_2Cl$; FW: 2669; orange liq.
For detailed technical note visit strem.com.



500mg

07-0291 **2-{4,5-Bis[(6-(2-ethoxy-2-oxoethoxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2E** *(1239877-06-5)*
$C_{50}H_{44}N_4O_{11}$; FW: 876.30; dark-red solid *(store cold)*
Note: Nitric Oxide Sensor (Intracellular) Kit ("NO-ON") (FL2) component.

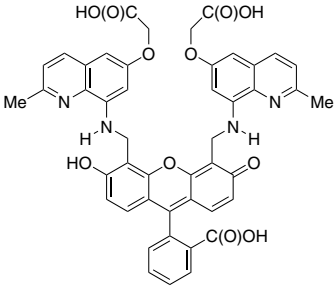


0.5mg

NITROGEN (Compounds)

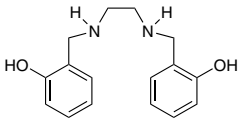
07-0287 NEW

2-{4,5-Bis[(6-(2-ethoxy-2-oxohydroxy)-2-methylquinolin-8-ylamino) methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2A *(1239877-07-6)*
$C_{46}H_{36}N_4O_{11}$; FW: 848.85; dark-red solid
Note: Nitric Oxide Sensor (Extracellular) Kit ("NO-ON") (FL2) component.



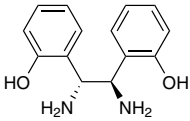
0.5mg

07-0295 **N,N'-Bis(2-hydroxybenzyl)ethylenediamine, min. 98% H_4 SALEN** *(18653-98-0)*
$C_{16}H_{20}N_2O_2$; FW: 272.35; off-white xtl.; m.p. 118-120°



5g
25g

07-6008 **(1R,2R)-1,2-Bis(2-hydroxyphenyl)ethane-1,2-diamine, min. 97%** *(870991-70-1)*
$C_{14}H_{16}N_2O_2$; FW: 244.29; white to off-white pwdr.
air sensitive

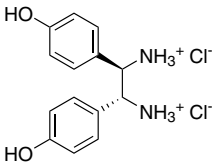


250mg
1g

07-6009 **(1S,2S)-1,2-Bis(2-hydroxyphenyl)ethane-1,2-diamine, min. 97%** *(119386-71-9)*
$C_{14}H_{16}N_2O_2$; FW: 244.29; white to off-white pwdr.
air sensitive

250mg
1g

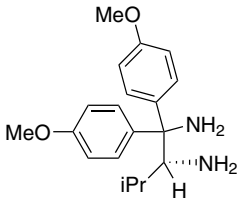
07-0232 **(1R,2R)-(-)-1,2-Bis(4-hydroxyphenyl)ethylenediamine dihydrochloride, min. 98%** *(1055301-14-8)*
$C_{14}H_{16}N_2O_2 \cdot 2HCl$; FW: 317.21; white to off-white pwdr.
hygroscopic



100mg
500mg

07-2203 **1,4-Bis(2-isocyanopropyl)piperazine (SnatchCat Metal Scavenger)**
(51641-96-4)
See page 128

07-0210 **(2R)-(+)-1,1-Bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine, min. 97% (R)-DAIPEN**
(166764-19-8)
$C_{19}H_{26}N_2O_2$; FW: 314.43; white to pale yellow pwdr.; m.p. 78-98°



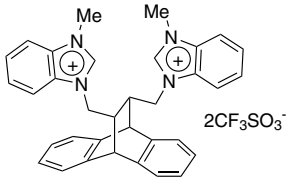
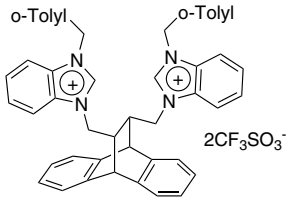
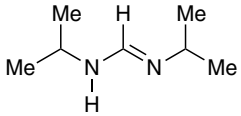
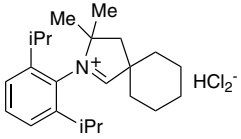
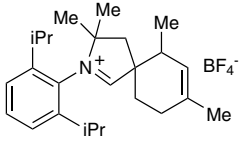
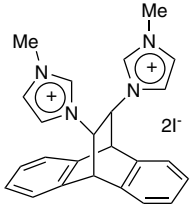
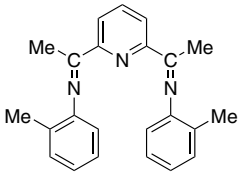
50mg
250mg

07-0211 **(2S)-(-)-1,1-Bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine, min. 97% (S)-DAIPEN** *(148369-91-9)*
$C_{19}H_{26}N_2O_2$; FW: 314.43; white to pale yellow pwdr.; m.p. 78-98°

50mg
250mg

Technical Note:
1. See 07-0210 (page 185)

NITROGEN (Compounds)

07-0080	**11,12-Bis[N-methyl-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)** *(958004-03-0)* $[C_{34}H_{32}N_4](CF_3SO_3)_2$; FW: 794.79; white to off-white pwdr. Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.		100mg 500mg
07-0082	**11,12-Bis[N-(2-methylbenzyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate), min. 95%** $[C_{48}H_{44}N_4](CF_3SO_3)_2$; FW: 951.01; white to off-white pwdr. Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.		100mg 500mg
07-0240 NEW	**N,N'-Bis(1-methylethyl)methanimidamide, min. 98%** *(44843-38-1)* $C_7H_{16}N_2$; FW: 128.22; off-white pwdr.		1g 5g 25g
07-0550	**2-[2,6-Bis(1-methylethyl)phenyl]-3,3-dimethyl-2-azoniaspiro[4.5]dec-1-ene hydrogen dichloride, min. 97% Cyclohexyl-CAAC** *(1141464-90-5)* $C_{23}H_{36}N{\cdot}HCl_2$; FW: 398.45; white pwdr. *hygroscopic* Note: US Patent Application 11/449,568 and PCT Application US06/22477. **For detailed technical note visit strem.com.**		100mg 500mg
07-0558	**2-[2,6-Bis(1-methylethyl)phenyl]-3,3,6,8-tetramethyl-2-azoniaspiro[4.5]dec -1,7-diene tetrafluoroborate Trivertal-CAAC** *(1160555-04-3)* $C_{25}H_{38}BF_4N$; FW: 439.38; white pwdr. *hygroscopic* Note: US Patent Application 11/449,568 and PCT Application US06/22477.		100mg 500mg
07-0083	**11,12-Bis[3-methylimidazolium]-9,10-dihydro-9,10-ethanoanthracene bis(iodide), min. 95%** $[C_{24}H_{24}N_4]I_2$; FW: 622.28; white to off-white pwdr. Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.		100mg 500mg
07-0296	**2,6-Bis[1-(2-methylphenylimino)ethyl]pyridine, 98%** *(210537-32-9)* $C_5H_3N[(CH_3)C_6H_4N{=}C(CH_3)]_2$; FW: 341.46; yellow pwdr.		500mg 2g

Technical Note:

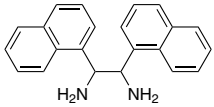
1. Active ethylene oligomerization catalyst with iron to give α-olefins.

References:

1. *J. Am. Chem. Soc.,* **1998**, *120*, 7143
2. *Angew. Chem. Int. Ed.,* **2001**, *40*, 534

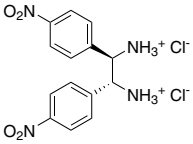
NITROGEN (Compounds)

07-0492 **meso-1,2-Bis(naphthyl)ethylenediamine, min. 98%** *(117106-39-5)*
$C_{22}H_{20}N_2$; FW: 312.41; white to yellow pwdr.
air sensitive



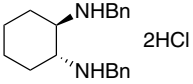
100mg
500mg

07-0243 **(1R,2R)-(+)-1,2-Bis(4-nitrophenyl)ethylenediamine dihydrochloride, min. 98%** *(117903-79-4)*
$C_{14}H_{14}N_4O_4 \cdot 2HCl$; FW: 375.21; white to off-white pwdr.
hygroscopic



100mg
500mg

07-4073 NEW **(1R,2R)-N,N'-Bis(phenylmethyl)-1,2-cyclohexanediamine dihydrochloride, min. 98%** *(212611-88-6)*
$C_{20}H_{26}N_2 \cdot 2HCl$; FW: 367.36; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



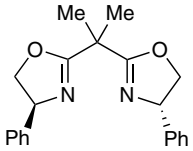
1g
5g

07-4074 NEW **(1S,2S)-N,N'-Bis(phenylmethyl)-1,2-cyclohexanediamine dihydrochloride, min. 98%**
$C_{20}H_{26}N_2 \cdot 2HCl$; FW: 367.36; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

1g
5g

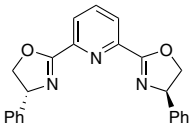
Technical Note:
1. See 07-4073 (page 187)

07-0275 **(-)-2,2-Bis[(4S)-4-phenyl-2-oxazolin-2-yl]propane, 98%** *(131457-46-0)*
$C_{21}H_{22}N_2O_2$; FW: 334.41; viscous liq.
For detailed technical note visit strem.com.



250mg
1g

07-0303 **(+)-2,6-Bis[(4R)-4-phenyl-2-oxazolin-2-yl]pyridine, 98+% (R,R)-Ph-pybox** *(128249-70-7)*
$C_{23}H_{19}N_3O_2$; FW: 369.42; white xtl.; m.p. 171-175°
For detailed technical note visit strem.com.



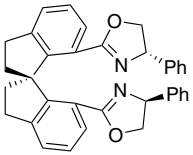
500mg
2g

07-0304 **(-)-2,6-Bis[(4S)-4-phenyl-2-oxazolin-2-yl]pyridine, 98+% (S,S)-Ph-pybox** *(174500-20-0)*
$C_{23}H_{19}N_3O_2$; FW: 369.42; white xtl.; m.p. 171-175°

500mg
2g

Technical Note:
1. See 07-0303 (page 187)

07-5194 **(R)-7,7'-Bis[(4S)-(phenyl)oxazol-2-yl)]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Ra,S,S)-SpiroBOX** *(890090-21-8)*
$C_{35}H_{30}N_2O_2$; FW: 510.62; white solid; m.p. 130-132°
moisture sensitive
For detailed technical note visit strem.com.



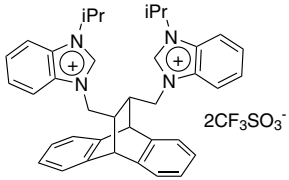
25mg
100mg

07-5195 **(S)-7,7'-Bis[(4S)-(phenyl)oxazol-2-yl)]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Sa,S,S)-SpiroBOX** *(940880-69-3)*
$C_{35}H_{30}N_2O_2$; FW: 510.62; white solid; m.p. 167-169°
moisture sensitive
For detailed technical note visit strem.com.

25mg
100mg

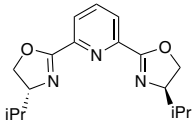
NITROGEN (Compounds)

07-0084 **11,12-Bis[N-(i-propyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)** *(958004-12-1)*
$[C_{38}H_{40}N_4](CF_3SO_3)_2$; FW: 826.87; white to off-white pwdr.
Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.



100mg
500mg

07-0306 **(+)-2,6-Bis[(4R)-4-(i-propyl)-2-oxazolin-2-yl]pyridine, 98+% (R)-(i-Pr)-pybox** *(131864-67-0)*
$C_{17}H_{23}N_3O_2$; FW: 301.38; white xtl.; m.p. 152-153°
For detailed technical note visit strem.com.

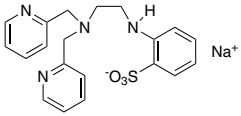


250mg
1g

07-0307 **(-)-2,6-Bis[(4S)-4-(i-propyl)-2-oxazolin-2-yl]pyridine, 98+% (S)-(i-Pr)-pybox** *(118949-61-4)*
$C_{17}H_{23}N_3O_2$; FW: 301.38; white xtl.; m.p. 152-153°
For detailed technical note visit strem.com.

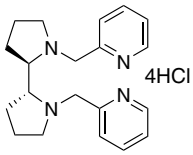
250mg
1g

07-0350 **2-{[Bis(2-pyridinylmethyl)amino]ethylamino} benzenesulfonic acid hydrate sodium salt ZX1**
$C_{20}H_{21}N_4NaO_3S$; FW: 420.46; yellow solid
air sensitive



100mg
500mg

07-0097 **(2R,2'R)-(+)-[N,N'-Bis(2-pyridylmethyl)]-2,2'-bipyrrolidine tetrahydrochloride, 98% (R,R)-PDP** *(1228077-88-0)*
$C_{20}H_{26}N_4 \cdot 4HCl$; FW: 468.29; white pwdr.
air sensitive
Note: Patent pending.

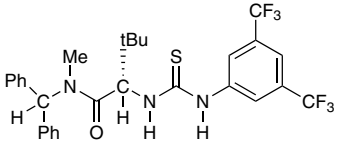


100mg
500mg

07-0094 **(2S,2'S)-(-)-[N,N'-Bis(2-pyridylmethyl]-2,2'-bipyrrolidine tetrahydrochloride, 98% (S,S)-PDP** *(959395-07-4)*
$C_{20}H_{26}N_4 \cdot 4HCl$; FW: 468.29; white pwdr.
air sensitive
Note: Patent pending.

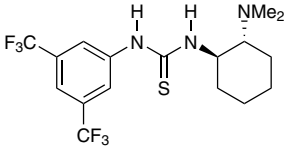
100mg
500mg

07-0215 **(2S)-(-)-2-{[[[3,5-Bis(tifluoromethyl)phenyl]amino]thioxomethyl]amino}-N-(diphenylmethyl)-N,3,3-trimethylbutanamide, 95%** *(1186602-28-7)*
$C_{29}H_{29}F_6N_3OS$; FW: 581.62; white to gray solid; m.p. 193-198°
Note: US Patent Application 61/240,558.



50mg
250mg
1g

07-0283 **1-[3,5-Bis(trifluoromethyl)phenyl]-3-[(1R,2R)-(-)-2-(dimethylamino)cyclohexyl]thiourea (R,R-TUC)** *(620960-26-1)*
$C_{17}H_{21}F_6N_3S$; FW: 413.42; white pwdr.; m.p. 87-88°
Note: Sold for research purposes only. Patents PCT Application No.: JP2004009350 (publication WO2005000803) US Application 10/562,579, EPC Application 04746819.4
For detailed technical note visit strem.com.



250mg
1g

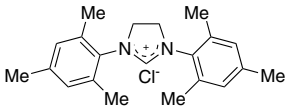
07-0284 **1-[3,5-Bis(trifluoromethyl)phenyl]-3-[(1S,2S)-(+)-2-(dimethylamino)cyclohexyl] thiourea (S,S-TUC)** *(851477-20-8)*
$C_{17}H_{21}F_6N_3S$; FW: 413.42; white pwdr.; m.p. 87-88°
Note: Sold for research purposes only. Patents PCT Application No.: JP2004009350 (publication WO2005000803) US Application 10/562,579, EPC Application 04746819.4

250mg
1g

Technical Note:
1. See 07-0283 (page 188)

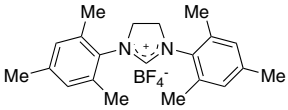
NITROGEN (Compounds)

07-4011 **1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazolium chloride, min. 97%** *(173035-10-4)*
$C_{21}H_{27}ClN_2$; FW: 342.91; white to off-white solid
air sensitive
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.



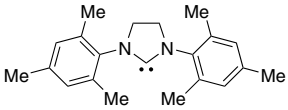
500mg
2g

07-0302 **1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydro-imidazolium tetrafluoroborate, min. 95% SIMes-HBF$_4$** *(245679-18-9)*
$[C_{21}H_{27}N_2]^+BF_4^-$; FW: 394.27; off-white pwdr.
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.
For detailed technical note visit strem.com.



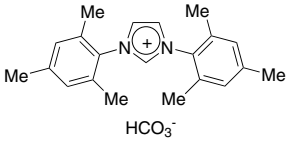
1g
5g

07-0605 HAZ **1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroim-idazol-2-ylidene, min. 98%** *(173035-11-5)*
$C_{21}H_{26}N_2$; FW: 306.45; pale yellow pwdr.
air sensitive, moisture sensitive
Note: NHC Ligand Kit 2: "Free" Carbenes Kit component.
For detailed technical note visit strem.com.



500mg
2g

07-4033 NEW **1,3-Bis(2,4,6-trimethylphenyl)imidazolium bicarbonate, min. 97% IMesH.HCO$_3$** *(1372124-93-0)*
$[C_{21}H_{25}N_2]^+HCO_3^-$; FW: 366.45; white to yellow-orange pwdr.
moisture sensitive
For detailed technical note visit strem.com.

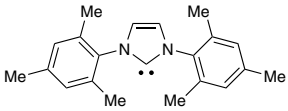


500mg
2g

07-0299 **1,3-Bis(2,4,6-trimethylphenyl)imidazolium chloride, min. 97%** *(141556-45-8)*
$C_{21}H_{25}N_2^+Cl^-$; FW: 340.90; off-white to yellow pwdr.
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.
For detailed technical note visit strem.com.

1g
5g

07-0600 HAZ **1,3-Bis(2,4,6-trimethylphenyl)imidaz-ol-2-ylidene, min. 98%** *(141556-42-5)*
$C_{21}H_{24}N_2$; FW: 304.43; white to off-white pwdr.
air sensitive, moisture sensitive
Note: NHC Ligand Kit 2: "Free" Carbenes Kit component.
For detailed technical note visit strem.com.



500mg
2g

07-0050 **1-Butyl-2,3-dimethylimidazolium diethyleneglycolmonomethylether sulfate, 98% [BDiMIM] [MDEGSO$_4$]** *(108203-89-0)*
See page 81

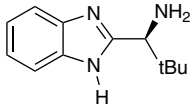
07-0060 **1-Butyl-2,3-dimethylimidazolium octylsulfate, 98% [BDiMIM] [OcSO$_4$]** *(108203-89-0)*
See page 81

07-0075 **1-Butyl-2,3-dimethylimidazolium tetrafluoroborate, 98% [BDiMIM] [BF$_4$]** *(402846-78-0)*
See page 81

06-0115 **n-Butylisocyanide, 97%** *(2769-64-4)*
See page 38

06-0120 **t-Butylisocyanide, min. 98%** *(7188-38-7)*
See page 38

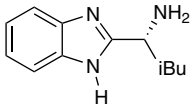
07-1245 **(S)-(-)-2-(α-(t-butyl)methanamine)-1H-benzimidazole, min. 95% (S)-t-Bu-BIMAH** *(1118114-88-7)*
$C_{12}H_{17}N_3$; FW: 203.28; white to off-white solid; m.p. 220-222°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929.
Enantiotech BIMAH Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

NITROGEN (Compounds)

07-1242 **(R)-(+)-2-(α-(i-butyl)methanamine)-1H-benzimidazole, min. 98% (R)-i-Bu-BIMAH** *(1235960-36-7)* — 100mg, 500mg



$C_{12}H_{17}N_3$; FW: 203.28; white to off-white solid; m.p. 92-94°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ligand Kit component.
For detailed technical note visit strem.com.

07-1240 **(S)-(-)-2-(α-(i-butyl)methanamine)-1H-benzimidazole, min. 98% (S)-i-Bu-BIMAH** *(59592-31-3)* — 250mg, 1g
$C_{12}H_{17}N_3$; FW: 203.28; white to off-white solid; m.p. 109-112°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ligand Kit component.
For detailed technical note visit strem.com.

07-0100 **1-Butyl-3-methylimidazolium chloride, 98% [BMIM]Cl** *(79917-90-1)*
See page 81

07-0140 **1-Butyl-3-methylimidazolium methanesulfonate, 98% [BMIM] [$MeSO_4$]** *(401788-98-5)*
See page 81

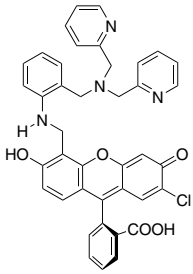
07-0150 **1-Butyl-3-methylimidazolium octylsulfate, 98% [BMIM] [$OctSO_4$]** *(445473-58-5)*
See page 81

07-0160 **1-Butyl-3-methylimidazolium phosphate, 99% $[BMIM]_3$ [PO_4]**
See page 81

07-0170 **1-Butyl-3-methylimidazolium tetrafluoroborate, 98% [BMIM] [BF_4]** *(174501-65-6)*
See page 81

07-0180 **N-Butyl-3-methylpyridinium bis(trifluoromethylsulfonyl)imide, 99% [BMPlm]** *(344790-86-9)*
See page 82

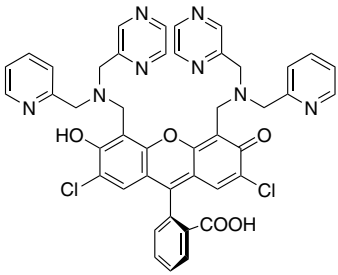
07-0312 **9-(2-Carboxyphenyl)-2-chloro-5-[{2-(di(2-pyridyl) aminomethyl)phenyl}aminomethyl]-6-hydroxy-3-xanthanone Zinpyr-4** *(502467-23-4)* — 10mg
$C_{40}H_{31}ClN_4O_5$; FW: 683.15; orange pwdr.



Technical Note:
1. An intracellular and extracellular Zn+2 sensor of the Zinpyr family of ligands.

References:
1. *J. Am. Chem. Soc.,* **2003**, *125*, 1778

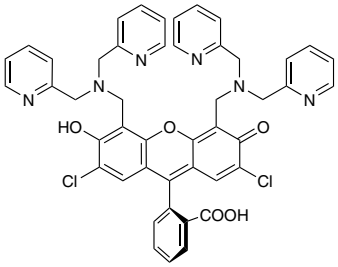
07-0311 **9-(2-Carboxyphenyl)-2,7-dichloro-4,5-bis[(2-picolyl)(pyrazin-2-ylmethyl)aminomethyl]-6-hydoxy-3-xanthanone ZPP1** *(1084898-23-6)* — 0.5mg
$C_{44}H_{34}Cl_2N_8O_5$; FW: 825.70; pink pwdr.
For detailed technical note visit strem.com.



NITROGEN (Compounds)

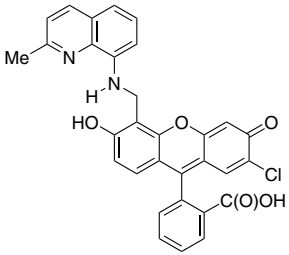
07-0314 **9-(2-Carboxyphenyl)-2,7-dichloro-4,5-bis[di(2-pyridyl)aminomethyl]-6-hydroxy-3-xanthanone ZINPYR-1** *(288574-78-7)*
$C_{46}H_{36}Cl_2N_6O_5$; FW: 823.72; pink pwdr.
For detailed technical note visit strem.com.

10mg

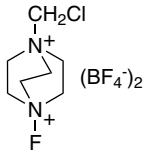


07-0293 **2-{2-Chloro-6-hydroxy-5-[2-methylquinolin-8-ylaminomethyl]-3-oxo-3H-xanthen-9-yl} benzoic acid FL** *(905982-78-7)*
$C_{31}H_{21}ClN_2O_5$; FW: 536.96; magenta solid
(store cold)
Note: Nitric Oxide Sensor (Intracellular) Kit ("NO-ON") (FL) component.
For detailed technical note visit strem.com.

0.5mg



07-0332 **1-(Chloromethyl)-4-fluoro-1,4-diazoniabicyclo[2.2.2]octane bis(tetrafluoroborate), min. 97% SelectFluor®** *(140681-55-6)*
$(C_7H_{14}ClFN_2)(BF_4)_2$; FW: 354.26; white to off-white pwdr.
moisture sensitive
For detailed technical note visit strem.com.

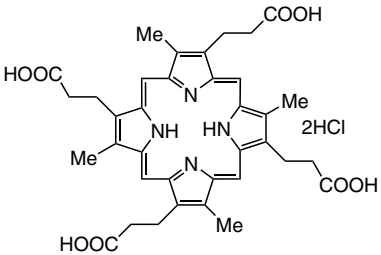


5g
25g
100g
500g

96-1575 **Cinchona Alkaloid-Derived Organocatalyst Kit - (enantiopure primary amines) for Iminium-Enamime Activation**
See page 478

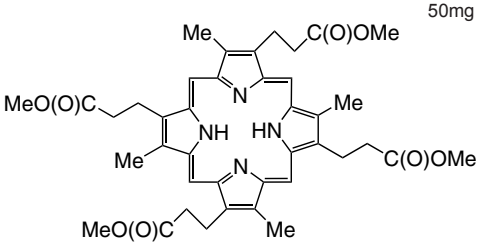
07-0300 **Coproporphyrin I dihydrochloride (synthetic)** *(69477-27-6)*
$C_{36}H_{38}N_4O_8 \cdot 2HCl$; FW: 727.64; purple xtl.

10mg
50mg



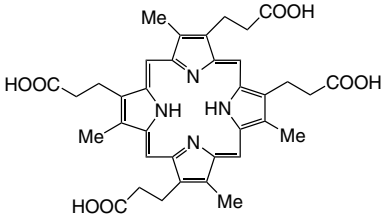
07-0310 **Coproporphyrin I tetramethyl ester, 98% (synthetic)** *(25767-20-8)*
$C_{40}H_{46}N_4O_8$; FW: 710.83; purple xtl.; m.p. 251-252°

10mg
50mg

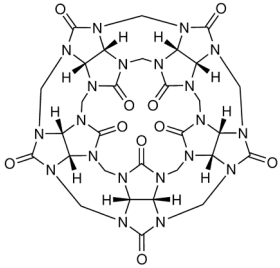


NITROGEN (Compounds)

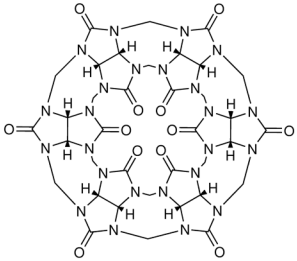
07-0305 **Coproporphyrin III dihydrochloride** *(14643-66-4)*
$C_{36}H_{38}N_4O_8 \cdot 2HCl$; FW: 727.64; purple xtl.
5mg
25mg



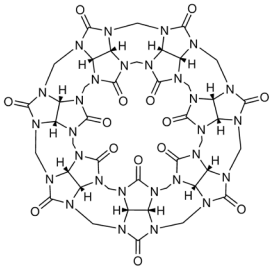
07-1310 **Cucurbit[5]uril (CB[5]) ammonium sulfate hydrate, 99+%** *(259886-49-2)*
$C_{30}H_{30}N_{20}O_{10} \cdot (NH_4)_2SO_4 \cdot XH_2O$;
FW: 962.83; white solid
Note: Sold for R&D purposes only. US 6365734. Cucurbitural Kit component.
100mg



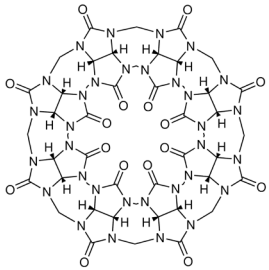
07-1320 **Cucurbit[6]uril (CB[6]) hydrate, 99+%** *(80262-44-8)*
$C_{36}H_{36}N_{24}O_{12} \cdot XH_2O$; FW: 996.82; white solid
Note: Cucurbitural Kit component.
500mg



07-1325 **Cucurbit[7]uril (CB[7]) hydrate, 99+%** *(259886-50-5)*
$C_{42}H_{42}N_{28}O_{14} \cdot XH_2O$; FW: 1162.96; white solid
Note: Sold for R&D purposes only. US 6365734. Cucurbitural Kit component.
50mg



07-1330 **Cucurbit[8]uril (CB[8]) hydrate, 99+%** *(259886-51-6)*
$C_{48}H_{48}N_{32}O_{16} \cdot H_2O$; FW: 1329.10; white solid
Note: Sold for R&D purposes only. US 6365734. Cucurbitural Kit component.
25mg



96-7054 **Cucurbituril Kit**
See page 539

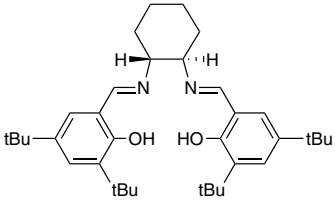
NITROGEN (Compounds)

93-1001 — **Cyanogen bromide, min. 97%** *(506-68-3)* — 25g, 100g
HAZ
BrCN; FW: 105.93; white xtl.; m.p. 52°; b.p. 61.4°; d. 2.015
moisture sensitive, (store cold)

07-0318 — **trans-1,2-Cyclohexanediaminetetraacetic acid monohydrate, min. 98% CyDTA** *(125572-95-4)* — 25g, 100g
$(HOOCCH_2)_2NC_6H_{10}N(CH_2COOH)_2 \cdot H_2O$; FW: 346.32 (364.36); white pwdr.

07-0319 — **trans-1,2-Cyclohexanediaminetetraacetic acid monohydrate, 99+% CyDTA** *(125572-95-4)* — 25g, 100g
$(HOOCCH_2)_2NC_6H_{10}N(CH_2COOH)_2 \cdot H_2O$; FW: 346.32 (364.36); white xtl.

07-0316 — **(1R,2R)-(-)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene), 98% (R,R)-Jacobsen Ligand** *(135616-40-9)* — 1g, 5g
$C_{36}H_{54}N_2O_2$; FW: 546.84; yellow pwdr.; m.p. 205-207°
For detailed technical note visit strem.com.

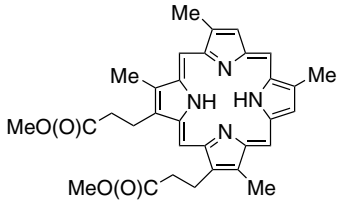


07-0317 — **(1S,2S)-(+)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene), 98% (S,S)-Jacobsen Ligand** *(135616-36-3)* — 1g, 5g
$C_{36}H_{54}N_2O_2$; FW: 546.84; yellow pwdr.; m.p. 205-207°

Technical Note:
1. See 07-0316 (page 193)

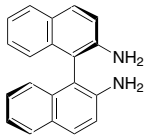
07-0440 — **L-Cysteine ethyl ester hydrochloride, 98%** *(868-59-7)*
See page 167

07-0325 — **Deuteroporphyrin IX, dimethyl ester, min. 97%** *(10589-94-3)* — 10mg, 50mg
$C_{32}H_{34}N_4O_4$; FW: 538.65; purple xtl.; m.p. 227°



07-0326 — **racemic-2,2'-Diamino-1,1'-binaphthyl, min. 96%** *(4488-22-6)* — 1g, 5g
$C_{20}H_{16}N_2$; FW: 284.36; white to off-white xtl.

07-0327 — **(R)-(+)-2,2'-Diamino-1,1'-binaphthyl, 99%** *(18741-85-0)* — 250mg, 1g
$C_{20}H_{16}N_2$; FW: 284.36; white to off-white xtl.; m.p. 242-244°



07-0328 — **(S)-(-)-2,2'-Diamino-1,1'-binaphthyl, 99%** *(18531-95-8)* — 250mg, 1g
$C_{20}H_{16}N_2$; FW: 284.36; white to off-white xtl.; m.p. 242-244°

07-0330 — **(1R,2R)-(-)-1,2-Diaminocyclohexane, 99% (R,R)-DACH** *(20439-47-8)* — 1g, 5g
HAZ
$C_6H_{14}N_2$; FW: 114.19; white pwdr.; m.p. 38-40°; b.p. 65°/5 mm; f.p. 169°F
air sensitive, light sensitive, (store cold)

07-0335 — **(1S,2S)-(+)-1,2-Diaminocyclohexane, 99% (S,S)-DACH** *(21436-03-3)* — 1g, 5g
HAZ
$C_6H_{14}N_2$; FW: 114.19; white pwdr.; m.p. 38-40°; b.p. 65°/5 mm; f.p. 169°F
air sensitive, light sensitive, (store cold)

15-0961 — **(1S,2S)-(-)-1,2-Diaminocyclohexane-N,N'-bis(2'-diphenylphosphinobenzoyl), 95% (S,S)-DACH-Phenyl Trost Ligand** *(169689-05-8)*
See page 285

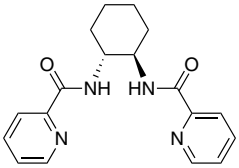
15-0960 — **(1R,2R)-(+)-1,2-Diaminocyclohexane- N,N'-bis(2'-diphenylphosphinobenzoyl), 98% (R,R)-DACH-Phenyl Trost Ligand** *(138517-61-0)*
See page 285

NITROGEN (Compounds)

15-0963 **(1R,2R)-(+)-1,2-Diaminocyclohexane-N,N'-bis(2-diphenylphosphino-1-naphthoyl), min. 94% (R,R)-DACH-Naphthyl Trost Ligand** *(174810-09-4)*
See page 285

15-0964 **(1S,2S)-(-)-1,2-Diaminocyclohexane-N,N'-bis(2-diphenylphosphino-1-naphthoyl), min. 94% (S,S)-DACH-Naphthyl Trost Ligand** *(205495-66-5)*
See page 285

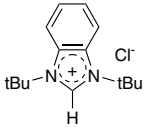
07-0340 **(-)-N,N'-(1R,2R)-1,2-Diaminocyclohexanediyl-bis(2-pyridinecarboxamide), min. 98% (R,R)-DACH-Pyridyl Trost Ligand** *(218290-24-5)* — 1g, 5g
$C_{18}H_{20}N_4O_2$; FW: 324.38; off-white pwdr.; m.p. 170°
For detailed technical note visit strem.com.



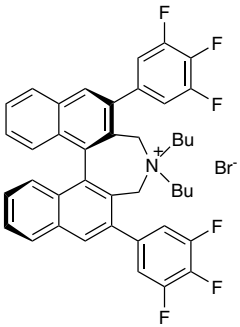
07-0341 **(+)-N,N'-(1S,2S)-1,2-Diaminocyclohexanediylbis(2-pyridinecarboxamide), min. 98% (S,S)-DACH-Pyridyl Trost Ligand** *(172138-95-3)* — 1g, 5g
$C_{18}H_{20}N_4O_2$; FW: 324.38; off-white pwdr.; m.p. 170°

Technical Note:
1. See 07-0340 (page 194)

07-4013 **1,3-Di-t-butylbenzimidazolium chloride, min. 97%** *(946607-10-9)* — 500mg, 2g
$C_{15}H_{23}ClN_2$; FW: 266.81; white to off-white solid
air sensitive



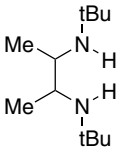
07-0380 **(11bR)-4,4-Dibutyl-2,6-bis(3,4,5-trifluorophenyl)-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]azepinium bromide** *(887938-70-7)* — 50mg, 250mg
$[C_{42}H_{36}F_6N]^+Br^-$; FW: 748.64; brown pwdr.
Note: Sold in collaboration with Nagase for research purposes only. US Patent 6,340,753.
For detailed technical note visit strem.com.



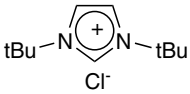
07-0381 **(11bS)-4,4-Dibutyl-2,6-bis(3,4,5-trifluorophenyl)-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]azepinium bromide** *(851942-89-7)* — 50mg, 250mg
$[C_{42}H_{36}F_6N]^+Br^-$; FW: 748.64; brown pwdr.
Note: Sold in collaboration with Nagase for research purposes only. US Patent 6,340,753.

Technical Note:
1. See 07-0380 (page 194)

07-0385 **N,N'-Di-t-butyl-2,3-diaminobutane, 98%** *(1167987-07-6)* — 500mg, 2g
$(C_4H_9)NHCH(CH_3)CH(CH_3)NH(C_4H_9)$; FW: 200.36; colorless, viscous liq.; b.p. 224-232°; f.p. 80-100°F; d. 0.82
air sensitive



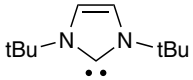
07-0368 **1,3-Di-t-butylimidazolium chloride, min. 98%** *(157197-54-1)* — 250mg
$[C_{11}H_{21}N_2]^+Cl^-$; FW: 216.75; white xtl.
air sensitive, hygroscopic
Note: NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes Kit component.



NITROGEN (Compounds)

07-0333
HAZ

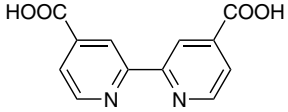
1,3-Di-t-butylimidazol-2-ylidene, min. 98%
(157197-53-0)
$C_{11}H_{20}N_2$; FW: 180.29; white xtl.; m.p. 71-72°
air sensitive, moisture sensitive, (store cold)
Note: NHC Ligand Kit 2: "Free" Carbenes Kit component.



250mg

15-0073
2-(Di-t-butylphosphinomethyl)-6-(diethylaminomethyl)pyridine, 98%
(863971-66-8)
See page 289

07-0370
4,4'-Dicarboxy-2,2'-bipyridine, 98%
(6813-38-3)
$C_{12}H_8N_2O_4$; FW: 244.21; white pwdr.



250mg
1g
5g

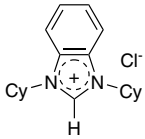
07-1813
2,6-Dichloro-1-fluoropyridinium triflate, 95% *(130433-68-0)*
$C_6H_3Cl_2F_4NO_3S$; FW: 316.06; white to light-yellow pwdr.
moisture sensitive, (store cold)

500mg
2g

07-1813
NEW
2,6-Dichloro-1-fluoropyridinium triflate, 95% *(130433-68-0)*
$C_6H_3Cl_2F_4NO_3S$; FW: 316.06; white to light-yellow pwdr.
air sensitive, moisture sensitive, (store cold)

500mg
2g

07-4015
1,3-Dicyclohexylbenzimidazolium chloride, min. 97%
(1034449-15-4)
$C_{19}H_{27}ClN_2$; FW: 318.88; white to off-white solid
air sensitive



500mg
2g

15-1086
2-(Dicyclohexylphosphino)-N,N-bis(1-methylethyl)-1H-indole-1-carboxamide, min. 98% Amidole-Phos *(1067175-36-3)*
See page 292

15-1087
1-(Dicyclohexylphosphino)-2-(2-methoxyphenyl)-1H-indole, min. 98% NPCy o-Andole-Phos *(947402-60-0)*
See page 294

15-1089
1-(Dicyclohexylphosphino)-2-phenyl-1H-indole, min. 98% NPCy Phendole-Phos *(947402-57-5)*
See page 295

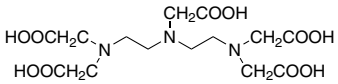
15-1088
2-[2-(Dicyclohexylphosphino)phenyl]-1-methyl-1H-indole, min. 98% CM-Phos *(1067883-58-2)*
See page 295

07-1677
Didodecylamine, min. 97% *(3007-31-6)*
See page 167

07-0400
HAZ
Diethylenetriamine, min. 95% DIEN *(111-40-0)*
$NH_2CH_2CH_2NHCH_2CH_2NH_2$; FW: 103.17; colorless liq.; m.p. -35°; b.p. 199-209°; f.p. 215°F; d. 0.955
air sensitive

100g
500g

07-0410
Diethylenetriaminepentaacetic acid, 97% DTPA *(67-43-6)*
$(HO_2CH_2)_2N(CH_2)_2N(CH_2CO_2H)(CH_2)_2N(CH_2CO_2H)_2$; FW: 393.35; white xtl.; m.p. 220° dec.



250g
1kg

07-0398
Diethylenetriaminepentaacetic acid, 98.5% DTPA (USP) *(67-43-6)*
$(HO_2CCH_2)_2N(CH_2)_2N(CH_2CO_2H)(CH_2)_2N(CH_2CO_2H)_2$; FW: 393.35; white xtl.; m.p. 220°

50g
250g

07-0412
Diethylenetriaminepentaacetic acid, 99% DTPA *(67-43-6)*
$(HO_2CCH_2)_2N(CH_2)_2N(CH_2CO_2H)(CH_2)_2N(CH_2CO_2H)_2$; FW: 393.35; white xtl.; m.p. 220°

25g
100g

NITROGEN (Compounds)

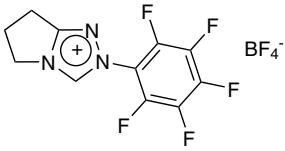
07-4024	**(2R,5R)-1-{[(2R,5R)-2,5-Diethylpyrrolidin-1-yl]methylene}-2,5-diethylpyrrolidinium tetrafluoroborate, min. 97%** *(1204324-20-8)* $C_{17}H_{33}BF_4N_2$; FW: 352.26; yellow solid *air sensitive* Note: Sold under license from Kanata for research purposes only. WO2010/003226. NHC Ligand Kit 1: Chiral N-Heterocyclic Carbenes Kit component.	100mg 500mg
07-4025	**(2S,5S)-1-{[(2S,5S)-2,5-Diethylpyrrolidin-1-yl]methylene}-2,5-diethylpyrrolidinium tetrafluoroborate, min. 97%** *(1204324-18-4)* $C_{17}H_{33}BF_4N_2$; FW: 352.26; yellow solid *air sensitive* Note: Sold under license from Kanata for research purposes only. WO2010/003226. NHC Ligand Kit 1: Chiral N-Heterocyclic Carbenes Kit component.	100mg 500mg
07-1280 NEW	**2-(2,4-Difluorophenyl)-5-methylpyridine, 95%** *(583052-21-5)* $C_{12}H_9F_2N$; FW: 205.20; white solid *air sensitive* Note: Ligand for photocatalyst synthesis.	500mg 2g
07-4040 NEW	**2-(2,4-Difluorophenyl)-5-(trifluoromethyl)pyridine, 98% dF(CF3)ppy** *(387827-64-7)* $C_{12}H_6F_5N$; FW: 259.18; off-white microxtl.; m.p. 59.0-62.1°	250mg 1g
07-4018	**(S)-4,5-Dihydro-1,3-bis-([2.2]paracyclophan-4-yl)imidazolinium chloride, min. 97%** $C_{35}H_{35}ClN_2$; FW: 519.12; white to tan-colored solid *air sensitive*	100mg 500mg
07-1718	**(8α, 9S)-10,11-Dihydro-6'-methoxycinchonan-9-amine trihydrochloride, min. 90%** *(852913-53-2)* $C_{20}H_{27}N_3O{\cdot}3HCl$; FW: 434.83; white to off-white pwdr. *(store cold)* **For detailed technical note visit strem.com.**	100mg 500mg
07-1722	**(9R)-10,11-Dihydro-6'-methoxycinchonan-9-amine trihydrochloride, min. 90%** *(931098-92-9)* $C_{20}H_{27}N_3O{\cdot}3HCl$; FW: 434.83; white to off-white pwdr. *(store cold)* **For detailed technical note visit strem.com.**	100mg 500mg
07-0415	**(5aR,10bS)-(+)-5a,10b-Dihydro-2-(pentafluorophenyl)-4H,6H-indeno[2,1-b][1,2,4]triazolo[4,3-d][1,4]oxazinium tetrafluoroborate, min. 98%** *(872143-57-2)* $[C_{18}H_{11}F_5N_3O]^+BF_4^-$; FW: 467.10; light brown pwdr. **For detailed technical note visit strem.com.**	250mg 1g

NITROGEN (Compounds)

07-0414 **(5aS, 10bR)-(-)-5a,10b-Dihydro-2-(pentafluorophenyl)-4H,6H-indeno[2,1-b][1,2,4]triazolo[4,3-d][1,4]oxazinium tetrafluoroborate, min. 98%** *(740816-14-2)*
$[C_{18}H_{11}F_5N_3O]^+BF_4^-$; FW: 467.10; light brown pwdr.
100mg
500mg

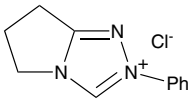
Technical Note:
1. See 07-0415 (page 196)

07-0417 **6,7-Dihydro-2-pentafluorophenyl-5H-pyrrolo[2,1-c]-1,2,4-triazolium tetrafluoroborate, min. 98%** *(862095-91-8)*
$[C_{11}H_7F_5N_3]^+BF_4^-$; FW: 362.99; tan pwdr.
For detailed technical note visit strem.com.



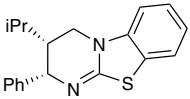
250mg
1g

07-0421 **6,7-Dihydro-2-phenyl-5H-pyrrolo[2,1-c]-1,2,4-triazolium chloride, min. 98%** *(828914-68-7)*
$[C_{11}H_{12}N_3]^+Cl^-$; FW: 221.69; off-white pwdr.
For detailed technical note visit strem.com.



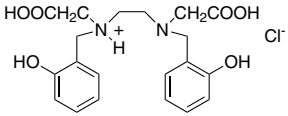
250mg
1g

07-0496 NEW
(2R,3S)-(-)-3,4-Dihydro-3-(i-propyl)-2-phenyl-2H-pyrimido[2,1-b]benzothiazole, min. 98% HyperBTM *(1203507-02-1)*
$C_{19}H_{20}N_2S$; FW: 308.44; white pwdr.



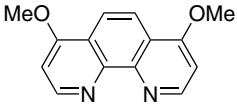
100mg
500mg

07-0422 **N,N'-Di(2-hydroxybenzyl)ethylenediamine-N,N'-diacetic acid monohydrochloride hydrate HBED** *(35369-53-0)*
$C_{20}H_{24}N_2O_6 \cdot HCl \cdot XH_2O$; FW: 424.89; off-white pwdr.; m.p. 130-134°



1g
5g

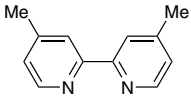
07-1923 NEW HAZ
4,7-Dimethoxy-1,10-phenanthroline, 98% *(92149-07-0)*
$C_{14}H_{10}N_2O_2$; FW: 238.24; white to off-white pwdr.; m.p. 210-212°; d. 1.25
air sensitive
Note: Ligand for photocatalyst synthesis.



250mg
1g

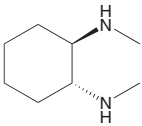
05-0750 **N,N-Dimethylanilinium tetra(pentafluorophenyl)borate, 98%** *(118612-00-3)*
See page 27

07-0458 NEW
4,4'-Dimethyl-2,2'-bipyridine, 99% DMBPY *(1134-35-6)*
$C_{12}H_{12}N_2$; FW: 184.24; white to off-white pwdr.



1g
5g
25g

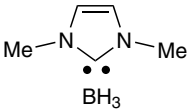
07-0270 **trans-N,N'-Dimethyl-1,2-cyclohexanediamine, 98%** *(67579-81-1)*
$C_6H_{10}(NHCH_3)_2$; FW: 142.24; colorless to pale yellow liq.; m.p. 4°
air sensitive
For detailed technical note visit strem.com.



500mg
2g
10g

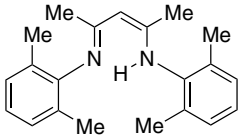
07-0445 HAZ
N,N'-Dimethylethylenediamine, min. 98% *(110-70-3)*
$CH_3NHCH_2CH_2NHCH_3$; FW: 88.15; colorless liq.; b.p. 119°; d. 0.819
air sensitive
5g
25g
100g

07-4035 **1,3-Dimethylimidazol-2-ylidene borane, min. 97%** *(1211417-77-4)*
$C_5H_{11}BN_2$; FW: 109.97; white solid
moisture sensitive



250mg
1g

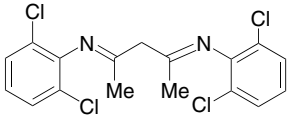
07-0377 **N-{3-[(2,6-Dimethylphenyl)amino]-1-methyl-2-buten-1-ylidene}-2,6-dimethylbenzenamine, 98%** *(267431-79-8)*
$C_{21}H_{26}N_2$; FW: 306.45; light-brown solid



250mg
1g

NITROGEN (Compounds)

07-0375 **N,N'-(1,3-Dimethyl-1,3-propanediylidene) bis(2,6-dichlorobenzenamine), 99%** *(445460-78-6)*
$C_{17}H_{14}Cl_4N_2$; FW: 388.12; white pwdr.

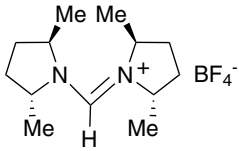


1g
5g

07-0465 **1,2-Dimethyl-3-propylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [DMPIIm]** *(169051-76-7)*
See page 82

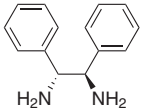
07-0470 **1,2-Dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl)methide, 99% [DMPIMe]** *(169051-77-8)*
See page 82

07-4022 **(2R,5R)-1-{[(2R,5R)-2,5-Dimethylpyrrolidin-1-yl]methylene}-2,5-dimethylpyrrolidinium tetrafluoroborate, min. 97%** *(1204324-14-0)*
$C_{13}H_{25}BF_4N_2$; FW: 296.16; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2010/003226. NHC Ligand Kit 1: Chiral N-Heterocyclic Carbenes Kit component.



100mg
500mg

07-0474 **(1R,2R)-(+)-1,2-Diphenylethylenediamine, min. 97% (R,R)-DPEN** *(35132-20-8)*
$(C_6H_5)(NH_2)CHCH(NH_2)(C_6H_5)$; FW: 212.29; white to pale yellow xtl.; m.p. 85-87°

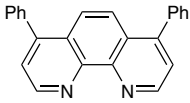


500mg
2g
10g

07-0475 **(1S,2S)-(-)-1,2-Diphenylethylenediamine, min. 97% (S,S)-DPEN** *(29841-69-8)*
$(C_6H_5)(NH_2)CHCH(NH_2)(C_6H_5)$; FW: 212.29; white to pale yellow xtl.; m.p. 85-87°

500mg
2g
10g

07-0472 **4,7-Diphenyl-1,10-phenanthroline, 99% (Bathophenanthroline)** *(1662-01-7)*
$C_{24}H_{16}N_2$; FW: 332.40; off-white pwdr.; m.p. 218°
For detailed technical note visit strem.com.



250mg
1g
5g
25g

15-7220 **(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (R,R-BCPM)** *(114751-47-2)*
See page 305

15-7224 **(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-methyl-1-pyrrolidinecarboxamide, min. 95% (R,R-MCCPM)** *(122709-72-2)*
See page 305

15-7225 **(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-methyl-1-pyrrolidinecarboxamide, min. 97% (S,S-MCCPM)** *(112521-97-8)*
See page 306

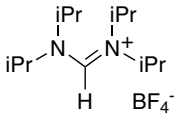
15-7211 **(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino) pyrrolidine, min. 97% (S,S-PPM)** *(61478-29-3)*
See page 306

15-7210 **(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4- (diphenylphosphino) pyrrolidine, min. 97% (R,R-PPM)** *(77450-05-6)*
See page 306

15-7216 **(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (R,R-BPPM)** *(72598-03-9)*
See page 306

15-7217 **(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (S,S-BPPM)** *(61478-28-2)*
See page 306

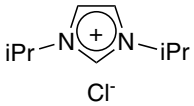
07-4020 **Di-i-propylaminomethylene(di-i-propyl)aminium tetrafluoroborate, min. 97%** *(369405-27-6)*
$C_{13}H_{29}BF_4N_2$; FW: 300.19; white solid
air sensitive



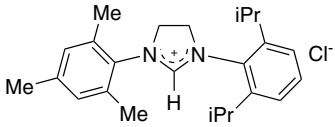
500mg
2g

NITROGEN (Compounds)

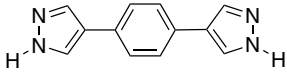
07-0485 **1,3-Di-i-propylimidazolium chloride, min. 97%** *(139143-09-2)*
$[C_9H_{17}N_2]^+Cl^-$; FW: 188.70; white to off-white xtl.
air sensitive, hygroscopic
1g
5g



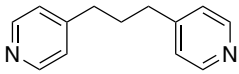
07-4017 **1-(2,6-Di-i-propylphenyl)-3-(2,4,6-trimethyl-phenyl)-4,5-dihydroimidazolium chloride, min. 97%** *(866926-59-2)*
$C_{24}H_{33}ClN_2$; FW: 384.99; white to pink solid
air sensitive
500mg
2g



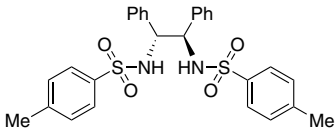
07-0435 **1,4-Di(4'-pyrazolyl)benzene, min. 97% H_2BDP** *(1036248-62-0)*
$C_{12}H_{10}N_4$; FW: 210.24; pale yellow solid
Note: Ligand for MOF synthesis.
500mg
2g



07-0510 NEW **1,3-Di-(4-pyridyl)propane, 98%** *(17252-51-6)*
$C_{13}H_{14}N_2$; FW: 198.26; light yellow xtl.
5g
25g



07-4060 NEW **(1R,2R)-N,N'-Di-p-tosyl-1,2-diphenyl-1,2-ethylenediamine, min. 98%** *(121758-19-8)*
$C_{28}H_{28}N_2O_4S_2$; FW: 520.67; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.
500mg
1g



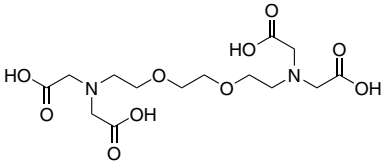
07-4061 NEW **(1S,2S)-N,N'-Di-p-tosyl-1,2-diphenyl-1,2-ethylenediamine, min. 98%** *(170709-41-8)*
$C_{28}H_{28}N_2O_4S_2$; FW: 520.67; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
500mg
1g

Technical Note:
1. See 07-4060 (page 199)

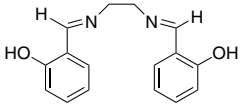
96-3700 **Enantiotech BIMAH Ligand Kit for Asymmetric Hydrogenation**
See page 510

07-0535 **1-Ethyl-2,3-dimethylimidazolium tosylate, 98% [EDiMIM] [TOS]**
(783321-71-1)
See page 82

07-0610 **Ethylene glycol-bis(2-amino-ethyl)-N,N,N',N'-tetraacetic acid, 99% EGTA** *(67-42-5)*
$(HOOCCH_2)_2N(CH_2CH_2O)_2CH_2CH_2N(CH_2COOH)_2$;
FW: 380.35; white xtl.
25g
100g



07-0540 **Ethylenebis(salicylimine), 98% SALEN** *(94-93-9)*
$HOC_6H_4CH{=}NCH_2CH_2N{=}CHC_6H_4OH$; FW: 268.32;
yellow xtl.; m.p. 122-125°
25g
100g



07-0570 HAZ **Ethylenediamine, 99%** *(107-15-3)*
$NH_2CH_2CH_2NH_2$; FW: 60.10; colorless to pale yellow liq.; m.p. 8.5°; b.p. 118°;
f.p. 93°F; d. 0.899
air sensitive
250g
1kg

07-0573 **Ethylenediaminetetraacetic acid, 99+%** *(60-00-4)*
$(HO_2CCH_2)_2NCH_2CH_2N(CH_2CO_2H)_2$; FW: 292.24; white xtl.; m.p. 245° dec.
500g
2kg

07-0580 **Ethylenediaminetetraacetic acid dipotassium salt dihydrate, 99%** *(25102-12-9)*
$(HOOCCH_2)_2NCH_2CH_2N(CH_2COOK)_2{\cdot}2H_2O$; FW: 368.44 (404.47); white xtl.;
m.p. 272° dec.
50g
250g

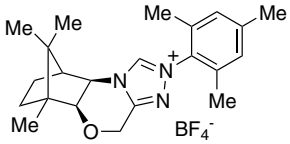
93-1103 **Ethylenediaminetetraacetic acid, disodium salt, dihydrate, 99+%** *(6381-92-6)*
$(HOOCCH_2)_2NCH_2CH_2N(CH_2COONa)_2{\cdot}2H_2O$; FW: 336.22 (372.24); white xtl.;
m.p. 255°
250g
1kg

NITROGEN (Compounds)

93-1104	**Ethylenediaminetetraacetic acid, tetrasodium salt tetrahydrate, 99+%** *(64-02-8)* $(NaOOCCH_2)_2NCH_2CH_2N(CH_2COONa)_2 \cdot 4H_2O$; FW: 380.18 (452.23); white xtl.	500g 2kg
07-0578	**1-Ethyl-3-methylimidazolium bis(pentafluoroethylsulfonyl)imide, 99% [EMIBeti]** *(216299-76-2)* *See* page 82	
07-0579	**1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [EMIIm]** *(174899-82-2)* *See* page 82	
07-0581	**1-Ethyl-3-methylimidazolium ethylsulfate, 98%** *(342573-75-5)* *See* page 82	
07-0588	**1-Ethyl-3-methylimidazolium tosylate, 98% [EMIM] [TOS]** *(328090-25-1)* *See* page 82	
07-0585	**Etioporphyrin III** *(26608-34-4)* $C_{32}H_{38}N_4$; FW: 478.68; purple xtl.	50mg 250mg
07-1828	**1-Fluoropyridinium triflate, 95%** *(107263-95-6)* $C_6H_5F_4NO_3S$; FW: 247.17; white to pale-yellow pwdr. *moisture sensitive, (store cold)*	500mg 2g
07-1828 NEW	**1-Fluoropyridinium triflate, 95%** *(107263-95-6)* $C_6H_5F_4NO_3S$; FW: 247.17; white to pale-yellow pwdr. *air sensitive, moisture sensitive, (store cold)*	500mg 2g
07-1835	**1-Fluoro-2,4,6-trimethylpyridinium triflate** *(107264-00-6)* $C_9H_{11}F_4NO_3S$; FW: 289.25; white to pale-yellow pwdr. *moisture sensitive, (store cold)*	500mg 2g
07-1835 NEW	**1-Fluoro-2,4,6-trimethylpyridinium triflate** *(107264-00-6)* $C_9H_{11}F_4NO_3S$; FW: 289.25; white to pale-yellow pwdr. *air sensitive, moisture sensitive, (store cold)*	500mg 2g
07-0790	**Hematoporphyrin IX dihydrochloride** *(17696-69-4)* $C_{34}H_{38}N_4O_6 \cdot 2HCl$; FW: 671.62; purple xtl.	1g 5g
07-0970	**(5aS,6R,9S,9aR)-5a,6,7,8,9,9a-Hexahydro-6,11,11-trimethyl-2-(2,3,4,5,6-pentafluorophenyl)-6,9-methano-4H-[1,2,4]triazolo[3,4-c][1,4]benzoxazinium tetrafluoroborate** *(1037287-81-2)* $C_{19}H_{19}F_5N_3OBF_4$; FW: 487.17; white pwdr. *hygroscopic* Note: Sold in collaboration with SIOC for research purposes only. Patent ZL200810033107.0. **For detailed technical note visit strem.com.**	250mg 1g

NITROGEN (Compounds)

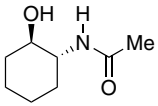
07-0975 **(5aS,6R,9S,9aR)-5a,6,7,8,9,9a-Hexahydro-6,11,11-trimethyl-2-(2,4,6-trimethylphenyl)-6,9-methano-4H-[1,2,4]triazolo[3,4-c][1,4]benzoxazinium tetrafluoroborate**
(1037287-79-8)
$C_{22}H_{30}N_3OBF_4$; FW: 439.29; white to off-white pwdr.
hygroscopic
Note: Sold in collaboration with SI-OC for research purposes only. Patent ZL200810033107.0.
For detailed technical note visit strem.com.



250mg
1g

07-0968 **1-Hexyl-3-methylimidazolium tetrafluoroborate, 98% [HMIM] [BF_4]**
(244193-50-8)
See page 82

07-0785 NEW **N-[(1R,2R)-2-Hydroxycyclohexyl]acetamide, min. 98%**
(214348-95-5)
$C_8H_{15}NO_2$; FW: 157.21; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

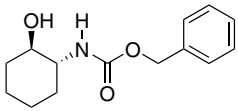


1g
5g

07-0786 NEW **N-[(1S,2S)-2-Hydroxycyclohexyl]acetamide, min. 98%** *(190848-36-3)*
$C_8H_{15}NO_2$; FW: 157.21; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

1g
5g

07-1005 NEW **[(1R,2R)-2-Hydroxycyclohexyl]carbamic Acid Phenylmethyl Ester, min. 98%** *(134108-76-2)*
$C_{14}H_{19}NO_3$; FW: 249.31; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

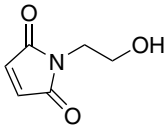


1g
5g

07-1006 NEW **[(1S,2S)-2-Hydroxycyclohexyl]carbamic Acid Phenylmethyl Ester, min. 98%**
(198422-64-9)
$C_{14}H_{19}NO_3$; FW: 249.31; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

1g
5g

07-1010 **N-(2-Hydroxyethyl)maleimide, 99%** *(1585-90-6)*
$C_6H_7NO_3$; FW: 141.13; white pwdr.



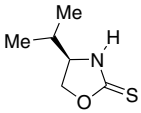
250mg
1g

96-6510 **Ionic Liquid Kit 2: BMIM Kit**
See page 499

96-6520 **Ionic Liquid Kit 3: CYPHOS® IL Phosphonium Salt Kit**
See page 499

96-6500 **Ionic Liquid Kit 1: Hydrophobic (water-immiscible) Kit**
See page 498

07-0615 NEW **(R)-4-Isopropyl-2-oxazolidinethione, min. 98%** *(1217463-35-8)*
$C_6H_{11}NOS$; FW: 145.22; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



500mg
2g

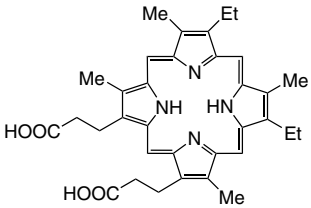
07-0616 NEW **(S)-4-Isopropyl-2-oxazolidinethione, min. 98%** *(104499-08-3)*
$C_6H_{11}NOS$; FW: 145.22; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

500mg
2g

16-3025 **1,3-(N-Mercaptoethylcarboxamide)benzene, 99% BDET** *(351994-94-0)*
See page 426

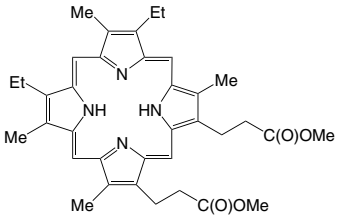
NITROGEN (Compounds)

07-1100 **Mesoporphyrin IX dihydrochloride**
(68938-72-7)
$C_{34}H_{38}N_4O_4 \cdot 2HCl$; FW: 639.62; purple xtl.



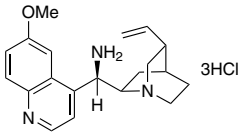
10mg
50mg

07-1150 **Mesoporphyrin IX, dimethyl ester, 97%**
(1263-63-4)
$C_{36}H_{42}N_4O_4$; FW: 594.76; purple xtl.; m.p. 215°



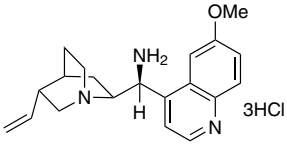
10mg
50mg

07-1715 **(8α, 9R)-6'-Methoxycinchonan-9-amine trihydrochloride, min. 90%**
$C_{20}H_{25}N_3O \cdot 3HCl$; FW: 432.81; white to off-white pwdr.
(store cold)
For detailed technical note visit strem.com.



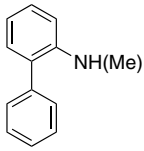
100mg
500mg

07-1710 **(8α, 9S)-6'-Methoxycinchonan-9-amine trihydrochloride, min. 90%** *(1231763-32-8)*
$C_{20}H_{25}N_3O \cdot 3HCl$; FW: 432.81; pale yellow pwdr.
(store cold)
For detailed technical note visit strem.com.



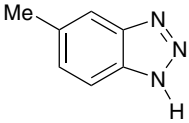
100mg
500mg

07-1158 NEW
2-(N-Methylamino)-1,1'-biphenyl, min. 95% *(14925-09-8)*
$C_{13}H_{13}N$; FW: 183.25; pale-yellow liq.
air sensitive



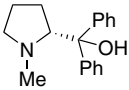
250mg
1g
5g

07-1215 NEW
5-Methyl-1H-benzotriazole, 99% *(136-85-6)*
$C_7H_7N_3$; FW: 133.15; white to off-white solid



25g
100g
500g

07-1170 NEW
(2R)-(-)-N-Methyl-α,α-diphenyl-2-pyrrolidinemethanol, min. 98% *(144119-12-0)*
$C_{18}H_{21}NO$; FW: 267.37; white to light-yellow pwdr.; m.p. 68-71°
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



100mg
250mg

07-1171 NEW
(2S)-(+)-N-Methyl-α,α-diphenyl-2-pyrrolidinemethanol, min. 98% *(110529-22-1)*
$C_{18}H_{21}NO$; FW: 267.37; white to pale-yellow pwdr.; m.p. 66-69°
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.

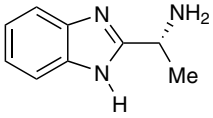
100mg
250mg

93-0711
HAZ
Methylhydrazine, 98% *(60-34-4)*
CH_3NNH_2; FW: 46.07; colorless to pale yellow liq.; b.p. 87°; f.p. 70°F; d. 0.866
Note: For sale in USA. For other countries contact Strem.

25g
100g

NITROGEN (Compounds)

07-1234 **(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole, min. 98% (R)-Me-BIMAH** *(163959-79-3)*
$C_9H_{11}N_3$; FW: 161.2; white to off-white solid; m.p. 188-190°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ligand Kit component.
For detailed technical note visit strem.com.



250mg
1g

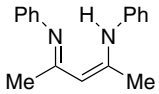
07-1232 **(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole, min. 98% (S)-Me-BIMAH** *(925689-54-9)*
$C_9H_{11}N_3$; FW: 161.2; off-white to brown pwdr.; m.p. 170-172°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ligand Kit component.

250mg
1g

Technical Note:
1. See 07-1234 (page 203)

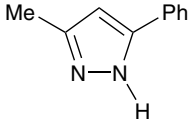
07-1264 **1-Methyl-3-octylimidazolium tetrafluoroborate, 98% [OMIM] [BF_4]** *(244193-52-0)*
See page 83

07-1655 **N-[1-Methyl-3-(phenylamino)-2-buten-1-ylidene] benzenamine, min. 98% NacNac** *(19164-92-2)*
$C_{17}H_{18}N_2$; FW: 250.34; white solid



1g
5g
25g

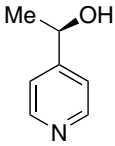
07-1210 **3-Methyl-5-phenyl-1H-pyrazole, 99%** *(3347-62-4)*
$C_{10}H_{10}N_2$; FW: 158.20; pale yellow solid; m.p. 127-129°



500mg
2g

07-1725 **1-Methyl-3-propylimidazolium phosphate, 99%** *(817575-04-5)*
See page 83

07-1160 NEW **(R)-(+)-α-Methyl-4-pyridinemethanol, min. 98%** *(27854-88-2)*
C_7H_9NO; FW: 123.15; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



50mg
100mg

07-1161 NEW **(S)-(-)-α-Methyl-4-pyridinemethanol, min. 98%** *(54656-96-1)*
C_7H_9NO; FW: 123.15; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

50mg
100mg

Technical Note:
1. See 07-1160 (page 203)

96-3775 **NHC Ligand Kit 4: Bis Carbenes**
See page 514

96-3760 **NHC Ligand Kit 1: Chiral N-Heterocyclic Carbenes**
See page 512

96-3770 **NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes**
See page 513

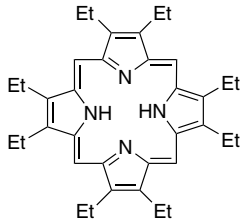
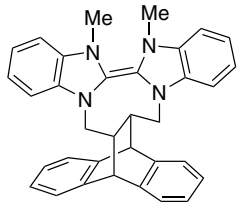
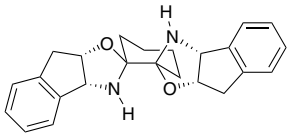
96-3765 **NHC Ligand Kit 2: "Free" Carbenes**
See page 512

96-0397 **Nitric Oxide Sensor (Extracellular) Kit ("NO-ON") (FL2A) (Cell-impermeable NO fluorescent probe)**
See page 540

96-0293 **Nitric Oxide Sensor (Intracellular) Kit ("NO-ON") (FL) (Cell-trappable NO fluorescent probe)**
See page 542

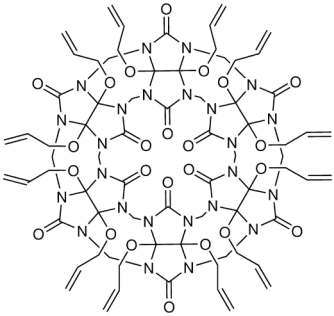
96-0396 **Nitric Oxide Sensor (Intracellular) Kit ("NO-ON") (FL2E) (Cell-trappable NO fluorescent probe)**
See page 543

NITROGEN (Compounds)

07-1475	**Nitrilotriacetic acid, disodium salt, 99%** *(15467-20-6)* $HOOCCH_2N(CH_2COONa)_2$; FW: 235.10; white xtl.; m.p. > 300°	50g 250g
93-0738 HAZ	**Nitronium hexafluoroantimonate, min. 97%** *(17856-92-7)* NO_2SbF_6; FW: 281.75; white xtl. *moisture sensitive* Note: Packaged in PFA/FET bottle.	10g
93-0739 HAZ	**Nitronium hexafluorophosphate, min. 97%** *(19200-21-6)* NO_2PF_6; FW: 190.97; white xtl. *moisture sensitive*	10g
93-0740 HAZ	**Nitronium tetrafluoroborate, min. 97%** *(13826-86-3)* NO_2BF_4; FW: 132.83; white xtl. *moisture sensitive* Note: Packaged in PFA/FET bottle.	5g 25g
93-0722 HAZ	**Nitrosonium hexafluoroantimonate, min. 97%** *(16941-06-3)* $NOSbF_6$; FW: 265.75; white xtl. *moisture sensitive* Note: Packaged in PFA/FET bottle.	25g
93-0736 HAZ	**Nitrosonium hexafluorophosphate, min. 97%** *(16921-91-8)* $NOPF_6$; FW: 174.96; white xtl. *moisture sensitive*	10g
93-0724 HAZ	**Nitrosonium tetrafluoroborate, min. 97%** *(14635-75-7)* $NOBF_4$; FW: 116.78; white xtl.; b.p. subl. 250°/0.01 mm; d. 2.185 *moisture sensitive* Note: Packaged in PFA/FET bottle.	5g 25g
07-1550	**Octaethylporphine, 97+% OEP** *(2683-82-1)* $C_{36}H_{46}N_4$; FW: 534.78; purple xtl. 	250mg 1g
07-0086	**(12a,18a)-5,6,12,12a,13,18,18a,19-Octahydro-5,6-dimethyl-13,18[1',2']-benzenobisbenzimidazo [1,2-b:2',1'-d] benzo[i][2.5]benzodiazocine potassium triflate adduct** *(958004-04-1)* $C_{34}H_{30}N_4 \cdot CF_3SO_3K$; FW: 494.63 (682.80); white pwdr. *air sensitive* Note: Sold under license from UFRFI for research purposes only. Patent application PCT/US2008/054137. NHC Ligand Kit 4: Bis Carbenes Kit component.  CF_3SO_3K adduct	100mg 500mg
07-0488	**(1'R,2'R,3aS,3"aS,8aR,8"aR)-(+)-3,3",3a,3"a,8,8",8a,8"a-Octahydrodispiro{2H-indeno[1,2-d]oxazole-2,1'-cyclohexane-2',2"-[2H] indeno[1,2-d]oxazole} WOLF BISOXAZOLIDINE** *(947515-50-6)* $C_{24}H_{26}N_2O_2$; FW: 374.48; white pwdr. Note: Sold under license from Georgetown University for research purposes only. Patent pending. **For detailed technical note visit strem.com.** 	250mg 1g
07-1665	**Oleylamine, min. 70%** *(112-90-3)* *See* page 168	
07-1668	**Oleylamine, min. 95%** *(112-90-3)* *See* page 168	

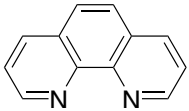
NITROGEN (Compounds)

07-1322 — **Perallyloxycucurbit[6]uril (AOCB[6]) potassium sulfate, 94+%** *(558445-90-2)*
$C_{72}H_{84}N_{24}O_{24}\cdot XK_2SO_4$; FW: 1668.61; white solid
light sensitive
Note: Sold for R&D purposes only. US 7388099. Cucurbitural Kit component.



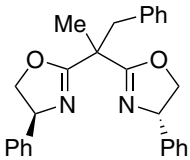
25mg

07-1650 HAZ — **1,10-Phenanthroline, anhydrous, 99%** *(66-71-7)*
$C_{12}H_8N_2$; FW: 180.21; white xtl.; m.p. 114-117°; b.p. >300°
hygroscopic



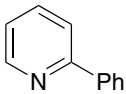
5g
25g
100g

07-1219 — **(4S,4'S)-2,2'-(1-Phenylpropane-2,2-diyl)bis(4-phenyl-4,5-dihydrooxazole) (S)-BnPh-SaBOX** *(1404433-37-9)*
$C_{27}H_{26}N_2O_2$; FW: 410.51; white solid
For detailed technical note visit strem.com.



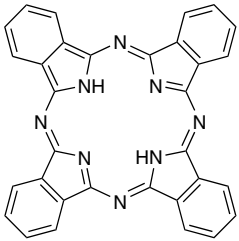
250mg
1g

07-1780 NEW — **2-Phenylpyridine, 95%** *(1008-89-5)*
$C_{11}H_9N$; FW: 155.20; amber liquid; b.p. 268-270º; f.p. 230º; d. 1.086
air sensitive
Note: Ligand for photocatalyst synthesis.



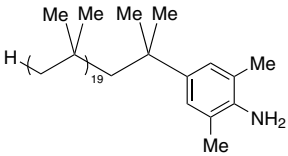
1g

07-1700 — **Phthalocyanine** *(574-93-6)*
$C_{32}H_{18}N_8$; FW: 514.55; blue black pwdr.



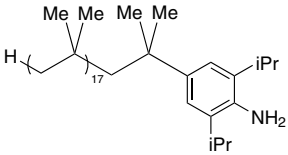
1g
5g
25g

07-6110 amp HAZ — **4-[Polyisobutyl(20)]-2,6-dimethylaniline (50% in heptane/polyisobutylene)**
$C_{88}H_{171}N$; FW: 1243; pale yellow liq.



1g
5g

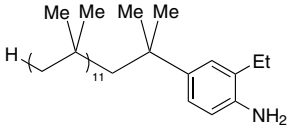
07-6120 amp HAZ — **4-[Polyisobutyl(18)]-2,6-(di-i-propyl)aniline (50% in heptane/polyisobutylene)**
$C_{84}H_{163}N$; FW: 1187; yellow-orange liq.



1g
5g

NITROGEN (Compounds)

07-6115 amp HAZ — **4-[Polyisobutyl(12)]-2-ethylaniline (50% in heptane/polyisobutylene)** — 1g, 5g
$C_{56}H_{107}N$; FW: 794; red-orange liq.



07-1755 — **Poly-4-vinylpyridine, beads (50-60% H_2O)** *(9017-40-7)* — 50g, 250g, 1kg
$[-CH_2CH(C_5H_4N)CH_2-]_n$; off-white beads (18-50 mesh); b.p. 225° dec. (air), 260° dec. (N_2); d. 1.15

07-1765 — **Poly-4-vinylpyridine, beads, anhydrous (toluene conditioned)** *(9017-40-7)* — 25g, 100g, 500g
$[-CH_2CH(C_5H_4N)CH_2-]_n$; off-white beads; b.p. 225° dec. (air), 260° dec. (N_2); d. 1.15

07-1760 — **Poly-4-vinylpyridine, powder (~10% H_2O)** *(9017-40-7)* — 50g, 250g, 1kg
$[-CH_2CH(C_5H_4N)CH_2-]_n$; off-white granular pwdr. (~60 mesh); b.p. 225° dec. (air), 260° dec. (N_2); d. 1.15

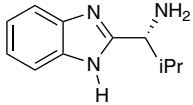
07-1770 — **Poly-4-vinylpyridine, powder, anhydrous (toluene conditioned)** *(9017-40-7)* — 25g, 100g, 500g
$[-CH_2CH(C_5H_4N)CH_2-]_n$; off-white granular pwdr.; b.p. 225° dec. (air), 260° dec. (N_2); d. 1.15

07-1815 — **Polyvinylpyrrolidone (average mol. Wt. 10,000) PVP10** *(9003-39-8)*
See page 168

07-1817 — **Polyvinylpyrrolidone (average mol.wt. 40,000) PVP40** *(9003-39-8)*
See page 168

06-1850 — **i-Propylisocyanide, min. 97%** *(598-45-8)*
See page 40

07-1238 — **(R)-(+)-2-(α-(i-propyl)methanamine)-1H-benzimidazole, min. 98% (R)-i-Pr-BIMAH** *(1235024-08-4)* — 250mg, 1g
$C_{11}H_{15}N_3$; FW: 189.26; white to off-white solid; m.p. 193-196°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929.
Enantiotech BIMAH Ligand Kit component.
For detailed technical note visit strem.com.



07-1236 — **(S)-(-)-2-(α-(i-propyl)methanamine)-1H-benzimidazole, min. 98% (S)-i-Pr-BIMAH** *(59653-66-6)* — 250mg, 1g
$C_{11}H_{15}N_3$; FW: 189.26; white to off-white solid; m.p. 166-168°
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ligand Kit component.
For detailed technical note visit strem.com.

07-1775 — **N-Propyl-3-methylpyridinium bis(trifluoromethylsulfonyl)imide, 99% [PMPIm]** *(817575-06-7)*
See page 83

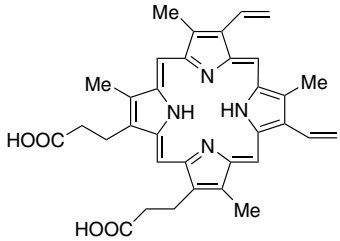
07-0099 — **(4R,5S)-(+)-4-i-Propyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99%** *(1432793-97-9)* — 100mg, 500mg
$C_{14}H_{14}F_{13}NO_2$; FW: 475.25; white pwdr.; m.p. 96-99°
Note: Sold under license for research purposes only. Patent PCT US/60/661,914.
For detailed technical note visit strem.com.

07-0098 — **(4S,5R)-(-)-4-i-Propyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99%** *(871210-22-9)* — 100mg, 500mg
$C_{14}H_{14}F_{13}NO_2$; FW: 475.25; white pwdr.; m.p. 96-99°
Note: Sold under license for research purposes only. PCT US/60/661,914.

Technical Note:
1. See 07-0099 (page 206)

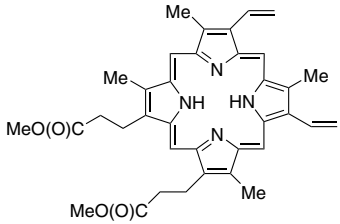
NITROGEN (Compounds)

07-1820 **Protoporphyrin IX** *(553-12-8)*
$C_{34}H_{34}N_4O_4$; FW: 562.67; purple pwdr.
light sensitive



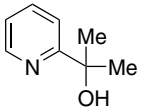
250mg
1g

07-1850 **Protoporphyrin IX, dimethyl ester**
(5522-66-7 =)
$C_{36}H_{38}N_4O_4$; FW: 590.73; purple xtl.



100mg
500mg

07-3333 NEW **2-(Pyridine-2-yl)propan-2-ol, min. 95% pyalc** *(37988-38-8)*
$(C_5H_4N)C(CH_3)_2(OH)$; FW: 137.18; white xtl.

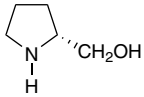


100mg
500mg
2g

07-1885 **Pyridinium trifluoromethanesulfonate, min. 97%** *(52193-54-1)*
$[C_5H_5NH]^+CF_3SO_3^-$; FW: 229.18; white pwdr.; m.p. 221-223°
For detailed technical note visit strem.com.

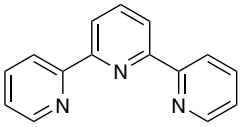
5g
25g

07-1895 NEW **(R)-(-)-2-Pyrrolidinemethanol, 99% (D-Prolinol)** *(68832-13-3)*
$C_5H_{11}NO$; FW: 101.15; light-yellow, viscous liq.; b.p. 74-76° (2mm); d. 1.025
air sensitive



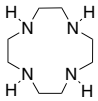
1g
5g
25g

07-1920 **2,2':6',2''-Terpyridine, min. 98% TERPY**
(1148-79-4)
$C_5H_4NC_5H_3NC_5H_4N$; FW: 233.27; off-white pwdr.; m.p. 88-89°



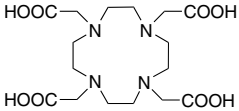
1g
5g

07-1941 **1,4,7,10-Tetraazacyclododecane, min. 98% CYCLEN**
(294-90-6)
$C_8H_{20}N_4$; FW: 172.28; white to off-white pwdr.
hygroscopic



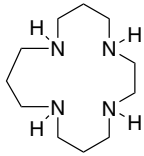
1g
5g
25g

07-1942 **1,4,7,10-Tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid, min. 98% DOTA**
(60239-18-1)
$C_{16}H_{28}N_4O_8$; FW: 404.42; white pwdr.
Note: Ligand for MOF synthesis.



250mg
1g
5g

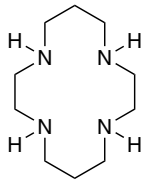
07-1955 **1,4,8,12-Tetraazacyclopentadecane, min. 98%** *(15439-16-4)*
$C_{11}H_{26}N_4$; FW: 214.35; white pwdr.; m.p. 98-99°
hygroscopic



250mg
1g

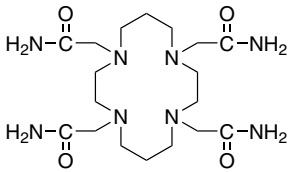
NITROGEN (Compounds)

07-1959 **1,4,8,11-Tetraazacyclotetradecane, min. 98% CYCLAM** *(295-37-4)*
$C_{10}H_{24}N_4$; FW: 200.33; off-white pwdr.; m.p. 185-186°



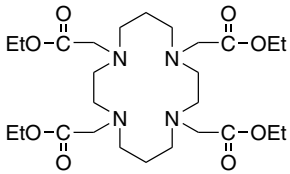
250mg
1g
5g
25g

07-1932 **1,4,8,11-Tetraazacyclotetradecane-N,N',N'',N'''-tetraacetamide, min. 98%** *(345612-63-7)*
$C_{18}H_{36}N_8O_4$; FW: 428.53; white to yellow pwdr.



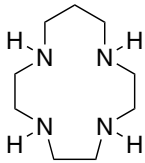
250mg
1g

07-1930 **1,4,8,11-Tetraazacyclotetradecane-N,N',N'',N'''-tetraacetic acid, tetraethyl ester, min. 98%** *(126320-57-8)*
$C_{26}H_{48}N_4O_8$; FW: 544.68; white to yellow pwdr.



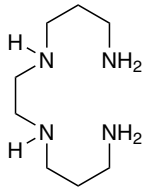
250mg
1g

07-1934 **1,4,7,10-Tetraazacyclotridecane, min. 98%** *(295-14-7)*
$C_9H_{22}N_4$; FW: 186.30; white to yellow pwdr.



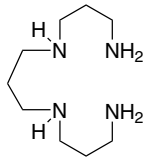
250mg
1g

07-1961 HAZ **1,5,8,12-Tetraazadodecane, min. 95%** *(10563-26-5)*
$C_8H_{22}N_4$; FW: 174.29; colorless to pale yellow liq.; b.p. 118°/0.2 mm; f.p. >230°F; d. 0.952
air sensitive



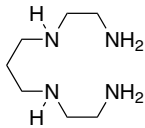
25g
100g
500g

07-1963 HAZ **1,5,9,13-Tetraazatridecane, min. 97%** *(4605-14-5)*
$C_9H_{24}N_4$; FW: 188.32; colorless to pale yellow liq.; b.p. 98-103°/1 mm; f.p. 230°F; d. 0.92
air sensitive



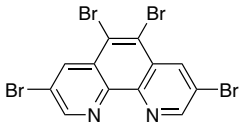
1g
5g
25g

07-1965 HAZ **1,4,8,11-Tetraazaundecane, min. 97%** *(4741-99-5)*
$C_7H_{20}N_4$; FW: 160.26; colorless to pale yellow liq.; b.p. 142-145°/8 mm; f.p. 230°F; d. 0.96
air sensitive



1g
5g
25g

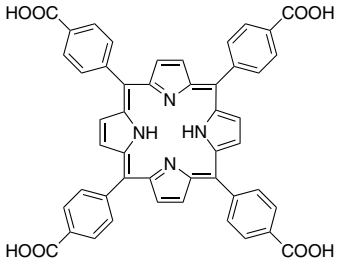
07-1971 **3,5,6,8-Tetrabromo-1,10-phenanthroline, 98%** *(66127-00-2)*
$C_{12}H_4Br_4N_2$; FW: 495.79; white pwdr.
For detailed technical note visit strem.com.



250mg
1g

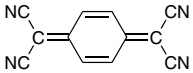
NITROGEN (Compounds)

07-1970 **meso-Tetra(4-carboxyphenyl)porphine, 98%** *(14609-54-2)*
$C_{48}H_{30}N_4O_8$; FW: 790.79; purple pwdr.
250mg
1g



07-1975 HAZ **Tetracyanoethylene, 98%** *(670-54-2)*
$(CN)_2C{=}C(CN)_2$; FW: 128.09; off-white xtl.; m.p. 197-199°
5g
25g

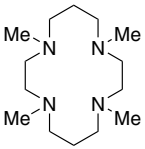
07-1977 amp **7,7,8,8-Tetracyanoquinodimethane, 98% TCNQ** *(1518-16-7)*
$C_{12}H_4N_4$; FW: 204.19; orange xtl.; m.p. 296° dec.
5g
25g



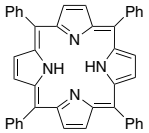
07-2000 HAZ **Tetraethylenepentamine, tech gr. (~50% linear, 41% branched, 5% Triethylenetetramine, 4% polyethylene polyamines) TETRAEN** *(112-57-2)*
$HN(CH_2CH_2NHCH_2CH_2NH_2)_2$; FW: 189.31; colorless to yellow liq.; m.p. -40°; b.p. 340°; f.p. 365°F; d. 0.998
air sensitive
250g
1kg

07-2050 HAZ **N,N,N',N'-Tetramethylethylenediamine, 99% TMEDA** *(110-18-9)*
$(CH_3)_2NCH_2CH_2N(CH_3)_2$; FW: 116.21; colorless liq.; m.p. -55°; b.p. 120-122°; f.p. 68°F; d. 0.775
100g
500g

07-2112 **1,4,8,11-Tetramethyl-1,4,8, 11-tetraazacyclotetradecane, 98%** *(41203-22-9)*
$C_{14}H_{32}N_4$; FW: 256.43; white waxy xtl.; m.p. 34-36°; f.p. >230°F
moisture sensitive
1g
5g

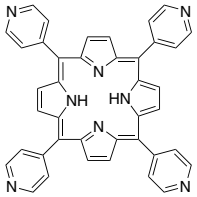


07-2160 **meso-Tetraphenylporphine, min. 97% TPP (contains 1-3% chlorin)** *(917-23-7)*
$C_{44}H_{30}N_4$; FW: 614.75; purple xtl.
2g
10g

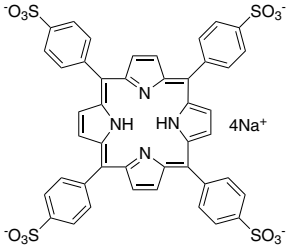


07-2170 **meso-Tetraphenylporphine TPP (chlorin free)** *(917-23-7)*
$C_{44}H_{30}N_4$; FW: 614.75; violet xtl.
50mg
250mg

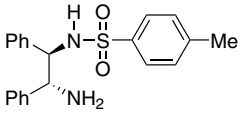
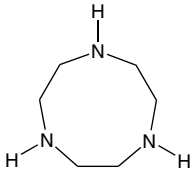
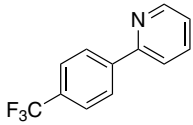
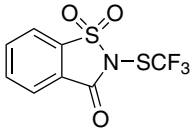
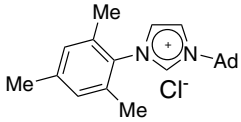
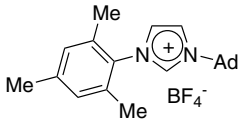
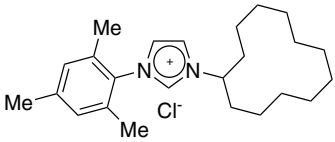
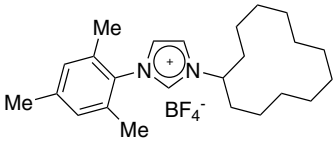
07-2300 **meso-Tetra(4-pyridyl)porphine, 97%** *(16834-13-2)*
$C_{40}H_{26}N_8$; FW: 618.70; purple pwdr.
1g
5g



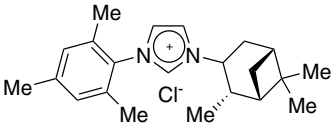
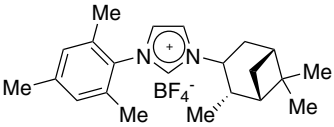
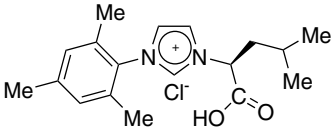
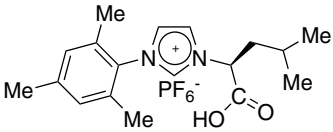
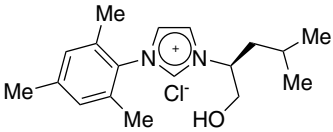
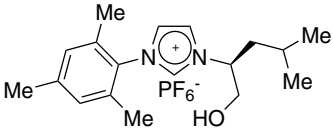
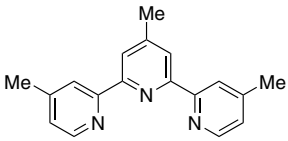
07-2340 **Tetrasodium-meso-tetra(4-sulfonatophenyl)porphine dodecahydrate, min. 95%** *(39050-26-5)*
$C_{44}H_{26}N_4Na_4O_{12}S_4 \cdot 12H_2O$; FW: 1022.87 (1239.11); purple pwdr.
250mg
1g



NITROGEN (Compounds)

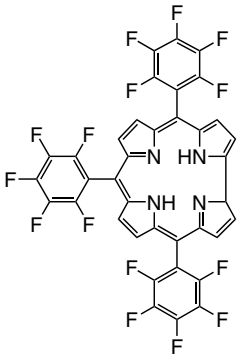
07-2371	**(1R,2R)-(-)-N-(4-toluenesulfonyl)-1,2-diphenylethylenediamine, 98% (R,R)-TsDPEN** *(144222-34-4)* $C_{21}H_{22}N_2O_2S$; FW: 366.48; white xtl.; m.p. 127-129° Note: CATHy™ Catalyst Kit component. 	500mg 2g 10g
07-2370	**(1S,2S)-(+)-N-(4-toluenesulfonyl)-1,2-diphenylethylenediamine, 98% (S,S)-TsDPEN** *(167316-27-0)* $C_{21}H_{22}N_2O_2S$; FW: 366.48; white xtl.; m.p. 127-129° Note: CATHy™ Catalyst Kit component.	500mg 2g 10g
07-2400 HAZ	**2,2',2''-Triaminotriethylamine, min. 98% TREN** *(4097-89-6)* $N(CH_2CH_2NH_2)_3$; FW: 146.24; colorless to pale yellow liq.; b.p. 98-99°/1 mm; f.p. >230°F; d. 0.977 *air sensitive*	10g 50g 250g
07-2500 HAZ	**1,4,7-Triazacyclononane, 97%** *(4730-54-5)* $C_6H_{15}N_3$; FW: 129.20; white xtl.; f.p. 230°F 	25mg 100mg
07-2625 NEW	**2-[4-(Trifluoromethyl)phenyl]pyridine, 95%** *(203065-88-7)* $C_{12}H_8F_3N$; FW: 223.19; white to yellow solid *air sensitive* Note: Ligand for photocatalyst synthesis. 	1g
07-1840 NEW	**2-[(Trifluoromethyl)thio]-1,1-dioxide-1,2-benzisothiazol-3(2H)-one, 97%** *(1647073-46-8)* $C_8H_4F_3NO_3S_2$; FW: 283.25; white solid *air sensitive, moisture sensitive* 	250mg 1g
07-2660	**1,2,3-Trimethylimidazolium methyl sulfate, 98% [TriMIM] [MeSO4]** *(65086-12-6)* *See* page 84	
07-0542	**1-(2,4,6-Trimethylphenyl)-3-(adamantyl) imidazolium chloride, min. 97%** *(1583244-07-8)* $C_{22}H_{29}ClN_2$; FW: 356.94; white to off-white pwdr. *hygroscopic* 	250mg 1g
07-0545	**1-(2,4,6-Trimethylphenyl)-3-(adamantyl) imidazolium tetrafluoroborate, min. 97%** $C_{22}H_{29}BF_4N_2$; FW: 356.94; white to off-white pwdr. *hygroscopic* 	250mg 1g
07-0530	**1-(2,4,6-Trimethylphenyl)-3-(cyclododecyl)imidazolium chloride, min. 97%** $C_{24}H_{37}N_2Cl$; FW: 389.02; white to off-white pwdr. *hygroscopic* 	250mg 1g
07-0534	**1-(2,4,6-Trimethylphenyl)-3-(cyclododecyl)imidazolium tetrafluoroborate, min. 97%** *(1583244-17-0)* $C_{24}H_{37}BF_4N_2$; FW: 440.37; white to off-white pwdr. *hygroscopic* 	250mg 1g

NITROGEN (Compounds)

07-0522	**1-(2,4,6-Trimethylphenyl)-3-[(1R,2R,3R,5S)-(-)-isopinocampheyl] imidazolium chloride, min. 95%** *(1583244-12-5)* $C_{22}H_{31}ClN_2$; FW: 358.95; white to off-white pwdr. *hygroscopic*		100mg 500mg
07-0528	**1-(2,4,6-Trimethylphenyl)-3-[(1R,2R,3R,5S)-(-)-isopinocampheyl] imidazolium tetrafluoroborate, min. 95%** $C_{22}H_{31}BF_4N_2$; FW: 410.30; white to off-white pwdr. *hygroscopic*		100mg 500mg
07-0640	**1-(2,4,6-Trimethyl-phenyl)-3-[(2S)-4-methylpentanoic acid]imidazolium chloride, min. 95%** $C_{18}H_{25}ClN_2O_2$; FW: 336.86; yellow solid *hygroscopic*		250mg 1g
07-0645	**1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methylpentanoic acid]imidazolium hexafluorophosphate, min. 95%** $C_{18}H_{25}F_6N_2PO_2$; FW: 446.37; yellow solid *hygroscopic*		250mg 1g
07-0560	**1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methyl-1-pentanol]imidazolium chloride, min. 97%** $C_{18}H_{27}ClN_2O$; FW: 322.87; white to off-white pwdr. *hygroscopic*		250mg 1g
07-0565	**1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methyl-1-pentanol]imidazolium hexa-fluorophosphate, min. 97%** $C_{18}H_{27}F_6N_2OP$; FW: 432.38; white to off-white pwdr. *hygroscopic*		250mg 1g
07-2758 NEW	**4,4',4''-Trimethyl-2,2':6',2''-terpyridine, 98%** *(33354-75-5)* $C_{18}H_{17}N_3$; FW: 275.35; white to off-white pwdr.		500mg 2g
15-6400	**2,8,9-Trimethyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3]undecane VERKADE SUPERBASE** *(120666-13-9)* *See* page 329		
07-2750 amp	**1,4,7-Trimethyl-1,4,7-triazacyclononane, min. 97%** *(96556-05-7)* $C_9H_{21}N_3$; FW: 171.28; pale yellow liq.; f.p. 155°F; d. 0.884 *moisture sensitive*		250mg 500mg 2g

NITROGEN (Compounds)

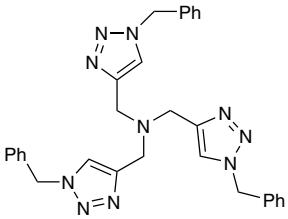
07-3100 **5,10,15-Tri(pentafluorophenyl)corrole** 25mg
(262280-80-8)
$C_{37}H_{11}F_{15}N_4$; FW: 796.52; purple pwdr.
Note: US Patent 6,541,628 B1.



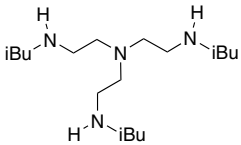
Technical Note:

1. Corroles are a class of tetradentate nitrogen ligands analogous to porphyrins. The corroles can act as trianionic ligands toward metal ions, and in particular, stabilize metal ions in high oxidation states such as Fe(IV), Co(IV) and Co(V).

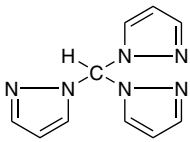
07-3215 NEW **Tris[(1-benzyl-1H-1,2,3-triazol-4-yl)methyl] amine, 97% TBTA** *(510758-28-8)* 250mg 1g
$C_{30}H_{30}N_{10}$; FW: 530.63; white to off-white pwdr.
(store cold)



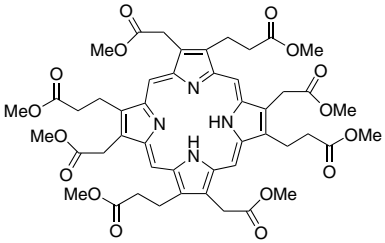
07-3110 **Tris(isobutylaminoethyl)amine, min 97%** 500mg 2g
(331465-73-7)
$C_{18}H_{42}N_4$; FW: 314.55; colorless to pale yellow, viscous liq.
hygroscopic
Note: Ligand for MOF synthesis.



07-3200 **Tris(pyrazol-1-yl)methane, min. 98%** *(80510-03-8)* 250mg 1g
$C_{10}H_{10}N_6$; FW: 214.23; white pwdr.; m.p. 103-104°

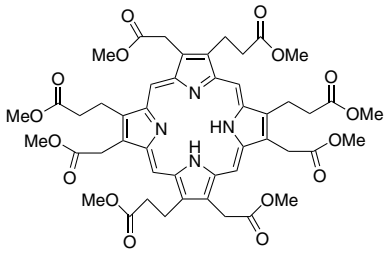


07-3350 **Uroporphyrin I, octamethyl ester** 10mg
(10170-03-3)
$C_{48}H_{54}N_4O_{16}$; FW: 942.98; rust colored pwdr.; m.p. 291-292°



NITROGEN (Compounds)

07-3410 **Uroporphyrin III, octamethyl ester** *(15435-60-6)* 5mg
$C_{48}H_{54}N_4O_{16}$; FW: 942.98; red to black pwdr.



OSMIUM (Elemental Forms)

76-3000 **Osmium powder (99.8%)** *(7440-04-2)* 1g
HAZ Os; FW: 190.20; 100-200 mesh; m.p. 3000°; b.p. 5027°; d. 22.48 5g

OSMIUM (Compounds)

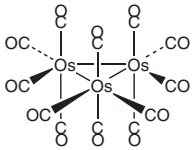
76-0080 **Ammonium hexabromoosmate(IV), 99%** *(24598-62-7)*
See page 5

76-0150 **Bis(cyclopentadienyl)osmium, 99% (99.9%-Os) (Osmocene)** *(1273-81-0)* 250mg
$(C_5H_5)_2Os$; FW: 320.39; white xtl.; m.p. 226-228° 1g

76-0200 **Bis(pentamethylcyclopentadienyl)osmium, 99% (99.9%-Os)** 500mg
amp **(Decamethylosmocene)** *(100603-32-5)*
$[(CH_3)_5C_5]_2Os$; FW: 460.66; off-white pwdr.

93-7610 **Dihydrogen hexachloroosmate(IV) hexahydrate** *(27057-71-2)* 1g
$H_2OsCl_6 \cdot 6H_2O$; FW: 404.94 (513.01); black xtl. 5g
hygroscopic

76-2000 **Osmium carbonyl, 99%** *(15696-40-9)* 500mg
$Os_3(CO)_{12}$; FW: 906.73; yellow xtl.; d. 3.48 2g



76-2200 **Osmium(III) chloride hydrate** *(14996-60-2)* 250mg
HAZ $OsCl_3 \cdot XH_2O$; FW: 296.56; black xtl.; m.p. >500° dec. 1g
5g

76-2210 **Osmium(III) chloride hydrate (99.95+%-Os)** *(14996-60-2)* 250mg
HAZ $OsCl_3$; FW: 296.56; black xtl. 1g
5g

76-2950 **Osmium(VIII) oxide (99.95+%-Os)** *(20816-12-0)* 250mg
amp OsO_4; FW: 254.20; pale yellow xtl.; m.p. 41-42°; d. 4.906 500mg
HAZ 1g
5 x 1g

76-2958 **Osmium(VIII) oxide (99.99+%-Os) PURATREM** *(20816-12-0)* 250mg
amp OsO_4; FW: 254.20; pale yellow xtl.; m.p. 41-42°; d. 4.906 500mg
HAZ 1g
5x1g

76-2955 **Osmium(VIII) oxide (99.99+%-Os), 4% in water PURATREM** *(20816-12-0)* 2ml
amp OsO_4; FW: 254.20; colorless liq. 5ml
HAZ 2x5ml

76-2952 **Osmium(VIII) oxide, 4% in water** *(20816-12-0)* 2ml
amp OsO_4; colorless liq. 5ml
HAZ 10ml

76-2956 **Osmium(VIII) oxide, Microencapsulated in a Styrene Polymer (~10%OsO_4)** 1g
HAZ OsO_4; black solid
For detailed technical note visit strem.com.

93-7611 **Potassium hexachloroosmate(IV), 99%** *(16871-60-6)*
See page 342

OSMIUM (Compounds)

76-3510 **Potassium hexachloroosmate (IV), 99% (99.98+%-Os)** *(16871-60-6)*
See page 342

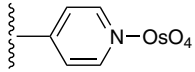
93-7613 **Potassium osmate(VI) dihydrate, 99%** *(10022-66-9)*
See page 343

76-4050 **Potassium osmate(VI) dihydrate, 99% (99.98+%-Os)** *(10022-66-9)*
See page 343

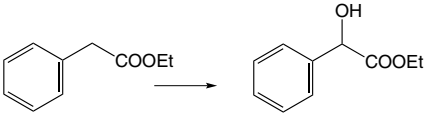
93-7612 **Sodium hexachloroosmate(IV) hydrate** *(1307-81-9)*
See page 418

76-3520 **Sodium hexachloroosmate((IV) hydrate (99.98+%-Os)** *(1307-81-9)*
See page 418

76-2970 **Tetraoxopyridineosmium(VIII) (~7.5% Os) polymer-bound FibreCat™** — 5g
yellow, fibrous solid
Note: Limited quantities available.

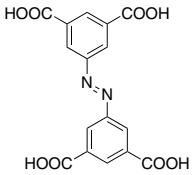


Technical Note:
1. A stable polymer-bound osmium tetroxide useful for the hydroxylation of olefins. Use of this catalyst effectively eliminates the hazard of working with osmium tetroxide in the free state, while still maintaining its activity as a catalyst.

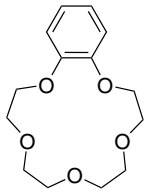


OXYGEN (Compounds)

08-0125 NEW **3,3',5,5'-Azobenzene tetracarboxylic acid, TazbH$_4$, 97%** *(365549-33-33)* — 1g, 5g
$C_{16}H_{10}N_2O_8$; FW: 358.26; yellow-orange pwdr.
Note: Ligand for MOF Synthesis

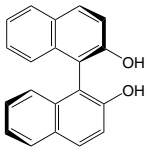


08-0150 **Benzo-15-crown-5, 97%** *(14098-44-3)* — 1g, 5g
$C_{14}H_{20}O_5$; FW: 268.31; white xtl.; m.p. 76-78°
air sensitive



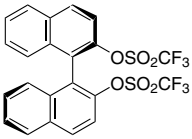
08-0999 **racemic-1,1'-Bi-2-naphthol, 99% rac-BINOL** *(602-09-5)* — 5g, 25g
$C_{20}H_{14}O_2$; FW: 286.32; white pwdr.; m.p. 214-217°

08-1000 **R-(+)-1,1'-Bi-2-naphthol, 99% (R)-BINOL** *(18531-94-7)* — 1g, 5g, 25g
$HOC_{10}H_6$-$C_{10}H_6OH$; FW: 286.33; white to off-white pwdr.; m.p. 208-211°



08-1001 **S-(-)-1,1'-Bi-2-naphthol, 99% (S)-BINOL** *(18531-99-2)* — 1g, 5g, 25g
$HOC_{10}H_6$-$C_{10}H_6OH$; FW: 286.33; white to off-white pwdr.; m.p. 207-210°

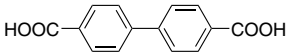
08-0160 **(R)-(-)-1,1'-Bi-2-naphthol bis(trifluoromethanesulfonate), 98%** *(126613-06-7)* — 250mg, 1g, 5g
$CF_3SO_3C_{10}H_6$-$C_{10}H_6O_3SCF_3$; FW: 550.45; white pwdr.; m.p. 82-85°
moisture sensitive



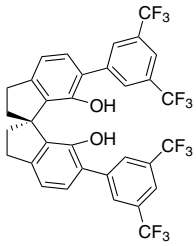
OXYGEN (Compounds)

08-0161 **(S)-(+)-1,1'-Bi-2-naphthol bis(trifluoromethanesulfonate), 98%** *(128544-05-8)* — 250mg, 1g, 5g
$CF_3SO_3C_{10}H_6$-$C_{10}H_6O_3SCF_3$; FW: 550.45; white pwdr.; m.p. 82-85°
moisture sensitive

08-0175 **[1,1'-Biphenyl]-4,4'-dicarboxylic acid, min. 98%** *(787-70-2)* — 5g, 25g
$C_{14}H_{10}O_4$; FW: 242.23; white to pale-yellow solid
Note: Ligand for MOF synthesis.

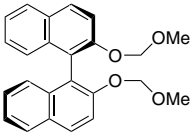


08-0163 NEW **(1R)-6,6'-Bis[3,5-bis(trifluoromethyl)phenyl]-2,2',3,3'-tetrahydro-1,1'-spirobi[1H-indene]-7,7'-diol, min. 98%** *(1286189-16-9)* — 25mg, 100mg
$C_{33}H_{20}F_{12}O_2$; FW: 676.49; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



08-0164 NEW **(1S)-6,6'-Bis[3,5-bis(trifluoromethyl)phenyl]-2,2',3,3'-tetrahydro-1,1'-spiro-bi[1H-indene]-7,7'-diol, min. 98%** *(1258327-01-3)* — 25mg, 100mg
$C_{33}H_{20}F_{12}O_2$; FW: 676.49; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

08-0170 **(R)-(+)-2,2'-Bis(methoxymethoxy)-1,1'-binaphthyl, 98%** *(173831-50-0)* — 250mg, 1g, 5g
$C_{24}H_{22}O_4$; FW: 374.43; white pwdr.; m.p. 100-103°

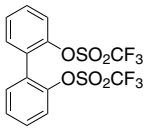


Technical Note:
1. Starting material for the preparation of a variety of 3,3'-substituted binaphthols.

08-0171 **(S)-(-)-2,2'-Bis(methoxymethoxy)-1,1'-binaphthyl, 98%** *(142128-92-5)* — 250mg, 1g, 5g
$C_{24}H_{22}O_4$; FW: 374.43; white pwdr.; m.p. 100-103°

Technical Note:
1. See 08-0170 (page 215)

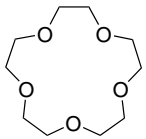
08-0180 **2,2'-Bis(trifluoromethanesulfonyloxy)-1,1'-biphenyl, 99% (1,1'-Biphenol bistriflate)** *(17763-95-0)* — 250mg, 1g
$C_{14}H_8F_6O_6S_2$; FW: 450.33; white pwdr.



08-0201 **(2S,3S)-(+)-2,3-Butanediol, min. 97%** *(19132-06-0)* — 100mg, 500mg
$CH_3CH(OH)CH(OH)CH_3$; FW: 90.12; colorless liq.; b.p. 179-182°; f.p. 185°F; d. 0.987
hygroscopic

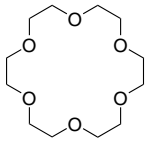
08-0198 **(S)-(+)-1,3-Butanediol, 98+%** *(24621-61-2)* — 250mg, 1g
$CH_3CH(OH)CH_2CH_2OH$; FW: 90.12; colorless liq.; f.p. 249°F; d. 1.005
hygroscopic

08-0300 **15-Crown-5, 98%** *(33100-27-5)* — 2g, 10g
$C_{10}H_{20}O_5$; FW: 220.26; pale yellow liq.; b.p. 78°/0.05 mm; f.p. >230°F; d. 1.109
air sensitive

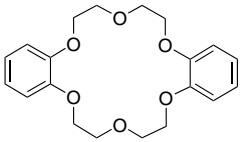


OXYGEN (Compounds)

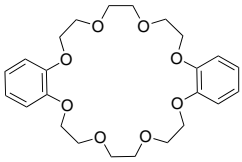
08-0320 **18-Crown-6, 99%** *(17455-13-9)* — 10g, 50g
$C_{12}H_{24}O_6$; FW: 264.32; white xtl.; m.p. 36-38°; f.p. >235°F
air sensitive



08-0500 **Dibenzo-18-crown-6, min. 98%** *(14187-32-7)* — 10g, 50g
$C_{20}H_{24}O_6$; FW: 360.41; white pwdr.; m.p. 162-164°
air sensitive

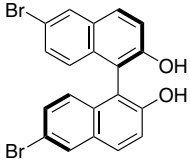


08-0510 **Dibenzo-24-crown-8, 98%** *(14174-09-5)* — 1g, 5g
$C_{24}H_{32}O_8$; FW: 448.51; white xtl.; m.p. 103-104°
air sensitive



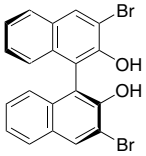
08-0604 **racemic-6,6'-Dibromo-1,1'-bi-2-naphthol, min. 98%** *(13185-00-7)* — 1g, 5g
$C_{20}H_{12}Br_2O_2$; FW: 444.13; white pwdr.; m.p. 202-205°
For detailed technical note visit strem.com.

08-0185 NEW **(R)-(-)-6,6'-Dibromo-1,1'-bi-2-naphthol, 98% (99% ee)** *(65283-60-5)* — 500mg, 2g
$C_{20}H_{12}Br_2O_2$; FW: 444.12; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

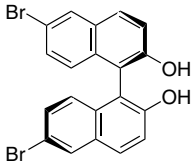


08-0186 NEW **(S)-(+)-6,6'-Dibromo-1,1'-bi-2-naphthol, 98% (99% ee)** *(80655-81-8)* — 500mg, 2g
$C_{20}H_{12}Br_2O_2$; FW: 444.12; white to light-yellow solid
Note: Sold in collaboration with Daicel for research purposes only.

08-0600 **(R)-(+)-3,3'-Dibromo-1,1'-bi-2-naphthol, min. 98%** *(111795-43-8)* — 100mg, 500mg
$C_{20}H_{12}Br_2O_2$; FW: 444.13; white pwdr.; m.p. 254-258°
For detailed technical note visit strem.com.



08-0605 **(R)-(-)-6,6'-Dibromo-1,1'-bi-2-naphthol, min. 98%** *(65283-60-5)* — 500mg, 2g
$C_{20}H_{12}Br_2O_2$; FW: 444.13; white pwdr.; m.p. 92-96°
For detailed technical note visit strem.com.

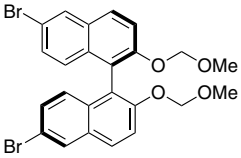


08-0601 **(S)-(-)-3,3'-Dibromo-1,1'-bi-2-naphthol, min. 98%** *(119707-74-3)* — 100mg, 500mg
$C_{20}H_{12}Br_2O_2$; FW: 444.13; white pwdr.; m.p. 257-262°
For detailed technical note visit strem.com.

08-0606 **(S)-(+)-6,6'-Dibromo-1,1'-bi-2-naphthol, min. 98%** *(80655-81-8)* — 500mg, 2g
$C_{20}H_{12}Br_2O_2$; FW: 444.13; white pwdr.; m.p. 92-96°
For detailed technical note visit strem.com.

OXYGEN (Compounds)

08-0152 NEW
(R)-(+)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthalene, min. 98% (99% ee)
(179866-74-1)
$C_{24}H_{20}Br_2O_4$; FW: 532.22; white to light-yellow pwdr.; m.p. 133°
Note: Sold in collaboration with Daicel for research purposes only.

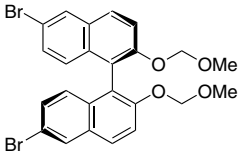


100mg
500mg

08-0153 NEW
(S)-(-)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthalene, min. 98% (99% ee) *(211560-97-3)*
$C_{24}H_{20}Br_2O_4$; FW: 532.22; white to light-yellow pwdr.; m.p. 133°
Note: Sold in collaboration with Daicel for research purposes only.

100mg
500mg

08-0620
(R)-(+)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthyl, min. 98% *(179866-74-1)*
$C_{24}H_{20}Br_2O_4$; FW: 532.22; white pwdr.; m.p. 133°



250mg
1g

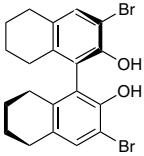
Technical Note:
1. Starting material for the preparation of a variety of 6,6' and 3,3'-substituted BINOLS.

08-0621
(S)-(-)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthyl, min. 98% *(211560-97-3)*
$C_{24}H_{20}Br_2O_4$; FW: 532.22; white pwdr.; m.p. 133°

250mg
1g

Technical Note:
1. See 08-0620 (page 217)

08-0650
(R)-(+)-3,3'-Dibromo-5,5',6,6',7,7',8,8'-octahydro-1,1'-bi-2-naphthol, 99% *(65355-08-0)*
$C_{20}H_{20}Br_2O_2$; FW: 452.20; off-white pwdr.

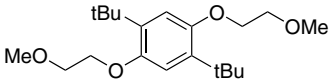


250mg
1g

08-0651
(S)-(-)-3,3'-Dibromo-5,5',6,6',7,7',8,8'-octahydro-1,1'-bi-2-naphthol, 99%
(765278-73-7)
$C_{20}H_{20}Br_2O_2$; FW: 452.20; off-white pwdr.

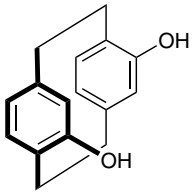
250mg
1g

08-0215 NEW
1,4-Di-t-butyl-2,5-bis(2-methoxyethoxy)benzene, 99+% Redox shuttle ANL-RS2
(1350770-63-6)
$C_{20}H_{34}O_4$; FW: 338.48; white to off-white pwdr.; m.p. 69-70°
air sensitive, moisture sensitive
Note: U.S. Patent: 8,609,287. European Patent App.: 11787270.5. Chinese Patent App.: 11/80014192.6
For detailed technical note visit strem.com.



1g
5g

08-0700
racemic-4,12-Dihydroxy[2.2]paracyclophane, min. 97%
(612492-27-0)
$C_{16}H_{16}O_2$; FW: 240.30; yellow to brown pwdr.
Note: Paracyclophane Kit component.

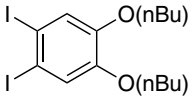
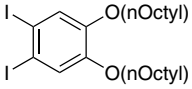
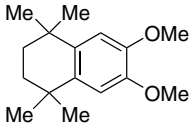
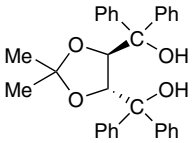
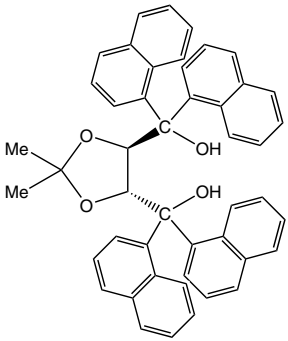
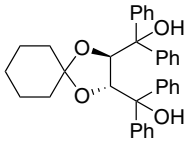


100mg
500mg

08-1220 NEW
2,5-Dihydroxyterephthalic acid, 98% H_4DOBDC *(610-92-4)*
$C_6H_2(OH)_2(COOH)_2$; FW: 198.13; white pwdr.
Note: Ligand for MOF Synthesis

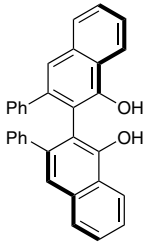
1g
5g
25g

OXYGEN (Compounds)

08-0720	**1,2-Diiodo-4,5-di-n-butoxybenzene** *(1005340-01-1)* $C_{14}H_{20}I_2O_2$; FW: 474.12; white to yellow pwdr.		250mg 1g
08-0722	**1,2-Diiodo-4,5-di-n-octyloxybenzene** *(248277-14-7)* $C_{22}H_{36}I_2O_2$; FW: 586.33; white to yellow pwdr.		250mg 1g
08-0220 NEW	**6,7-Dimethoxy-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene, 99+% Redox shuttle ANL-RS21** *(22825-00-9)* $C_{16}H_{24}O_2$; FW: 248.36; off-white solid *air sensitive, moisture sensitive* Note: U.S. Patent: 13/457,239. **For detailed technical note visit strem.com.**		1g 5g
08-2008	**(4R,5R)-(-)-2,2-Dimethyl-α, α, α', α'-tetraphenyl-1,3-dioxolane-4,5-dimethanol (R,R)-TADDOL** *(93379-48-7)* $C_{31}H_{30}O_4$; FW: 466.57; white pwdr.; m.p. 193-195°		500mg 2g
08-2000	**2,2-Dimethyl-3,5-hexanedione, min. 97%** *(7307-04-2)* $(CH_3)_3CC(O)CH_2C(O)CH_3$; FW: 142.20; colorless liq.		1g 5g 25g
08-2004	**(4R,5R)-(-)-2,2-Dimethyl-α,α,α',α'-tetra(1-naphthyl)-1,3-dioxolane-4,5-dimethanol, min. 97% (R,R)-1-Nph-TADDOL** *(137536-94-8)* $C_{47}H_{38}O_4$; FW: 666.82; white pwdr.; m.p. 200° (dec.)		500mg 2g
08-0611 NEW	**(2R,3R)-1,4-Dioxaspiro[4.5]decane-2,3-diylbis(diphenylmethanol), min. 98%** *(114026-76-5)* $C_{34}H_{34}O_4$; FW: 506.63; white to light-yellow pwdr. Note: Sold in collaboration with Daicel for research purposes only.		500mg 2g
08-0612 NEW	**(2S,3S)-1,4-Dioxaspiro[4.5]decane-2,3-diylbis(diphenylmethanol), min. 98%** *(123287-35-4)* $C_{34}H_{34}O_4$; FW: 506.63; white to light-yellow pwdr. Note: Sold in collaboration with Daicel for research purposes only.		500mg 2g

OXYGEN (Compounds)

08-1700 **(2R)-(+)-3,3'-Diphenyl-[2,2'-binaphthalene]-1,1'-diol, min. 98% (R)-VANOL** *(147702-13-4)* — 100mg, 500mg
$C_{32}H_{22}O_2$; FW: 438.52; white to pale yellow pwdr.
For detailed technical note visit strem.com.

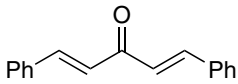


08-1702 **(2S)-(-)-3,3'-Diphenyl-[2,2'-binaphthalene]-1,1'-diol, min. 98% (S)-VANOL** *(147702-14-5)* — 100mg, 500mg
$C_{32}H_{22}O_2$; FW: 438.52; white to pale yellow pwdr.
For detailed technical note visit strem.com.

08-1704 **(3R)-(-)-2,2'-Diphenyl-[3,3'-biphenanthrene]-4,4'-diol dichloromethane adduct, min. 98% (R)-VAPOL** *(147702-16-7)* — 100mg, 500mg
$C_{40}H_{26}O_2 \cdot ½CH_2Cl_2$; FW: 538.63 (581.10); white to pale yellow pwdr.
For detailed technical note visit strem.com.

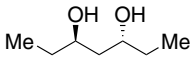
08-1706 **(3S)-(+)-2,2'-Diphenyl-[3,3'-biphenanthrene]-4,4'-diol dichloromethane adduct, min. 98% (S)-VAPOL** *(147702-15-6)* — 100mg, 500mg
$C_{40}H_{26}O_2 \cdot ½CH_2Cl_2$; FW: 538.63 (581.10); white to pale yellow pwdr.
For detailed technical note visit strem.com.

08-0625 **1,5-Diphenyl-1,4-pentadien-3-one, min. 98% (Dibenzylideneacetone)** *(538-58-9)* — 1g, 5g
$C_{17}H_{14}O$; FW: 234.30; yellow solid



09-4496 **6,6,7,7,8,8,8-Heptafluoro-2,2-dimethyl-3,5-octanedione, 98+% HFOD** *(17587-22-3)*
See page 64

08-2014 **(3R,5R)-(-)-3,5-Heptanediol, 99%** *(77291-90-8)* — 250mg, 1g
$C_7H_{16}O_2$; FW: 132.20; colorless solid; m.p. 52°



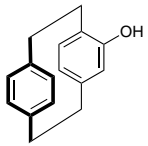
08-2015 **(3S,5S)-(+)-3,5-Heptanediol, 99%** *(129212-21-1)* — 250mg, 1g
$C_7H_{16}O_2$; FW: 132.20; colorless solid; m.p. 52°

08-0750 **Hexafluoroacetylacetone, min. 98% HFAA** *(1522-22-1)*
See page 64

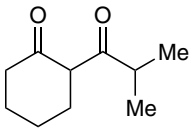
08-2024 **(2R,5R)-(-)-2,5-Hexanediol, 99%** *(17299-07-9)* — 500mg, 2g
$CH_3CH(OH)CH_2CH_2CH(OH)CH_3$; FW: 118.18; colorless xtl.; m.p. 50-53°

08-2025 **(2S,5S)-(+)-2,5-Hexanediol, 99%** *(34338-96-0)* — 500mg, 2g
$CH_3CH(OH)CH_2CH_2CH(OH)CH_3$; FW: 118.18; colorless xtl.; m.p. 50-53°

08-2027 **racemic-4-Hydroxy[2.2]paracyclophane, min. 97%** *(157018-15-0)* — 250mg, 1g
$C_{16}H_{16}O$; FW: 224.30; yellow to tan pwdr.
Note: Paracyclophane Kit component.

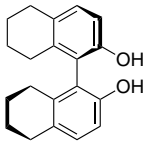
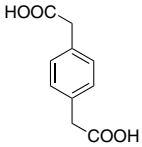
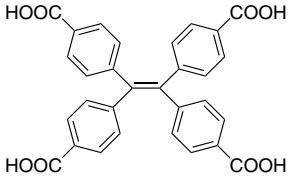
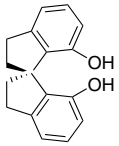
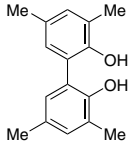


08-2029 **2-Isobutyrylcyclohexanone, 96% (~96% enol form)** *(39207-65-3)* — 1g, 5g
$C_{10}H_{16}O_2$; FW: 168.23; colorless liq.; m.p. 38°



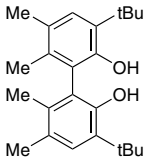
08-1235 NEW **2,6-Naphthalenedicarboxylic acid, min. 98%** *(1141-38-4)* — 5g, 25g
$C_{10}H_6(COOH)_2$; FW: 216.19; white pwdr.; m.p. >300°
Note: Ligand for MOF synthesis.

OXYGEN (Compounds)

08-2035	**(R)-(+)-5,5',6,6',7,7',8,8'-Octahydro-1,1'-bi-2-naphthol, 99%** *(65355-14-8)* $C_{20}H_{22}O_2$; FW: 294.40; off-white pwdr. 	250mg 1g
08-2036	**(S)-(-)-5,5',6,6',7,7',8,8'-Octahydro-1,1'-bi-2-naphthol, 99%** *(65355-00-2)* $C_{20}H_{22}O_2$; FW: 294.40; off-white pwdr.	250mg 1g
19-1600	**(R)-(-)-5,5',6,6',7,7',8,8'-Octahydro-3,3'-di-t-butyl-1,1'-bi-2-naphthol, dipotassium salt** *(350683-75-9)* *See* page 340	
19-1601	**(S)-(+)-5,5',6,6',7,7',8,8'-Octahydro-3,3'-di-t-butyl-1,1'-bi-2-naphthol, dipotassium salt** *See* page 340	
08-2037	**(3R,6R)-(-)-3,6-Octanediol, 99%** *(129619-37-0)* $C_2H_5C(OH)CH_2CH_2C(OH)C_2H_5$; FW: 146.23; colorless xtl.; m.p. 49-51°	250mg 1g
08-2038	**(3S,6S)-(+)-3,6-Octanediol, 99%** *(136705-66-3)* $C_2H_5C(OH)CH_2CH_2C(OH)C_2H_5$; FW: 146.23; colorless xtl.; m.p. 49-51°	250mg 1g
96-7052	**Paracyclophane Kit** *See* page 544	
08-2030	**(2R,4R)-(-)-2,4-Pentanediol, 99%** *(42075-32-1)* $C_5H_{12}O_2$; FW: 104.15; white xtl.; m.p. 48-50° *hygroscopic*	250mg 1g
08-2031	**(2S,4S)-(+)-2,4-Pentanediol, 99%** *(72345-23-4)* $C_5H_{12}O_2$; FW: 104.15; white xtl.; m.p. 48-50° *hygroscopic*	250mg 1g
08-1165	**1,4-Phenylenediacetic acid, 97%** *(7325-46-4)* $C_6H_4(CH_2COOH)_2$; FW: 194.18; white to off-white solid Note: Ligand for MOF synthesis. 	1g 5g
08-1650	**Polyethylene glycol sorbitan monolaurate (TWEEN® 20)** *(9005-64-5)* *See* page 168	
08-2040	**(S)-(+)-1,2-Propanediol, 99%** *(4254-15-3)* $CH_3CH(OH)CH_2OH$; FW: 76.10; clear, viscous liq.; b.p. 77°/9mm; f.p. 225°F; d. 1.040	1g 5g
08-3060	**1,1,2,2-Tetra(4-carboxylphenyl)ethylene, 99%** **H_4TCPE** *(1351279-73-6)* $C_{30}H_{20}O_8$; FW: 508.48; pale yellow pwdr. Note: Ligand for MOF synthesis. 	25mg 100mg
08-2065 NEW	**(R)-2,2',3,3'-Tetrahydro-1,1'-spirobi[indene]-7,7'-diol, 99%** *(223259-62-9)* $C_{17}H_{16}O_2$; FW: 252.31; white solid Note: Sold in collaboration with Daicel for research purposes only. 	250mg 1g
08-2043	**3,3',5,5'-Tetramethyl-2,2'-biphenol, 99%** *(26567-10-2)* $C_{16}H_{18}O_2$; FW: 242.31; white pwdr.; m.p. 134-136° 	100mg 500mg

OXYGEN (Compounds)

08-2045 **racemic-5,5',6,6'-Tetramethyl-3,3'-di- t-butyl-1,1'-biphenyl-2,2'-diol, 99% rac-BIPHEN H_2** *(101203-31-0)*
$C_{24}H_{34}O_2$; FW: 354.54; white to off-white xtl.; m.p. 163-165°
For detailed technical note visit strem.com.



5g
25g

08-2046 **(R)-(+)-5,5',6,6'-Tetramethyl-3,3'-di-t-butyl-1,1'- biphenyl-2,2'-diol, 99% (R)-BIPHEN H_2** *(329735-68-4)*
$C_{24}H_{34}O_2$; FW: 354.54; white pwdr.
For detailed technical note visit strem.com.

100mg
500mg
2g

08-2047 **(S)-(-)-5,5',6,6'-Tetramethyl-3,3'-di-t-butyl-1,1'- biphenyl-2,2'-diol, 99% (S)-BIPHEN H_2** *(205927-03-3)*
$C_{24}H_{34}O_2$; FW: 354.54; white pwdr.

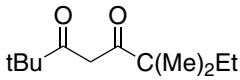
100mg
500mg
2g

Technical Note:
1. See 08-2046 (page 221)

08-2050 **2,2,6,6-Tetramethylheptane-3,5-dione, 98% TMHD** *(1118-71-4)*
$(CH_3)_3CC(O)CH_2C(O)C(CH_3)_3$; FW: 184.28; colorless to pale yellow liq. or low melting solid; b.p. 72-73°/6 mm; f.p. 153°F; d. 0.883

5g
25g
100g

08-2100 **2,2,6,6-Tetramethyl-3,5-octanedione, 98% (TMOD)** *(78579-61-0)*
$(CH_3)_3C(O)CH_2C(O)C(C_2H_5)(CH_3)_2$; FW: 198.31; colorless to pale yellow liq.



1g
5g

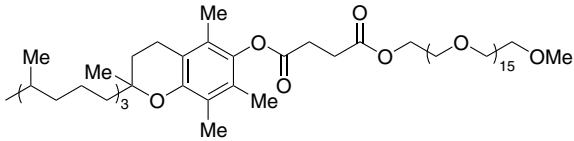
Technical Note:
1. Ligand of choice for the preparation of low melting, volatile beta-diketonate complexes.

References:
1. *Jpn. J. Appl. Phys.,* **1997**, *36*, 11, 6871
2. *Advanced Materials for Optics and Electronics,* **2000**, *10*, 3, 5, 201

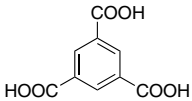
09-6950 **2-Thenoyltrifluoroacetone, 99% (TTA)** *(326-91-0)*
See page 65

08-2180 **DL-α-Tocopherol methoxypolyethylene glycol succinate solution (2 wt% in water) TPGS-750-M**
$C_{66}H_{117}O_{21}$; FW: 1246.62; colorless liq.
Note: Surfactant for nanomaterial synthesis.
For detailed technical note visit strem.com.

10ml
50ml



08-0195 **1,3,5-Tricarboxybenzene, min. 95% (Trimesic acid) BTC** *(554-95-0)*
$C_6H_3(COOH)_3$; FW: 210.14; white pwdr.
Note: Ligand for MOF synthesis.



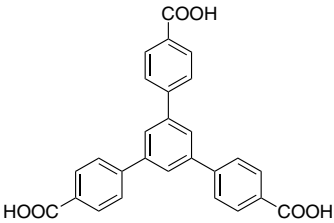
50g
250g

09-7210 **1,1,1-Trifluoroacetylacetone, min. 98%** *(367-57-7)*
See page 65

08-2500 HAZ **Trimethyloxonium tetrafluoroborate, min. 95%** *(420-37-1)*
$(CH_3)_3OBF_4$; FW: 147.93; white to off-white xtl.
heat sensitive, (store cold)

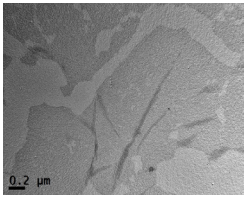
5g
25g

08-0635 **1,3,5-Tris(4-carboxyphenyl)benzene, min. 98% BTB** *(50446-44-1)*
$C_{27}H_{18}O_6$; FW: 438.43; white to yellow solid; m.p. 322-327°
Note: Ligand for MOF synthesis.



1g
5g

PALLADIUM (Elemental Forms)

96-6715	**BASF Blocking Group Removal Catalyst Kit** *See* page 467	
96-6717	**BASF Heterogeneous Catalyst Kit** *See* page 467	
96-6719	**BASF Palladium Catalyst Kit** *See* page 468	
96-6670	**Evonik Heterogeneous Catalyst Kit** *See* page 484	
96-6672	**Evonik Heterogeneous Palladium Catalyst Kit** *See* page 484	
28-0015 NEW	**Nickel/palladium alloy nanoparticle on graphene ($G\text{-}Ni_{33}Pd_{67}$)** black pwdr. Note: U.S. Patent Application 14/667,859. **For detailed technical note visit strem.com.** 	25mg 100mg
46-1706	**Palladium, 10% on activated carbon, Pearlman (50-70% wetted powder) Evonik Noblyst® P1070** *(7440-05-3)* wetted, black pwdr. Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Palladium Catalyst Kit component.	10g 50g
46-1890 HAZ	**Palladium, 5% on activated carbon, reduced, dry powder** *(7440-05-3)* Pd on carbon; pwdr.; SA: ~1050 m^2/g; P.Vol. 0.61 cc/g	5g 25g 100g
46-1900 HAZ	**Palladium, 10% on activated carbon, reduced, dry powder** *(7440-05-3)* Pd on carbon; pwdr.; SA: ~1000 m^2/g; P.Vol. 0.61 cc/g	2g 10g 50g
46-1907	**Palladium, 3% on activated carbon, reduced, 50% water wet paste (Escat™ 1911)** *(7440-05-3)* black pwdr. (d50=38 µm); SA: 1500m^2/g Note: Sold in collaboration with BASF for research purposes only. BASF Blocking Group Removal Catalyst Kit component.	10g 50g
46-1908	**Palladium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 1941)** *(7440-05-3)* black pwdr. (d50=38 µm); SA: 1500m^2/g Note: Sold in collaboration with BASF for research purposes only. BASF Blocking Group Removal Catalyst Kit component.	10g 50g
46-1909	**Palladium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 1961)** *(7440-05-3)* black pwdr. (d50=20 µm); SA: 850m^2/g Note: Sold in collaboration with BASF for research purposes only. BASF Blocking Group Removal Catalyst Kit component.	10g 50g
46-1911	**Palladium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 1971)** *(7440-05-3)* black pwdr. (d50=27 µm); SA: 900m^2/g Note: Sold in collaboration with BASF for research purposes only. BASF Blocking Group Removal Catalyst Kit component.	10g 50g
46-1707	**Palladium, 20% on activated carbon (Pearlman's catalyst), unreduced, 50% water wet paste (Escat™ 1951)** *(7440-05-3)* black pwdr. (d50=24 µm); SA: 850m^2/g Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.	5g 25g

Technical Note:

1. Escat™ 1951 catalyst is recommended for a broad range of reactions common to palladium on carbon catalysts. Specifically, it is well suited for removal of protecting groups such as benzyl, FMOC and others.

PALLADIUM (Elemental Forms)

46-1710 **Palladium, 0.6% on activated carbon, 50% water-wet paste (NanoSelect LF 100)** *(7440-05-3)* — 5g, 25g
black solid (d50=25 µm)
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.

Technical Note:
1. NanoSelect LF 100 is a lead-free, water-wet, catalyst containing metal crystallites sizes of around 7 nm, and a mean particle size of 25 microns. The metal crystallites are supported on a carbon powder. The presence of nanometer-sized metal particles greatly increases the metal surface area available per gram of catalyst, and boosts catalytic activity. The catalyst is recommended for use in hydrogenation reactions leading to the partial reduction of functional groups. It is specifically suited for the selective hydrogenation of alkynes to alkenes, with a high selectivity for cis-alkenes.

46-1703 **Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1086** *(7440-05-3)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Palladium Catalyst Kit component.

46-1740 **Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1090** *(7440-05-3)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Palladium Catalyst Kit component.

46-1747 **Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1092** *(7440-05-3)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Palladium Catalyst Kit component.

46-1743 **Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1093** *(7440-05-3)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Palladium Catalyst Kit component.

46-1750 **Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1109** *(7440-05-3)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Palladium Catalyst Kit component.

46-1901 **Palladium, 5% on activated peat carbon, reduced, 50% water wet paste (Escat™ 1621)** *(7440-05-3)* — 10g, 50g
black pwdr. (d50=15 µm); SA: 850m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.

Technical Note:
1. Escat™ 1621 catalyst is recommended for a broad range of reactions common to palladium on carbon catalysts, such as hydrogenolysis under hydrogen transfer conditions.

46-1902 HAZ **Palladium, 5% on activated wood carbon, reduced, dry (Escat™ 1431)** *(7440-05-3)* — 10g, 50g
black pwdr. (d50=18 µm); SA: 900m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component.

Technical Note:
1. Escat™ 1431 catalyst is recommended for a broad range of reactions common to palladium on carbon catalysts, where water is detrimental to the selectivity of the reaction. Active over a wide range of conditions.

PALLADIUM (Elemental Forms)

46-1905	**Palladium, 10% on activated wood carbon, reduced, 50% water wet (Escat™ 1931)** *(7440-05-3)* black pwdr. (d50=38 µm); SA: 1500m²/g Note: Sold in collaboration with BASF for research purposes only. BASF Blocking Group Removal Catalyst Kit component. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.	10g 50g

Technical Note:
1. Escat™ 1931 catalyst is recommended for a broad range of reactions commonly catalyzed by palladium on carbon. Specifically, it is well suited for removal of protecting groups such as benzyl, FMOC and others.

46-1903	**Palladium, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 1421)** *(7440-05-3)* black pwdr. (d50=18 µm); SA: 900m²/g Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.	10g 50g

Technical Note:
1. Escat™ 1421 catalyst is recommended for a broad range of reactions commonly catalyzed by palladium on carbon.

46-1904	**Palladium, 5% on activated wood carbon, unreduced, 50% water wet paste (Escat™ 1471)** *(7440-05-3)* black pwdr. (d50=18 µm); SA: 900m²/g Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.	10g 50g

Technical Note:
1. Escat™ 1471 catalyst is recommended for a broad range of reactions common to palladium on carbon catalysts. Specifically, it is well suited for hydrogenolysis reactions using molecular hydrogen. Active over a wide range of conditions.

46-1906	**Palladium, 10% on activated wood carbon, unreduced, 50% water wet (Escat™ 1921)** *(7440-05-3)* black pwdr. (d50=38 µm); SA: 1500m²/g Note: Sold in collaboration with BASF for research purposes only. BASF Blocking Group Removal Catalyst Kit component. BASF Palladium Catalyst Kit component.	10g 50g

Technical Note:
1. Escat™ 1921 catalyst is recommended for a broad range of reactions common to palladium on carbon catalysts. Specifically, it is well suited for removal of protecting groups such as benzyl, FMOC and others.

46-1920	**Palladium, 0.5% on alumina, reduced** *(7440-05-3)* Pd on alumina; 1/8" x 1/8" pellets; SA: ~90 m²/g	25g 100g
46-1950	**Palladium, 5% on alumina, reduced, dry powder** *(7440-05-3)* Pd on alumina; pwdr.	5g 25g 100g
46-1951	**Palladium, 5% on alumina powder, reduced, dry (Escat™ 1241)** *(7440-05-3)* gray pwdr. (d50=70 µm); SA: 110m²/g Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Palladium Catalyst Kit component.	5g 25g

Technical Note:
1. Escat™ 1241 catalyst is recommended for selective hydrogenation reactions such as alkyne reduction in the presence of carboxylic groups. The particle size of the catalyst is ideal for allowing fast separation from the reaction mixture.

46-1970	**Palladium, 5% on barium carbonate, reduced** *(7440-05-3)* Pd on $BaCO_3$; pwdr.; SA: high	10g 50g
46-1989	**Palladium, 5% on barium sulfate, reduced** *(7440-05-3)* gray to black pwdr.; SA: ~2.8m²/g; P.Vol. 0.61 cc/g	10g 50g
46-1990	**Palladium, 5% on barium sulfate, unreduced** *(7440-05-3)* Pd on $BaSO_4$; brown pwdr.; SA: ~2.8m²/g; P.Vol. 0.61 cc/g	10g 50g
46-1830 HAZ	**Palladium black (99.9%)** *(7440-05-3)* Pd; FW: 106.40; pwdr.; SA: ~23 m²/g; m.p. 1552°; b.p. 3140°; d. 12.02	1g 5g
46-2020	**Palladium, 5% on calcium carbonate, lead-poisoned (LINDLAR CATALYST)** *(7440-05-3)* Pd on $CaCO_3$; pwdr.; SA: 5-10 m²/g; P.Vol. 0.38 cc/g	10g 50g
46-2010	**Palladium, 5% on calcium carbonate, unpoisoned, reduced** *(7440-05-3)* Pd on $CaCO_3$; pwdr.; SA: 5-10 m²/g	10g 50g
46-2015	**Palladium, 5% on calcium carbonate, unpoisoned, unreduced** *(7440-05-3)* Pd on $CaCO_3$; light brown pwdr.; SA: 12m²/g	10g 50g

PALLADIUM (Elemental Forms)

46-2022 **Palladium, 5% on calcium carbonate, unreduced, dry (Escat™ 1371)** 5g
(7440-05-3) 25g
brownish pwdr. (d50=3 µm); SA: 7m²/g
Note: Sold in collaboration with BASF for research purposes only.

Technical Note:
1. Escat™ 1371 catalyst is recommended for selective hydrogenation reactions in which other palladium catalysts can lead to over-hydrogenation. Additional dopants can be added for improved performance.

46-2000 **Palladium foil (99.95%)** *(7440-05-3)* 25 x 25mm
Pd; FW: 106.40; 0.1mm thick (~3g/50 x 50mm); m.p. 1552°; b.p. 3140°; d. 12.02 50 x 50mm

Palladium nanoparticles - surfactant and reactant-free (pure), manufactured via laser ablation
(7440-05-3)
See page 162

46-2085 **Palladium, 1% on polyethylenimine/SiO_2 ROYER Pd CATALYST** *(7440-05-3)* 2g
Pd on support; 20-40 mesh beads 10g
50g

46-2087 **Palladium, 1% on polyethylenimine/SiO_2 ROYER Pd CATALYST** *(7440-05-3)* 2g
Pd on support; 40-200 mesh pwdr. 10g

46-2089 **Palladium, 3% on polyethylenimine/SiO_2 ROYER Pd CATALYST** *(7440-05-3)* 2g
Pd on support; 40-200 mesh pwdr. 10g
50g

93-4631 **Palladium powder (99.95%)** *(7440-05-3)* 1g
HAZ Pd; FW: 106.40; -60 mesh; m.p. 1552°; b.p. 3140°; d. 12.02 5g

93-4630 **Palladium powder (99.999%) PURATREM** *(7440-05-3)* 1g
HAZ Pd; FW: 106.40; -22 mesh; m.p. 1552°; b.p. 3140°; d. 12.02 5g

46-2113 **Palladium rod (99.95+%)** *(7440-05-3)* 20mm
Pd; FW: 106.40; 6.35 mm dia. (~7.72g/20mm); m.p. 1552°; b.p. 3140°; d. 12.02 100mm

46-2116 **Palladium shot (99.9%)** *(7440-05-3)* 1g
Pd; FW: 106.40; bluish-gray gran.; 6.35mm and down; m.p. 1552°; b.p. 3140°; d. 12.02 5g

46-2090 **Palladium, 5% on silica powder, reduced, dry (Escat™ 1351)** *(7440-05-3)* 5g
gray pwdr. (d50=40 µm); SA: 400m²/g 25g
Note: Sold in collaboration with BASF for research purposes only.

Technical Note:
1. Escat™ 1351 catalyst is recommended for selective hydrogenation reactions. The silica support enables totally different catalytic reactivity compared to carbon-based catalysts.

46-2119 **Palladium sponge (99.9%)** *(7440-05-3)* 1g
Pd; FW: 106.40; bluish-gray pwdr.; m.p. 1552°; b.p. 3140°; d. 12.02 5g

46-2123 **Palladium sponge (99.95%)** *(7440-05-3)* 1g
Pd; FW: 106.40; gray solid; m.p. 1552°; b.p. 3140°; d. 12.02 5g

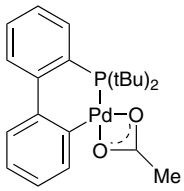
46-1711 **Palladium, 0.5% on titanium silicate, 50% water-wet paste (NanoSelect LF 200)** 5g
(7440-05-3) 25g
black solid (d50=25 µm)
Note: Sold in collaboration with BASF for research purposes only.

Technical Note:
1. NanoSelect LF 200 is a lead-free, water-wet, catalyst containing metal crystallites sizes of around 7 nm, and a mean particle size of 25 microns. The metal crystallites are supported on titanium silicate powder. The presence of nanometer-sized metal particles greatly increases the metal surface area available per gram of catalyst, and boosts catalytic activity. The catalyst is recommended for use in hydrogenation reactions leading to the partial reduction of functional groups. It is specifically suited for the selective hydrogenation of alkynes to alkenes, with a high selectivity for cis-alkenes.

46-2125 **Palladium wire (99.9%)** *(7440-05-3)* 10cm
Pd; FW: 106.40; 1.0mm dia. (~0.94g/10cm); m.p. 1552°; b.p. 3140°; d. 12.02 50cm

PALLADIUM (Compounds)

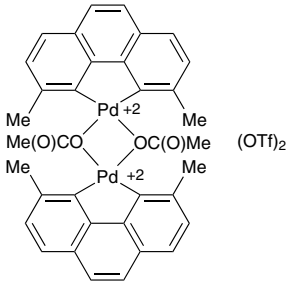
46-0025 **Acetato(2'-di-t-butylphosphino-1,1'-biphenyl-2-yl) palladium(II), min. 98%** *(577971-19-8)* 250mg
$C_{22}H_{29}O_2PPd$; FW: 462.86; off-white pwdr. 1g
For detailed technical note visit strem.com.



PALLADIUM (Compounds)

46-0970 NEW

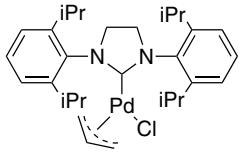
Acetato(2,9-dimethyl-1,10-phenanthroline)palladium(II) dimer bis(trifluoromethanesulfonate), 99%
(959698-19-2)
$C_{34}H_{30}F_6N_4O_{10}Pd_2S_2$; FW: 1045.59; dark orange pwdr.
For detailed technical note visit strem.com.



100mg
500mg

46-0039

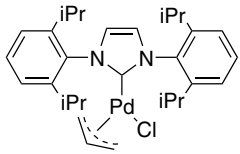
Allylchloro[1,3-bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene]palladium(II), 97%
(478980-01-7)
$C_{30}H_{43}ClN_2Pd$; FW: 573.55; white pwdr.
Note: Sold in collaboration with Umicore for research purposes only. Patent WO 2004014550, US 6,316,380 and EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0040

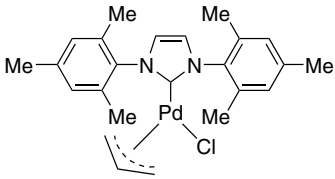
Allylchloro[1,3-bis(2,6-di-i-propylphenyl) imidazol-2-ylidene]palladium(II), 98%
(478980-03-9)
$C_{30}H_{41}ClN_2Pd$; FW: 571.53; white pwdr.; m.p. 190° dec.
Note: Sold in collaboration with Umicore for research purposes only. Patent WO 2004014550, US 6,316,380 and EP 721 953 A1.



250mg
1g

46-0045

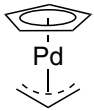
Allylchloro[1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene] palladium(II), 98% *(478980-04-0)*
$C_{24}H_{29}ClN_2Pd$; FW: 487.37; white pwdr.
Note: Sold in collaboration with Umicore for research purposes only. Patent WO 2004014550, US 6,316,380 and EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0065 NEW

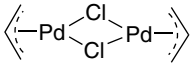
Allyl(cyclopentadienyl)palladium(II), 98% *(1271-03-0)*
$C_8H_{10}Pd$; FW: 212.58; red solid
air sensitive, (store cold)
For detailed technical note visit strem.com.



100mg
500mg
2g

46-0100

Allylpalladium chloride dimer, min. 98% *(12012-95-2)*
$[C_3H_5PdCl]_2$; FW: 365.86; yellow xtl.; m.p. 120° dec.
air sensitive, (store cold)
Note: Palladium Kit component.



500mg
2g
10g

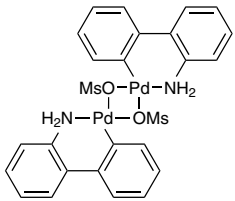
46-0101

Allylpalladium chloride dimer, supported on poly(ethylene glycol)polystyrene graft copolymer beads [~6% $(C_3H_5PdCl)_2$]
$[C_3H_5PdCl]_2$; yellow solid
air sensitive, (store cold)
For detailed technical note visit strem.com.

250mg

46-1558

(2'-Amino-1,1'-biphenyl-2-yl) methanesulfonatopalladium(II) dimer, min. 98%
(1435520-65-2)
$C_{26}H_{26}N_2O_6Pd_2S_2$; FW: 739.47; off-white to tan pwdr.
air sensitive
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



250mg
1g

PALLADIUM (Compounds)

93-4601 **Ammonium hexachloropalladate(IV), 99+%** *(19168-23-1)*
See page 5

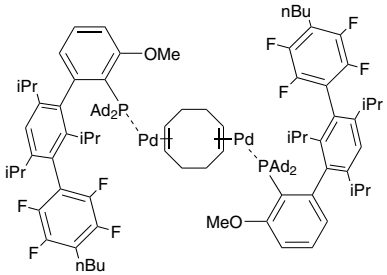
93-4602 **Ammonium tetrachloropalladate(II), 99%** *(13820-40-1)*
See page 6

02-1275 **Ammonium tetrachloropalladate(II) (99.998%-Pd) PURATREM**
(13820-40-1)
See page 6

46-0700 NEW
Bis(acetonitrile)palladium(II) p-toluenesulfonate, 98% *(114757-66-3)*
$C_{18}H_{20}N_2O_6S_2Pd$; FW: 530.91; yellow pwdr.
air sensitive, (store cold)
50mg
250mg

46-0200 amp
Bis[1,2-bis(diphenylphosphino)ethane]palladium(0), 98% *(31277-98-2)*
$Pd[(C_6H_5)_2PCH_2CH_2P(C_6H_5)_2]_2$; FW: 903.25; orange pwdr.
air sensitive
1g
5g

46-0241 NEW
Bis{[2-(Diadamantylphosphino)-3-methoxy-2',4',6'-tri-i-propyl-3'-(2,3,5,6-tetrafluoro-4-butylphenyl)-1,1'-biphenyl] palladium(0)}1,5-cyclooctadiene, [AlPhos Palladium complex]
(1805783-51-0)
$C_{112}H_{146}F_8O_2P_2Pd_2$; FW: 1951.13; yellow-green solid
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.

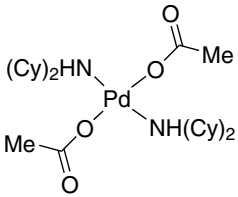


50mg
250mg

96-3735 **[1,1'-Bis(dialkyl/diarylphosphino)ferrocene]palladium(II) dichloro Catalyst Kit**
See page 468

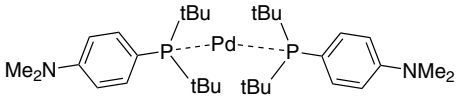
46-0210 **Bis(dibenzylideneacetone)palladium(0)** *(32005-36-0)*
$(C_6H_5CH{=}CHCOCH{=}CHC_6H_5)_2Pd$; FW: 575.00; purple pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.
250mg
1g
5g
25g

46-0228 **trans-Bis(dicyclohexylamine)bis(acetato)palladium(II) DAPCy** *(628339-96-8)*
$Pd[(C_6H_{11})_2NH]_2(CH_3COO)_2$; FW: 587.14; yellow xtl.
For detailed technical note visit strem.com.



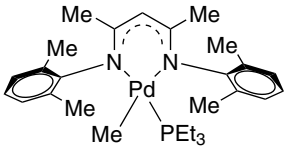
250mg
1g

46-0828 **Bis{[4-(N,N-dimethylamino) phenyl]di-t-butylphosphino} palladium(0), min. 98% Pdamphos** *(1233717-68-4)*
$C_{32}H_{56}N_2P_2Pd$; FW: 637.17; yellow-brown pwdr.
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only.
For detailed technical note visit strem.com.



250mg
1g

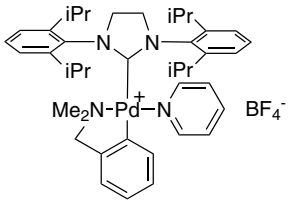
46-0230 **N,N'-[Bis(2,6-dimethylphenyl)-1,3-dimethyl-1,3-propanediylidene](methyl)(triethylphosphine)palladium(II), min. 97%**
(1224879-40-6)
$C_{28}H_{43}N_2PPd$; FW: 545.05; light brown pwdr.
air sensitive
For detailed technical note visit strem.com.



50mg
250mg

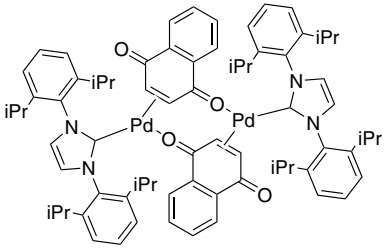
PALLADIUM (Compounds)

46-0226 **[1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydro-imidazol-2-ylidene]{2-[(dimethylamino-kN) methyl]phenyl-kC}(pyridine)palladium(II) tetrafluoroborate, min. 97% PACC™**
$[C_{41}H_{55}N_4Pd]BF_4^-$; FW: 797.13; pale yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US App. No. 61/324,022.
For detailed technical note visit strem.com.



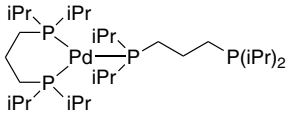
100mg
500mg

46-0220 **1,3-Bis(2,6-di-i-propylphenyl) imidazol-2-ylidene(1,4-naphtho-quinone)palladium(0) dimer, 96%** *(649736-75-4)*
$[(C_{27}H_{36}N_2)(C_{10}H_6O_2)Pd]_2$;
FW: 1306.3; violet solid
air sensitive
Note: Sold in collaboration with Umicore for research purposes only. Patent WO 2004014550, US 6,316,380 and EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0205 **[P,P'-1,3-Bis(di-i-propylphosphino)propane] [P-1,3-bis(di-i-propylphosphino)propane] palladium(0), 98%** *(123333-45-9)*
$[CH_2\{CH_2(P(C_3H_7)_2\}_2]Pd[(C_3H_7)_2PCH_2CH_2CH_2P(C_3H_7)_2]$; FW: 659.18; yellow oil to solid
air sensitive, (store cold)
For detailed technical note visit strem.com.

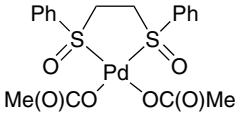


250mg
1g

46-0240 **Bis(2-methylallyl)palladium chloride dimer, min. 98%** *(12081-18-4)*
$[C_4H_7PdCl]_2$; FW: 393.94; yellow pwdr.; m.p. 168-170°
air sensitive

500mg
2g

46-0245 **1,2-Bis(phenylsulfinyl)ethane palladium(II) acetate, min. 98% Christina White Catalyst** *(858971-43-4)*
$C_{18}H_{20}O_6PdS_2$; FW: 502.90; orange to brown pwdr.
(store cold)
For detailed technical note visit strem.com.



250mg
1g

46-0248 **Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)palladium(II), min. 98% [Pd(TMHD)$_2$]** *(15214-66-1)*
$Pd(C_{11}H_{19}O_2)_2$; FW: 472.95; orange pwdr.

1g
5g

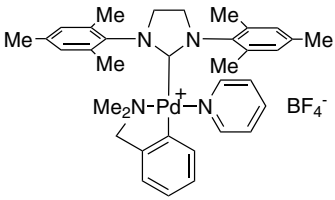
46-0252 **Bis(tri-t-butylphosphine)palladium(0), 98%** *(53199-31-8)*
$Pd[P(C_4H_9)_3]_2$; FW: 511.06; off-white xtl.
air sensitive
For detailed technical note visit strem.com.

250mg
1g
5g
25g

46-0260 amp **Bis(tricyclohexylphosphine)palladium(0), 98%** *(33309-88-5)*
$Pd[P(C_6H_{11})_3]_2$; FW: 667.28; off-white xtl.
air sensitive, (store cold)

250mg
1g
5g

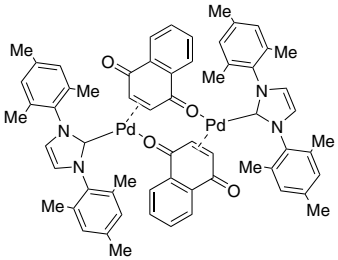
46-0224 **[1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydro-imidazol-2-ylidene]{2-[(dimethylamino-kN) methyl]phenyl-kC}(pyridine)palladium (II) tetrafluoroborate, min. 97% PACC™**
$[C_{35}H_{43}N_4Pd]BF4^-$; FW: 712.97; pale yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US App. No. 61/324,022.
For detailed technical note visit strem.com.



100mg
500mg

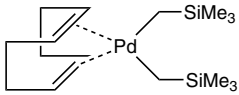
PALLADIUM (Compounds)

46-0265 **1,3-Bis(2,4,6-trimethylphenyl)imidazol-2-ylidene(1,4-naphthoquinone)palladium(0) dimer, 96%** *(467220-49-1)*
$[(C_{21}H_{24}N_2)(C_{10}H_6O_2)Pd]_2$; FW: 1138.00; orange-red pwdr.
air sensitive
Note: Sold in collaboration with Umicore for research purposes only. Patent WO 2004014550, US 6,316,380 and EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0308 NEW **Bis[(trimethylsilyl)methyl](1,5-cyclooctadiene) palladium(II), 98%** *(225931-80-6)*
$C_{16}H_{34}PdSi_2$; FW: 389.03; gray pwdr.
air sensitive, (store cold)



250mg
1g

46-0262 **Bis(tri-o-tolylphosphine)palladium(0), min. 98%** *(69861-71-8)*
$C_{42}H_{42}P_2Pd$; FW: 715.15; yellow xtl.
air sensitive, (store cold)
For detailed technical note visit strem.com.

250mg
1g
5g

96-5505 **Buchwald Palladacycle Precatalyst Kit 2a (Methanesulfonato-2'-amino-1,1'-biphenyl-2-yl- Palladacycles Gen. 3)**
See page 471

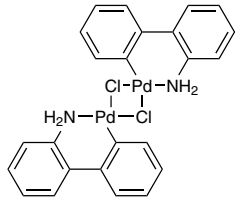
96-5508 **Buchwald Palladacycle Precatalyst Kit 3 (Chloro- 2'-amino-1,1'-biphenyl-2-yl - Palladacycles Gen. 2)**
See page 470

96-5503 **Buchwald Palladacycle Precatalyst Kit 1 (Chloro-2-aminoethylphenyl-Palladacycles Gen. 1)**
See page 469

96-5506 **Buchwald Palladacycle Precatalyst Kit 2b (Methanesulfonato-2'-amino-1,1'-biphenyl-2-yl- Palladacycles Gen. 3)**
See page 473

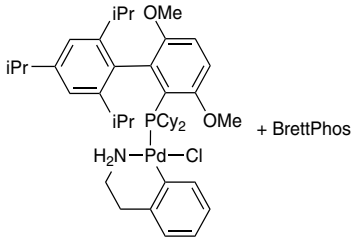
96-5512 **Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methyl-amino-1,1'-biphenyl-2-yl- Palladacycles Gen. 4)**
See page 475

46-1560 **Chloro(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dimer, min. 98%** *(847616-85-7)*
$C_{24}H_{20}Cl_2N_2Pd_2$; FW: 620.17; pale gray pwdr.
air sensitive



250mg
1g

46-0367 **Chloro{[BrettPhos][2-(2-aminoethylphenyl] palladium(II)]}/[BrettPhos] admixture (molar PdP/P = 1:1)**
white pwdr.
Note: Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.

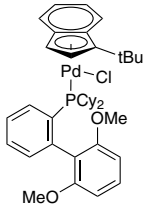


100mg
500mg

PALLADIUM (Compounds)

46-0435 NEW

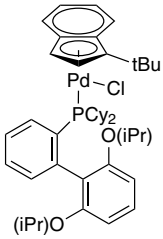
Chloro(1-t-butylindenyl)[2-(dicyclohexylphosphino)-2',6'-di-methoxy-1,1'-biphenyl]palladium(II) *(1779569-07-1)*
$C_{39}H_{52}ClO_2PPd$; FW: 723.06; orange pwdr.
Note: For research and development only. Not for use in humans.
Patents 62/061,319. US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



100mg
500mg

46-0440 NEW

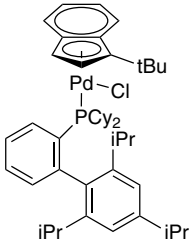
Chloro(1-t-butylindenyl)[2-(dicyclohexylphosphino)-2',6'-di-i-propoxy-1,1'-biphenyl]palladium(II)
(1779569-08-2)
$C_{43}H_{58}ClO_2PPd$; FW: 779.77; orange pwdr.
Note: For research and development only. Not for use in humans. Patents 62/061,319. US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



100mg
500mg

46-0437 NEW

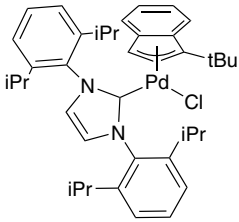
Chloro(1-t-butylindenyl)[2-(dicyclohexylphosphino)-2',4',6'-tri-i-propyl-1,1'-biphenyl]palladium(II)
(1779569-06-0)
$C_{46}H_{64}ClPPd$; FW: 789.85; orange pwdr.
Note: For research and development only. Not for use in humans. Patents 62/061,319. US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



100mg
500mg

46-0815 NEW

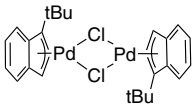
Chloro(1-t-butylindenyl)[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-yl]palladium(II), 98%
$C_{40}H_{41}ClN_2Pd$; FW: 691.61; orange pwdr.
For detailed technical note visit strem.com.



100mg
500mg

46-0868 NEW

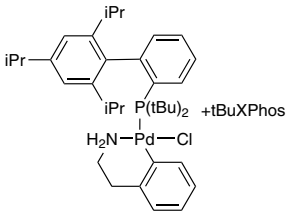
Chloro(1-t-butylindenyl)palladium(II) dimer, 98%
(1779569-01-5)
$C_{26}H_{30}Cl_2Pd_2$; FW: 626.26; brown pwdr.
For detailed technical note visit strem.com.



100mg
500mg

46-0364

Chloro{[t-BuXPhos][2-(2-aminoethylphenyl] palladium(II)}/[t-BuXPhos] admixture (molar PdP/P = 1:1)
white pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.

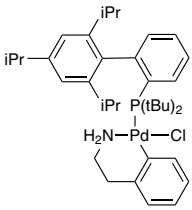


100mg
500mg

PALLADIUM (Compounds)

46-0264

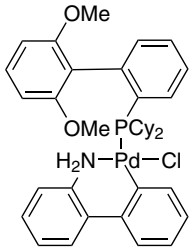
Chloro(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)[2-(2-aminoethyl)phenyl] palladium(II), min. 98% [t-BuXPhos Palladacycle Gen. 1] *(1142811-12-8)*
$C_{37}H_{55}ClNPPd$; FW: 686.69; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 1 component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

46-0283

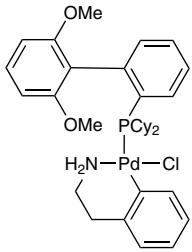
Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II) min. 98% [SPhos Palladacycle Gen. 2]
(1375325-64-6)
$C_{38}H_{45}ClNO_2PPd$; FW: 720.62; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 3 component.
For detailed technical note visit strem.com.



250mg
1g
5g
25g

46-0269

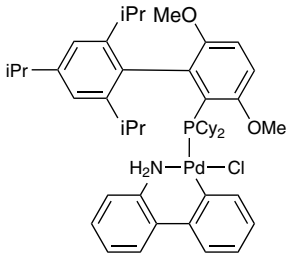
Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)[2-(2-aminoethylphenyl)]palladium(II) methyl-t-butylether adduct, min. 98% [SPhos Palladacycle Gen. 1] *(1028206-58-7)*
$C_{34}H_{45}ClNO_2PPd$; FW: 672.57; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 1 component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0292

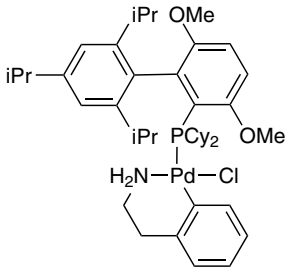
Chloro(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 2]
(1451002-39-3)
$C_{47}H_{63}ClNO_2PPd$; FW: 846.86; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 3 component.
For detailed technical note visit strem.com.



100mg
500mg
2g

46-0267

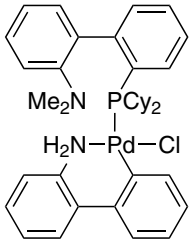
Chloro[2-(dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl][2-(2-aminoethyl)phenyl]palladium(II), min. 98% [BrettPhos Palladacycle Gen. 1]
(1148148-01-9)
$C_{43}H_{63}ClNO_2PPd$; FW: 798.81; white pwdr.
Note: Patents US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 1 component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

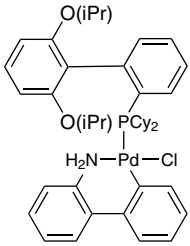
PALLADIUM (Compounds)

46-0232 **Chloro[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DavePhos Palladacycle Gen. 2]**
$C_{38}H_{46}ClN_2PPd$; FW: 703.63; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087.



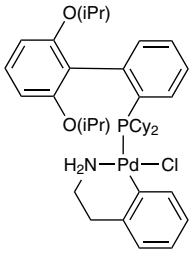
250mg
1g

46-0286 **Chloro(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [RuPhos Palladacycle Gen. 2]** *(1375325-68-0)*
$C_{42}H_{53}ClNO_2PPd$; FW: 776.72; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 3 component.
For detailed technical note visit strem.com.



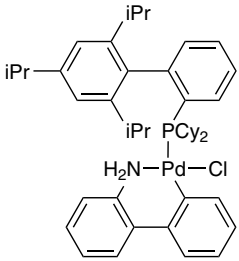
250mg
1g
5g

46-0266 **Chloro(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)[2-(2-aminoethylphenyl)]palladium(II), methyl-t-butylether adduct, min. 98% [RuPhos Palladacycle Gen. 1]** *(1028206-60-1)*
$C_{38}H_{53}ClNO_2PPd$; FW: 728.68; off-white to beige pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Buchwald Palladacycle Precatalyst Kit 1 component.
For detailed technical note visit strem.com.



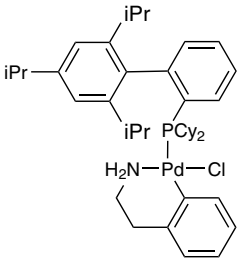
100mg
500mg
2g
10g

46-0281 **Chloro(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [XPhos Palladacycle Gen. 2]** *(1310584-14-5)*
$C_{45}H_{59}ClNPPd$; FW: 786.80; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087.
Buchwald Palladacycle Precatalyst Kit 3 component.
For detailed technical note visit strem.com.



250mg
1g
5g
25g

46-0268 **Chloro(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)[2-(2-aminoethyl)phenyl] palladium(II) methyl-t-butylether adduct, min. 98% [XPhos Palladacycle Gen. 1]** *(1028206-56-5)*
$C_{41}H_{59}ClNPPd$; FW: 738.76; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087.
Buchwald Palladacycle Precatalyst Kit 1 component.
For detailed technical note visit strem.com.

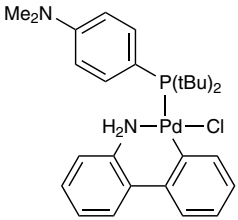


250mg
1g
5g
25g

PALLADIUM (Compounds)

46-0342

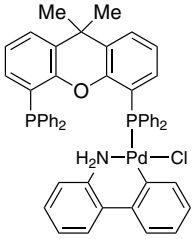
Chloro{[4-(N,N-dimethylamino)phenyl]di-t-butylphosphino}(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [Amphos Palladacycle Gen. 2]
$C_{28}H_{38}ClN_2PPd$; FW: 575.46; beige to tan pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



250mg
1g

46-0955

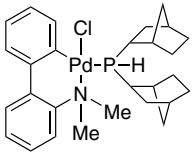
Chloro[9,9-dimethyl-4,5-bis(diphenylphosphino) xanthene][2'-amino-1,1'-biphenyl]palladium(II) dichloromethane adduct, min. 98% [Xantphos Palladacycle Gen. 2] *(1375325-77-1)*
$C_{51}H_{42}ClNOP_2Pd$; FW: 888.71; pale yellow pwdr.
Note: Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g

46-0270

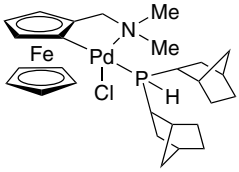
Chloro(di-2-norbornylphosphino)(2'-dimethyl-amino-1,1'-biphenyl-2-yl)palladium(II), 97% min. *(359803-53-5)*
$[C_{12}H_8N(CH_3)_2]PdCl[HP(C_7H_{11})_2]$; FW: 560.45; beige pwdr.; m.p. ~165° dec.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0272

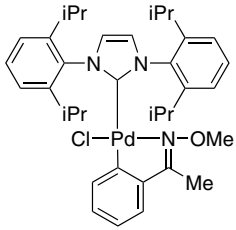
Chloro(di-2-norbornylphosphino)(2-dimethyl-aminomethylferrocen-1-yl)palladium(II), min. 97% *(614753-51-4)*
$C_{27}H_{39}ClFeNPPd$; FW: 606.31; beige pwdr.
Note: Sold in collaboration with Solvias for research purposes only. EP 1132361 (B1), 2001.
For detailed technical note visit strem.com.



250mg
1g
5g

46-1050
NEW

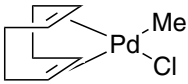
Chloro{2-[1-(N-methoxy)iminoethyl]phenyl} {[1,3-bis(2,6-di-i-propylphenyl]imidzole-2-ylidene}palladium(II) *(1511859-41-8)*
$C_{36}H_{46}ClN_3OPd$; FW: 678.64; pale yellow pwdr.
For detailed technical note visit strem.com.



50mg
250mg

46-0255

Chloromethyl(1,5-cyclooctadiene)palladium(II), 99% *(63936-85-6)*
$PdCl(CH_3)(C_8H_{12})$; FW: 265.09; light grey pwdr.; m.p. 124-129°
air sensitive, (store cold)

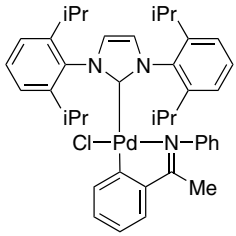


250mg
1g

PALLADIUM (Compounds)

46-1058 NEW

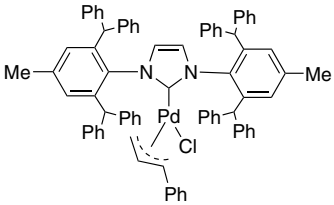
Chloro{2-[(1-(N-phenyl)iminoethyl]phenyl}{[1,3-bis(2,6-di-i-propylphenyl]imidzole-2-ylidene}palladium(II) *(1905460-13-0)*
$C_{41}H_{48}ClN_3Pd$; FW: 724.71; pale yellow pwdr.
For detailed technical note visit strem.com.



50mg
250mg

46-0298 NEW

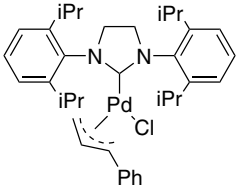
Chloro[(1,2,3-η)-1-phenyl-2-propen-1-yl]-{[1,3-bis[2,6-bis(diphenylmethyl)-4-methyl-phenyl]-2H-imidazol-2-ylidene}palladium(II), min. 97% *(1380314-24-8)*
$C_{78}H_{65}ClN_2Pd$; FW: 1172.24; yellow pwdr.
For detailed technical note visit strem.com.



100mg
500mg

46-0274

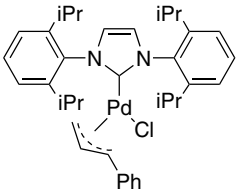
Chloro[(1,2,3-η)-3-phenyl-2-propenyl][1,3-bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene] palladium(II), min. 97% *(884879-24-7)*
$C_{36}H_{47}ClN_2Pd$; yellow microxtls.
Note: Sold in collaboration with Umicore. WO 2004014550, US 6,316,380, EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0276

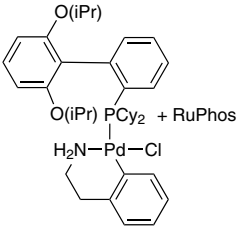
Chloro[(1,2,3-η)-3-phenyl-2-propenyl][1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene] palladium(II), min. 97% *(884879-23-6)*
$C_{36}H_{45}ClN_2Pd$; FW: 647.65; yellow microxtls.
Note: Sold in collaboration with Umicore for research purposes only. WO 2004014550 US 6,316,380, EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0366

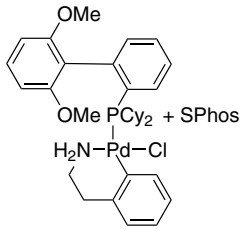
Chloro{[RuPhos][2-(2-aminoethylphenyl]palladium(II)}/[RuPhos] admixture (molar PdP/P = 1:1)
white pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



100mg
500mg

46-0369

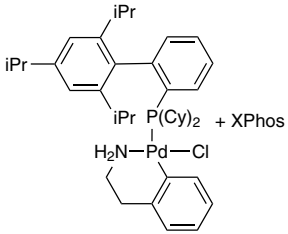
Chloro{[S-Phos][2-(2-aminoethylphenyl]palladium(II)}/[S-Phos] admixture (molar PdP/P = 1:1)
white pwdr.
Note: Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



250mg
1g

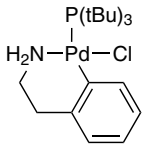
PALLADIUM (Compounds)

46-0368 **Chloro{[X-Phos][2-(2-aminoethylphenyl] palladium(II)}/[X-Phos] admixture (molar PdP/P = 1:1)**
white pwdr.
Note: Patents: US 6,395,916 US 6,307,087.
For detailed technical note visit strem.com.



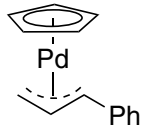
250mg
1g

46-0028 NEW **Chloro(tri-t-butylphosphine)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98%** *(1375325-71-5)*
$C_{24}H_{37}ClNPPd$; FW: 512.40; yellow pwdr.; m.p. 158-160°
For detailed technical note visit strem.com.



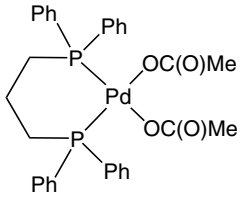
250mg
1g
5g

46-0285 **Cyclopentadienyl[(1,2,3-n)-1-phenyl-2-propenyl]palladium(II), 98%** *(105333-10-6)*
$C_{14}H_{14}Pd$; FW: 288.68; purple-red xtl.
air sensitive, (store cold)
For detailed technical note visit strem.com.



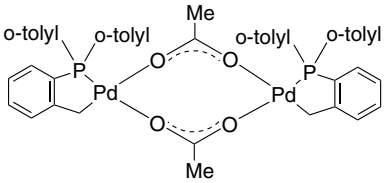
100mg
500mg

46-0257 NEW **Diacetato[1,3-bis(diphenylphosphino)propane] palladium(II), 99%** *(149796-59-8)*
$C_{31}H_{32}O_4P_2Pd$; FW: 636.95; yellow-brown solid
moisture sensitive
For detailed technical note visit strem.com.



250mg
1g

46-0290 **trans-Di(μ-acetato)bis[o-(di-o-tolylphosphino)benzyl]dipalladium(II), 97+% [cataCXium® C]** *(172418-32-5)*
$C_{21}H_{20}PPd(C_2H_3O_2)_2PdPC_{21}H_{20}$; FW: 937.65; yellow xtl.
Note: Sold in collaboration with Solvias for research purposes. German Patent No. 4421753 granted to Solvias. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.

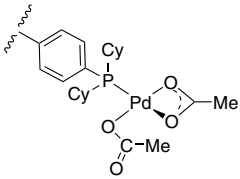


250mg
1g
5g

46-0300 **Diacetatobis(triphenylphosphine)palladium(II), 99%** *(14588-08-0)*
$(CH_3CO_2)_2Pd[P(C_6H_5)_3]_2$; FW: 749.07; light yellow xtl.
(store cold)

1g
5g

46-1500 **Di(acetato)dicyclohexyl-phenylphosphinepalladium (II) (~5% Pd) polymer-bound FibreCat™**
orange-brown, fibrous solid
Note: Limited quantities available.

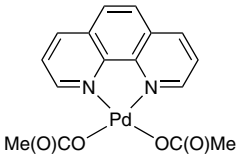


1g
5g

Technical Note:
1. Useful in the coupling of less active aryl chlorides with boronic acids.

PALLADIUM (Compounds)

46-1565 **Diacetato(1,10-phenanthroline)palladium(II), 99%** *(35679-81-3)*
$Pd(CH_3COO)_2(C_{12}H_8N_2)$; FW: 404.71; yellow pwdr.

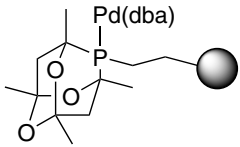


250mg
1g
5g

46-0329 **Diamminepalladium(II) nitrite solution (5% Pd)** *(14852-83-6)*
$Pd(NH_3)_2(NO_2)_2$; FW: 232.47; colorless to light yellow liq.

5g soln.
20g soln.
100g soln.

46-0180 **Dibenzylideneacetonepalladium(0) 1,3,5,7-tetramethyl-2,4,6-trioxa-8-phosphaadamantane-8- ethyl Silica (PhosphonicS PAPd2r)**
pale green solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only.



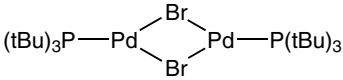
500mg
2g

Technical Note:

1. Immobilized palladium heterogeneous catalyst successfully utilized in typical Suzuki and Heck reactions. The catalyst is effective for a wide range of substrates yielding coupled products in high yield. The catalyst can be simply filtered off and reused over several cycles, with no apparent loss in activity. Typical reactions using the homogeneous version of dibenzylideneacetonepalladium(0) phosphaadamantane can be found in *Org. Lett.* **2003**, *5*, 6, *Tetrahedron Lett.*, **2004**, *45*, 8319 and *J.Org.Chem.*, **2004**, *69*, 5082.

Particle size range: 60-200 microns
Palladium loading: 0.01 to 0.03 mmol/g

46-0355 **Di-μ-bromobis(tri-t-butylphosphino)dipalladium(I)** *(185812-86-6)*
$Pd_2Br_2[P(C_4H_9)_3]_2$; FW: 777.28; dark-green xtl.
air sensitive, moisture sensitive, (store cold)
For detailed technical note visit strem.com.



100mg
500mg
2g

46-0360 **trans-Dibromobis(triphenylphosphine)palladium(II), 99%** *(22180-53-6)*
$C_{36}H_{30}Br_2P_2Pd$; FW: 790.80; yellow pwdr.

1g
5g

46-0665 **Dibromo(1,5-cyclooctadiene)palladium(II), 99%** *(12145-47-0)*
$PdBr_2(C_8H_{12})$; FW: 374.41; orange solid

250mg
1g

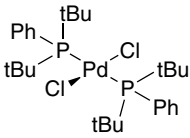
46-0370 **Dichlorobis(acetonitrile)palladium(II), 99%** *(14592-56-4)*
$PdCl_2(CH_3CN)_2$; FW: 259.41; orange pwdr.
For detailed technical note visit strem.com.

1g
5g

46-0400 **Dichlorobis(benzonitrile)palladium(II), 99%** *(14220-64-5)*
$PdCl_2(C_6H_5CN)_2$; FW: 383.55; yellow to orange pwdr.; m.p. 129-130°
Note: Palladium Kit component.
For detailed technical note visit strem.com.

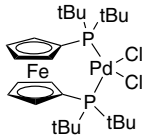
1g
5g

46-0420 NEW **Dichlorobis(di-t-butylphenylphosphino)palladium(II), 99%** *(34409-44-4)*
$C_{28}H_{46}Cl_2P_2Pd$; FW: 621.94; colorless to pale-yellow solid
For detailed technical note visit strem.com.



250mg
1g

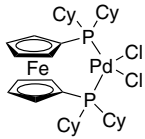
46-0445 **Dichloro[1,1'-bis(di-t-butylphosphino) ferrocene] palladium(II), 99%** *(95408-45-0)*
$[(C_5H_4P(C_4H_9)_2)_2Fe]PdCl_2$; FW: 651.75; dark purple xtl.
Note: Dichloro[1,1'-bis(dialkyl/diarylphosphino)ferrocene] palladium(II) Catalyst Kit component.



100mg
500mg
2g
10g

PALLADIUM (Compounds)

46-0455 **Dichloro[1,1'-bis(dicyclohexylphosphino)ferrocene] palladium(II), dichloromethane adduct, 99%** *(917511-90-1)*
$[(C_5H_4P(C_6H_{11})_2)_2Fe]PdCl_2$; FW: 755.89; red-orange microxtl.
Note: Dichloro[1,1'-bis(dialkyl/diarylphosphino)ferrocene] palladium(II) Catalyst Kit component.

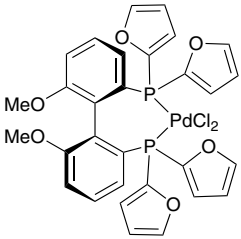


250mg
1g

Technical Note:
1. Air-stable catalyst useful in the arylation of various ketones with aryl chlorides and aryl bromides.PRIVATE

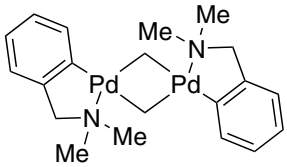
References:
1. *Org. Proc. Res. Dev.,* **2008**, *12*, 522

46-0188 NEW **Dichloro[(R)-(+)-2,2'-bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl]palladium(II)** *(1338245-54-7)*
$C_{30}H_{24}Cl_2O_6P_2Pd$; FW: 719.78; pale yellow pwdr.
For detailed technical note visit strem.com.



50mg
250mg

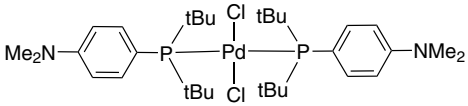
46-0375 **Di-μ-chlorobis{2-[(dimethylamino)methyl] phenyl}dipalladium, 99%** *(18987-59-2)*
$C_{18}H_{24}Cl_2N_2Pd_2$; FW: 552.14; yellow pwdr.



250mg
1g
5g

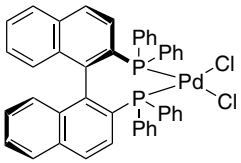
Technical Note:
1. Useful starting material for the preparation of N-heterocyclic-carbene palladium complexes.

46-0825 **Dichlorobis{[4-(N,N-dimethyl-amino)phenyl]di-t-butylphos-phino}palladium(II), min. 98% PdAmphos** *(887919-35-9)*
$(C_{16}H_{28}NP)_2PdCl_2$; FW: 708.07; yellow pwdr.
For detailed technical note visit strem.com.



250mg
1g
5g
25g

46-0870 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphi-no)-1,1'-binaphthyl]palladium(II), min. 98%** *(115826-95-4)*
$PdCl_2(C_{44}H_{32}P_2)$; FW: 800.00; orange microxtls.
For detailed technical note visit strem.com.



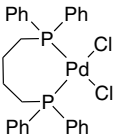
250mg
1g

46-0871 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]palladium(II), min. 98%** *(127593-28-6)*
$PdCl_2(C_{44}H_{32}P_2)$; FW: 800.00; orange microxtls.

250mg
1g

Technical Note:
1. See 46-0870 (page 237)

46-0468 NEW **Dichloro[1,4-bis(diphenylphosphino)butane]palladium(II), 99%** *(29964-62-3)*
$C_{28}H_{28}Cl_2P_2Pd$; FW: 603.80; light-yellow pwdr.
For detailed technical note visit strem.com.



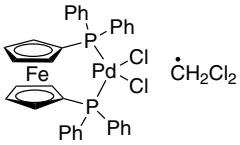
1g
5g

46-0800 **Dichloro(1,2-bis(diphenylphosphino)ethane)palladium(II), 98%** *(19978-61-1)*
$PdCl_2[(C_6H_5)_2PCH_2CH_2P(C_6H_5)_2]$; FW: 575.74; off-white pwdr.; m.p. > 300°
moisture sensitive

1g
5g

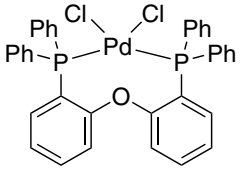
PALLADIUM (Compounds)

46-0450 **Dichloro 1,1'-bis(diphenylphosphino)ferrocene palladium (II) dichloromethane, 99%** *(95464-05-4)*
$[(C_5H_4P(C_6H_5)_2)_2Fe]PdCl_2{\cdot}CH_2Cl_2$;
FW: 731.77 (816.65); orange-red pwdr.
Note: Dichloro[1,1'-bis(dialkyl/diarylphosphino) ferrocene]palladium(II) Catalyst Kit component.
For detailed technical note visit strem.com.



1g
5g
25g

46-0463 NEW **Dichloro{bis[2-(diphenylphosphino)phenyl] ether}palladium(II), 98%** *(205319-06-8)*
$C_{36}H_{28}Cl_2OP_2Pd$; FW: 715.88; yellow pwdr.
For detailed technical note visit strem.com.

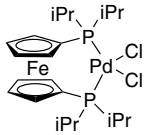


1g
5g

46-0850 **Dichloro(1,3-bis(diphenylphosphino)propane)palladium(II), 98%** *(59831-02-6)*
$PdCl_2[(C_6H_5)_2PCH_2CH_2CH_2P(C_6H_5)_2]$; FW: 589.77; pale yellow pwdr.

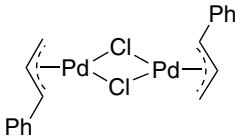
1g
5g

46-0460 **Dichloro[1,1'-bis(di-i-propylphosphino)ferrocene] palladium(II), 99%** *(215788-65-1)*
$[(C_5H_4P(C_3H_7)_2)_2Fe]PdCl_2$; FW: 595.64; yellow-orange solid
Note: Dichloro[1,1'-bis(dialkyl/diarylphosphino)ferrocene] palladium(II) Catalyst Kit component.
For detailed technical note visit strem.com.



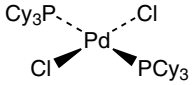
500mg
2g

46-0295 **Di-μ-chlorobis[(1,2,3-η)-1-phenyl-2-propenyl] dipalladium(II), 98%** *(12131-44-1)*
$[(C_9H_9)ClPd]_2$; FW: 518.08; yellow xtl.
air sensitive
For detailed technical note visit strem.com.



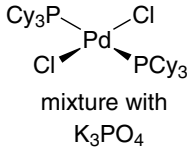
500mg
2g

46-0520 **trans-Dichlorobis(tricyclohexylphosphine)palladium(II), 99%** *(29934-17-6)*
$PdCl_2[(C_6H_{11})_3P]_2$; FW: 738.19; light yellow pwdr.



250mg
1g
5g

46-2040 **trans-Dichlorobis(tricyclohexylphosphine)palladium(II)/potassium phosphate admixture [CatKit single-use vials - 6.62 wt% Pd complex]** *(29934-17-6)*
$PdCl_2[(C_6H_{11})_3P]_2/K_3PO_4$; off-white pwdr.
Note: Each vial contains 453mg of admixture.
Weight-percent of components:
6.62 wt% palladium complex
Kit of CatKits - Single-Use Vials for low catalyst loading experiments Kit component..



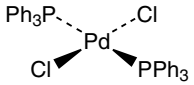
5 x 1vial
25 x 1vial

Technical Note:

1. Convenient, pre-weighed vial of palladium catalyst/base admixture useful for screening reactions. The vial contains 453mg of admixture, which will deliver 4 mole% of palladium catalyst and 2 equivalents of base, to a reaction using 1 mmole of substrate.

Weight-percent of components:
6.62 wt% palladium complex
93.38 wt% potassium phosphate

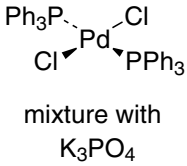
46-0530 **trans-Dichlorobis(triphenylphosphine)palladium(II), 99% (99.9+%-Pd)** *(13965-03-2)*
$PdCl_2(P(C_6H_5)_3)_2$; FW: 701.89; yellow pwdr.
For detailed technical note visit strem.com.



1g
5g
25g

PALLADIUM (Compounds)

46-2038 **trans-Dichlorobis(triphenylphosphine)palladium(II)/ potassium phosphate admixture [CatKit single-use vials - 6.32 wt% Pd complex]** *(13965-03-2)*
$PdCl_2[P(C_6H_5)_3]_2/K_3PO_4$; FW: 701.89; off-white pwdr.
Note: Each vial contains 453mg of admixture.
Weight-percent of components:
6.32 wt% palladium complex
Kit of CatKits - Single-Use Vials for low catalyst loading experiments Kit component.



5 x 1vial
25 x 1vial

Technical Note:
1. Convenient, pre-weighed vial of palladium catalyst/base admixture useful for screening reactions. The vial contains 453mg of admixture, which will deliver 4 mole% of palladium catalyst and 2 equivalents of base, to a reaction using 1 mmole of substrate.

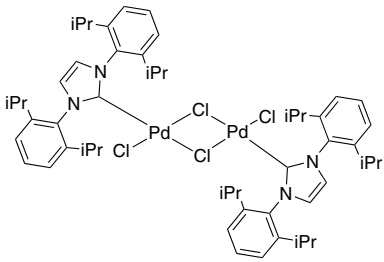
Weight-percent of components:
6.32 wt% palladium complex
93.68 wt% potassium phosphate

46-0525 **trans-Dichlorobis(tri-o-tolylphosphine)palladium(II), min. 95%** *(40691-33-6)*
$PdCl_2[P(CH_3C_6H_4)_3]_2$; FW: 786.07; yellow pwdr.
1g
5g

46-0650 **Dichloro(1,5-cyclooctadiene)palladium(II), 99%** *(12107-56-1)*
$PdCl_2(1,5\text{-}C_8H_{12})$; FW: 285.49; yellow xtl.; m.p. 205° dec.
250mg
1g
5g

93-4614 **trans-Dichlorodiammine palladium(II), 99%** *(13782-33-7)*
$Pd(NH_3)_2Cl_2$; FW: 211.37; yellow pwdr.
1g
5g

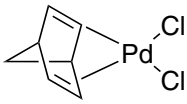
46-0860 **Dichloro(di-µ-chloro)bis[1,3-bis(2,6-di-i-propylphenyl)imidaz-ol-2-ylidene]dipalladium(II), 97%** *(444910-17-2)*
$C_{54}H_{72}Cl_4N_4Pd_2$; FW: 1131.83; orange to tan pwdr.
Note: Sold in collaboration with Umicore for research purposes only. Patent WO 2004014550, US 6,316,380 and EP 721 953 A1.
For detailed technical note visit strem.com.



250mg
1g

46-0865 **Dichloro[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene]palladium(II), min. 98%** *(205319-10-4)*
$PdCl_2(C_{39}H_{32}OP_2)$; FW: 755.94; yellow microxtls.
250mg
1g

46-0900 **Dichloro(norbornadiene)palladium(II), 99%** *(12317-46-3)*
$C_7H_8PdCl_2$; FW: 269.46; yellow to orange pwdr.

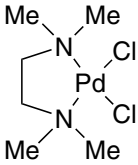


250mg
1g

Technical Note:
1. Useful starting material for the in situ preparation of a variety of chiral and achiral palladium catalysts.

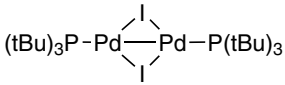
References:
1. *J. Am. Chem. Soc.*, **2001**, *123*, 7725.
2. *J. Org. Chem.*, **2009**, *74*, 1407.
3. *Angew. Chem. Int. Ed.*, **2008**, *47*, 6367.

46-0950 **cis-Dichloro(N,N,N',N'-tetramethylethylenediamine) palladium(II), 99%** *(14267-08-4)*
$C_6H_{16}Cl_2N_2Pd$; FW: 293.53; yellow pwdr.



250mg
1g

46-0310 NEW **Di-µ-iodobis(tri-t-butylphosphino) dipalladium(I), 98%** *(166445-62-1)*
$C_{24}H_{54}I_2P_2Pd_2$; FW: 871.28; black solid
For detailed technical note visit strem.com.

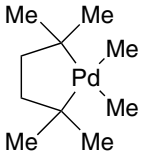


250mg
1g

PALLADIUM (Compounds)

46-0952

cis-Dimethyl(N,N,N',N'-tetramethylethylenediamine)palladium(II), 99% *(113822-11-0)*
$C_8H_{22}N_2Pd$; FW: 252.69; white to off-white pwdr.
light sensitive, (store cold)



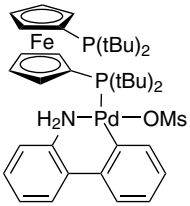
250mg
1g

96-3790

Kit of CatKits - Single-Use Vials for Low Catalyst Loading Experiments
See page 486

46-2158
NEW

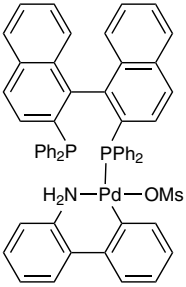
Methanesulfonato(1,1'-bis(di-t-butylphosphino)ferrocene)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DTBPF Palladacycle Gen. 3]
$C_{39}H_{57}FeNO_3P_2PdS$; FW: 844.16; orange pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



250mg
1g
5g

46-2153
NEW

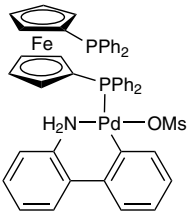
Methanesulfonato[2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [BINAP Palladacycle Gen. 3]
$C_{57}H_{45}NO_3P_2PdS$; FW: 992.41; off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.



250mg
1g
5g

46-2128
NEW

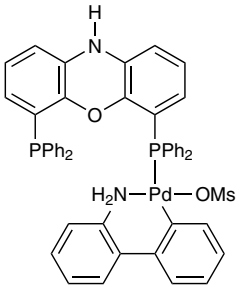
Methanesulfonato[1,1'-bis(diphenylphosphino)ferrocene)](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DPPF Palladacycle Gen. 3] *(1445086-28-1)*
$C_{47}H_{41}FeNO_3P_2PdS$; FW: 924.11; yellow pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



250mg
1g
5g

46-0959
NEW

Methanesulfonato[4,6-bis(diphenylphosphino) phenoxazine](2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [NiXantphos Palladacycle Gen. 3]
(1602922-03-1)
$C_{49}H_{40}N_2O_4P_2PdS$; FW: 921.29; light green yellow solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620
For detailed technical note visit strem.com.

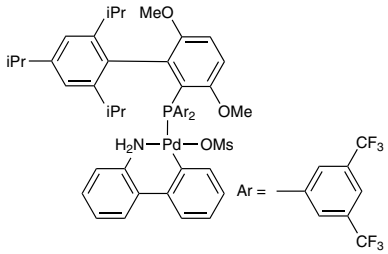


100mg
500mg
2g

PALLADIUM (Compounds)

46-0340

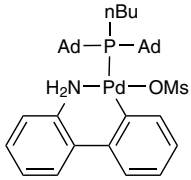
Methanesulfonato[2-bis(3,5-di(trifluoromethyl) phenylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [JackiePhos Palladacycle Gen. 3]
$C_{52}H_{50}F_{12}NO_5PPdS$; FW: 1166.39; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.



100mg
500mg
2g

46-0278
NEW

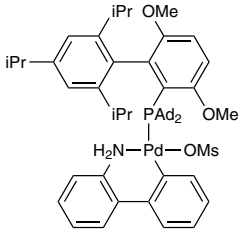
Methanesulfonato(diadamantyl-n-butylphosphino)-2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 95% [cataCXium® A Palladacycle Gen. 3]
$C_{37}H_{52}NO_3PPdS$; FW: 728.27; off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Patent WO 0210178.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0480
NEW

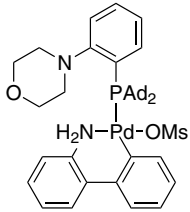
Methanesulfonato[2-(di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [AdBrettPhos Palladacycle Gen. 3] *(1445972-29-1)*
$C_{56}H_{74}NO_5PPdS$; FW: 1010.65; brown to green solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620
For detailed technical note visit strem.com.



50mg
250mg
1g
5g

46-0935
NEW

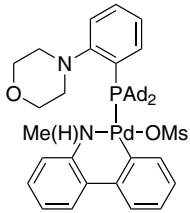
Methanesulfonato{N-[2-(di-1-adamantylphosphino) phenyl]morpholine}(2'-amino-1,1'-biphenyl-2-yl) palladium(II) dichloromethane adduct, min. 98% [Mor-Dalphos Palladacycle Gen. 3]
$C_{43}H_{55}N_2O_4PPdS$; FW: 833.37; Beige to brown solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



250mg
1g

46-0940
NEW

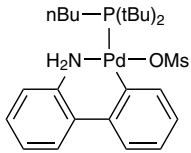
Methanesulfonato{N-[2-(di-1-adamantylphosphino) phenyl]morpholine}(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% MorDalphos Palladacycle Gen. 4
$C_{44}H_{57}N_2O_4PPdS$; FW: 847.39; off-white to gray solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.



250mg
1g

46-0365

Methanesulfonato[di-t-butyl(n-butyl)phosphine] (2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [P(t-Bu)$_2$(n-Bu) Palladacycle Gen. 3] *(1445086-17-8)*
$C_{25}H_{40}NO_3PPdS$; FW: 572.05; white to off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.

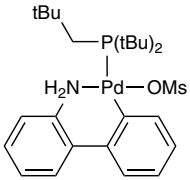


250mg
1g
5g

PALLADIUM (Compounds)

46-0358

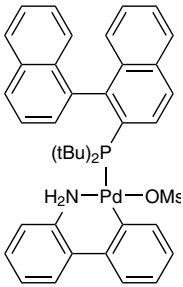
Methanesulfonato(di-t-butylneopentylphosphine)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DTBNpP Palladacycle Gen. 3] *(1507403-89-5)*
$C_{26}H_{42}NO_3PPdS$; FW: 586.08; white to off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.



250mg
1g
5g

46-0357 NEW

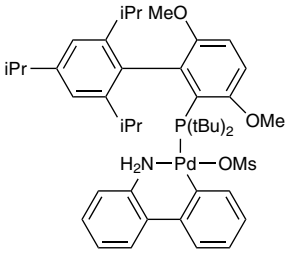
Methanesulfonato(2-di-t-butylphosphino-1,1'-binaphthyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 95% [TrixiePhos Palladacycle Gen. 3]
$C_{41}H_{44}NO_3PPdS$; FW: 768.25; white to off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



100mg
500mg
2g

46-0325

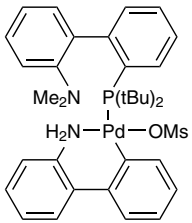
Methanesulfonato(2-(di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), dichloromethane adduct, min. 98%[t-BuBrettPhos Palladacycle Gen. 3]
(1536473-72-9)
$C_{44}H_{62}NO_5PPdS$; FW: 854.43; brown-green solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

46-2135 NEW

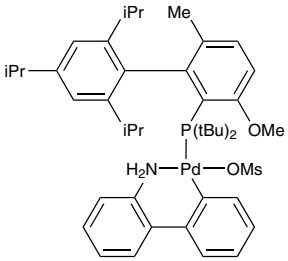
Methanesulfonato[2-(di-t-butylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [t-BuDavePhos Palladacycle Gen. 3] *(1445085-92-6)*
$C_{35}H_{45}N_2O_3PPdS{\cdot}CH_2Cl_2$; FW: 711.20; green-yellow pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



250mg
1g
5g

46-0335

Methanesulfonato(2-(di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RockPhos Palladacycle Gen. 3] *(2009020-38-4)*
$C_{44}H_{62}NO_4PPdS$; FW: 838.43; brown pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.



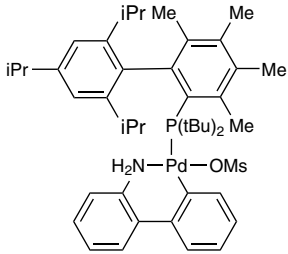
100mg
500mg
2g
10g

PALLADIUM (Compounds)

46-2163

NEW

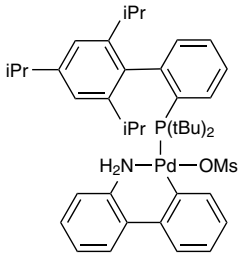
Methanesulfonato(2-di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propylbiphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 95% [Me4 t-ButylXPhos Palladacycle Gen. 3] *(1507403-85-1)*
$C_{46}H_{66}NO_3PPdS$; FW: 850.48; dark green pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620
For detailed technical note visit strem.com.



100mg
500mg
2g

46-0323

Methanesulfonato(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [t-BuXPhos Palladacycle Gen. 3] *(1447963-75-8)*
$C_{42}H_{58}NO_3PPdS$; FW: 794.38; yellow pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.

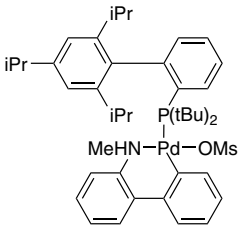


250mg
1g

46-0330

NEW

Methanesulfonato(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [t-BuXphos Palladacycle Gen. 4] *(1599466-89-3)*
$C_{43}H_{60}NO_3PPdS$; FW: 808.40; off-white to gray pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl- Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.

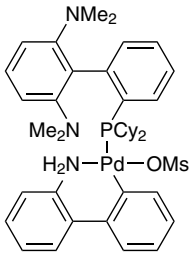


250mg
1g
5g

46-0487

NEW

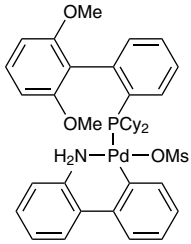
Methanesulfonato(2-dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [CPhos Palladacycle Gen. 3] *(1447963-73-6)*
$C_{41}H_{54}N_3O_3PPdS$; FW: 806.35; white to off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.



100mg
500mg
2g

46-0318

Methanesulfonato(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II) dichloromethane adduct min. 98% [SPhos Palladacycle Gen. 3] *(1445085-82-4)*
$C_{39}H_{48}NO_5PPdS$; FW: 780.26; pale yellow solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.

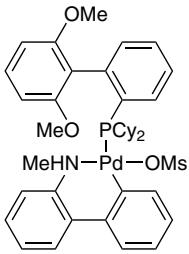


250mg
1g
5g
25g

PALLADIUM (Compounds)

46-0380 NEW

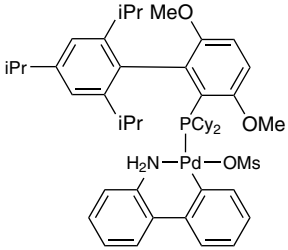
Methanesulfonato(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct min. 98% [SPhos Palladacycle Gen. 4] *(1599466-87-1)*
$C_{40}H_{50}NO_5PPdS$; FW: 794.29; off-white to tan pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl-Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0322

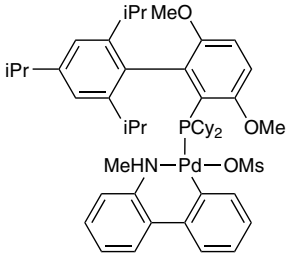
Methanesulfonato(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [BrettPhos Palladacycle Gen. 3] *(1470372-59-8)*
$C_{48}H_{66}NO_5PPdS$; FW: 906.50; beige pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

46-0333 NEW

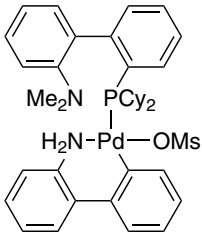
Methanesulfonato(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 4] *(1599466-83-7)*
$C_{49}H_{68}NO_5PPdS$; FW: 920.53; off-white to beige pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl- Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0237

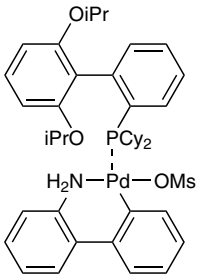
Methanesulfonato[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II) CH_2Cl_2 adduct, min. 98% [DavePhos Palladacycle Gen. 3] *(1445085-87-9)*
$C_{39}H_{49}N_2O_3PPdS$; FW: 763.28; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.



250mg
1g

46-0314

Methanesulfonato(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [RuPhos Palladacycle Gen. 3] *(1445085-77-7)*
$C_{43}H_{56}NO_5PPdS$; FW: 836.37; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.

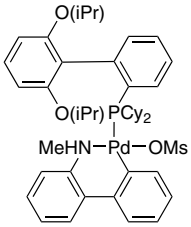


250mg
1g
5g

PALLADIUM (Compounds)

46-0395 NEW

Methanesulfonato(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 4] *(1599466-85-9)*
$C_{44}H_{58}NO_5PPdS$; FW: 850.40; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620 Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl-Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

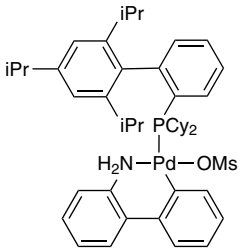
46-0353

Methanesulfonato{(R)-(-)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl] ethyldi-t-butylphosphine}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Josiphos Palladacycle Gen. 3] *(1702311-34-9)*
$C_{45}H_{65}FeNO_3P_2PdS$; FW: 924.28; red-orange solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

46-0320

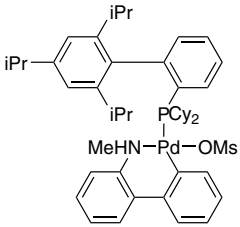
Methanesulfonato(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [Xphos Palladacycle Gen. 3] *(1445085-55-1)*
$C_{46}H_{62}NO_3PPdS$; FW: 846.45; white to off-white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 2 component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0327 NEW

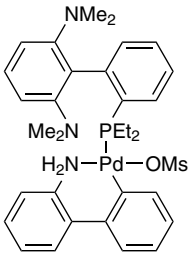
Methanesulfonato(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [XPhos Palladacycle Gen. 4] *(1599466-81-5)*
$C_{47}H_{64}NO_3PPdS$; FW: 860.48; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl- Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0348 NEW

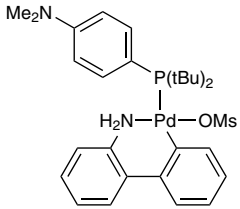
Methanesulfonato[2-diethylphosphino-2',6'-bis(dimethylamino)-1,1-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [EtCPhos Palladacycle Gen. 3]
$C_{33}H_{42}N_3O_3PPdS$; FW: 698.17; white to off-white solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620
For detailed technical note visit strem.com.



50mg
250mg
1g

46-0345

Methanesulfonato{[4-(N,N-dimethylamino) phenyl]di-t-butylphosphino}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Amphos Palladacycle Gen. 3] *(1820817-64-8)*
$C_{29}H_{41}N_2O_3PPdS$; FW: 635.11; beige to tan pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.

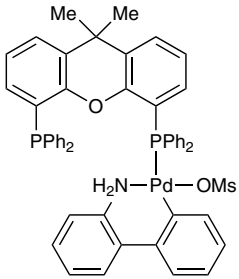


250mg
1g
5g

PALLADIUM (Compounds)

46-0957

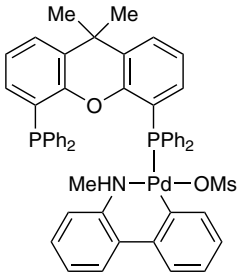
Methanesulfonato[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene][2'-amino-1,1'-biphenyl] palladium(II) dichloromethane adduct, min. 98% [Xantphos Palladacycle Gen. 3] *(1445085-97-1)*
$C_{52}H_{45}NO_4P_2PdS$; FW: 948.35; pale yellow pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.



500mg
2g

46-0388
NEW

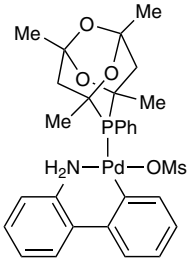
Methanesulfonato[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene] (2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [Xantphos Palladacycle Gen. 4]
(1621274-19-8)
$C_{53}H_{47}NO_4P_2PdS$; FW: 962.38; yellow solid
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl- Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0392
NEW

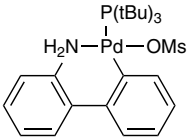
Methanesulfonato(1,3,5,7-tetramethyl-8-phenyl-2,4,6-trioxa-8-phosphaadamantane)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [MeCgPPh Palladacycle Gen. 3]
$C_{29}H_{34}NO_6PPdS{\cdot}CH_2Cl_2$; FW: 662.04; white to tan pwdr.
air sensitive, moisture sensitive
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620



500mg
2g

46-0387
NEW

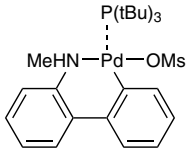
Methanesulfonato(tri-t-butylphosphino)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [P(t-Bu)3 Palladacycle Gen. 3] *(1445086-17-8)*
$C_{25}H_{40}NO_3PPdS$; FW: 572.05; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0385
NEW

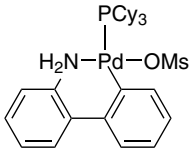
Methanesulfonato(tri-t-butylphosphino) (2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [P(t-Bu)$_3$ Palladacycle Gen. 4] *(1621274-11-0)*
$C_{26}H_{42}NO_3PPdS$; FW: 586.08; tan to yellow pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620 Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl-Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0239

Methanesulfonato(tricyclohexylphosphine)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [PCy3 Palladacycle Gen. 3]
(1445086-12-3)
$C_{31}H_{46}NO_3PPdS$; FW: 650.16; off-white to beige pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620.
For detailed technical note visit strem.com.

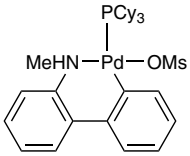


250mg
1g
5g

PALLADIUM (Compounds)

46-0379 NEW

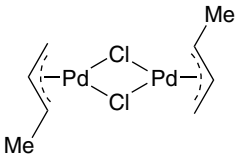
Methanesulfonato(tricyclohexylphosphino)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [PCy_3 Palladacycle Gen. 4]
$C_{32}H_{48}NO_3PPdS$; FW: 664.19; white pwdr.
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620. Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl-Palladacycles Gen. 4) component.
For detailed technical note visit strem.com.



250mg
1g
5g

46-0275

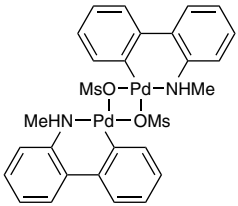
(1-Methylallyl)palladium chloride dimer, 99%
(12081-22-0)
$[C_4H_7PdCl]_2$; FW: 393.94; yellow pwdr.
air sensitive



500mg
2g

46-1553 NEW

(2'-Methylamino-1,1'-biphenyl-2-yl) methanesulfonatopalladium(II) dimer, min. 98%
(1581285-85-9)
$C_{28}H_{30}N_2O_6Pd_2S_2$; FW: 767.52; light gray pwdr.
air sensitive
Note: Patents: PCT/US2013/030779, US Serial No. 13/799620
For detailed technical note visit strem.com.



500mg
2g

46-1780

Palladium(II) acetate, min. 98% (99.9+%-Pd) *(3375-31-3)*
$Pd_3(OOCCH_3)_6$; FW: 673.52; golden-brown xtl.
Note: Palladium Kit component.
For detailed technical note visit strem.com.

1g
5g
25g

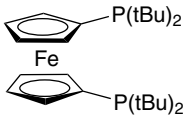
46-1781

Palladium(II) acetate, 99+% (99.95+%-Pd) *(3375-31-3)*
$Pd_3(OOCCH_3)_6$; FW: 673.52; golden-brown xtl.
For detailed technical note visit strem.com.

1g
5g
25g

46-2030

Palladium(II) acetate/1,1'-bis(di-t-butylphosphino) ferrocene/potassium phosphate admixture [CatKit single-use vials - 2.02 wt% $Pd(OAc)_2$]
off-white pwdr.
Note: Each vial contains 453mg of admixture.
Weight-percent of components:
2.02 wt% palladium acetate; 4.28 wt% phosphine ligand; 93.7 wt% potassium phosphate
Kit of CatKits - Single-Use Vials for low catalyst loading experiments Kit component..



mixture with $Pd(OAc)_2/K_3PO_4$

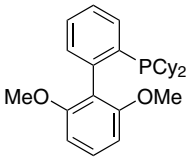
5 x 1vial
25 x 1vial

Technical Note:

1. Convenient, pre-weighed vial of palladium catalyst/base admixture useful for screening reactions. The vial contains 453mg of admixture, which will deliver 4 mole% of palladium catalyst and 2 equivalents of base, to a reaction using 1 mmole of substrate.

46-2033

Palladium(II) acetate/2-dicyclohexylphosphino-2,6-dimethoxy-1,1'-biphenyl (SPhos)/potassium phosphate admixture [CatKit single-use vials - 1.96 wt% $Pd(OAc)_2$]
off-white pwdr.
Note: Patents: US 6,395,916, US 6,307,087. Each vial contains 453mg of admixture.
Weight-percent of components:
1.96 wt% palladium acetate; 7.17 wt% phosphine ligand; 90.8 wt% potassium phosphate
Kit of CatKits - Single-Use Vials for low catalyst loading experiments Kit component.
For detailed technical note visit strem.com.



mixture with $Pd(OAc)_2/K_3PO_4$

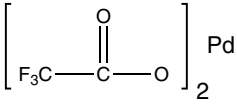
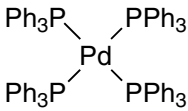
5 x 1vial
25 x 1vial

46-1800

Palladium(II) acetylacetonate, 99% *(14024-61-4)*
$Pd(C_5H_7O_2)_2$; FW: 304.62; yellow xtl.; m.p. 205° dec.

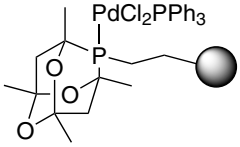
1g
5g

PALLADIUM (Compounds)

46-1810	**Palladium(II) benzoate, 99%** *(3375-32-4)* $Pd(C_7H_6O_2)_2$; FW: 348.65; light-brown pwdr.	250mg 1g
46-1836	**Palladium(II) bromide, 99%** *(13444-94-5)* $PdBr_2$; FW: 266.22; black xtl.; d. 5.173 *hygroscopic*	1g 5g
46-1850	**Palladium(II) chloride (99.9%-Pd)** *(7647-10-1)* $PdCl_2$; FW: 177.31; rust colored xtl.; m.p. 500° dec.; d. 4.0 *hygroscopic* Note: Palladium Kit component. **For detailed technical note visit strem.com.**	1g 5g 25g
93-4605 HAZ	**Palladium(II) cyanide, 98+%** *(2035-66-7)* $Pd(CN)_2$; FW: 158.47; yellow pwdr.	1g 5g
46-1870	**Palladium(II) hexafluoroacetylacetonate, min. 95%** *(64916-48-9)* $Pd(CF_3COCHCOCF_3)_2$; FW: 520.52; yellow pwdr.	250mg 1g 5g
93-4607	**Palladium(II) iodide, 99%** *(7790-38-7)* PdI_2; FW: 360.23; black xtl.; m.p. 350° dec.; d. 6.003	1g 5g
96-4650	**Palladium Kit** *See* page 488	
93-4608 HAZ	**Palladium(II) nitrate hydrate (Pd ~40%) (99.9%-Pd)** *(10102-05-3)* $Pd(NO_3)_2 \cdot XH_2O$; FW: 230.72; brown xtl.; m.p. dec.	1g 5g
46-2110	**Palladium(II) oxide (99.9%-Pd)** *(1314-08-5)* PdO; FW: 122.40; black pwdr.; m.p. 870°; d. 8.70	1g 5g
93-4609 HAZ	**Palladium(II) sulfate dihydrate** *(13566-03-5)* $PdSO_4 \cdot 2H_2O$; FW: 202.46 (238.50); brown xtl.	1g 5g
46-0280	**Palladium(II) trifluoroacetate, min. 97%** *(42196-31-6)* $Pd(OOCCF_3)_2$; FW: 332.44; brown pwdr.; m.p. 210° dec. 	250mg 1g 5g
46-1785	**Palladium(II) trimethylacetate, min. 98%** *(106224-36-6)* $Pd[O_2CC(CH_3)_3]_2$; FW: 308.67; orange pwdr.	250mg 1g
93-4610	**Potassium hexachloropalladate(IV), 99%** *(16919-73-6)* *See* page 342	
93-4611	**Potassium tetrabromopalladate(II), 98%** *(13826-93-2)* *See* page 344	
46-2126	**Potassium tetrachloropalladate(II), 99%** *(10025-98-6)* *See* page 344	
93-4612	**Sodium hexachloropalladate(IV), 98+%** *(53823-60-2)* *See* page 418	
93-4613	**Sodium tetrachloropalladate(II) trihydrate, 99%** *(13820-53-6)* *See* page 421	
46-2143	**Tetraammine palladium(II) tetrachloropalladate(II), 99%** *(13820-44-5)* $[Pd(NH_3)_4][PdCl_4]$; FW: 422.80; red pwdr.	1g 5g
46-2140	**Tetraamminepalladium(II) nitrate solution (5.0 wt% as Pd)** *(13601-08-6)* $[Pd(NH_3)_4](NO_3)_2$; FW: 298.53; pale yellow liq. *(store cold)*	10g 50g
46-2145	**Tetrakis(acetonitrile)palladium(II) tetrafluoroborate, min. 98%** *(21797-13-7)* $Pd(CH_3CN)_4(BF_4)_2$; FW: 444.22; yellow pwdr. *air sensitive, light sensitive*	250mg 1g 5g
46-2150	**Tetrakis(triphenylphosphine)palladium(0), 99%** **(99.9+%-Pd)** *(14221-01-3)* $Pd[(C_6H_5)_3P]_4$; FW: 1155.57; bright yellow pwdr. *air sensitive, (store cold)* Note: Palladium Kit component. **For detailed technical note visit strem.com.** 	1g 5g 25g

PALLADIUM (Compounds)

46-7860 **Triphenylphosphinepalladium(II) dichloride phosphaadamantane ethyl Silica (PhosphonicS PAPd1r)**
yellow solid
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only.



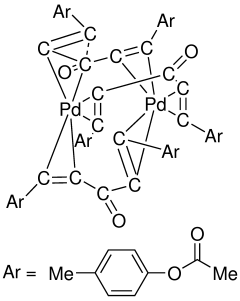
500mg
2g

Technical Note:

1. Immobilized palladium heterogeneous catalyst successfully utilized in typical Suzuki and Heck reactions. The catalyst is effective for a wide range of substrates yielding coupled products in high yield. The catalyst can be simply filtered off and reused over several cycles, with no apparent loss in activity. Typical reactions using the homogeneous version of triphenylphosphinepalladium(II) dichloride phosphaadamantane can be found in *Org. Lett.* **2003**, *5*, 6, *Tetrahedron Lett.*, **2004**, *45*, 8319 and *J.Org.Chem.*, **2004**, *69*, 5082.

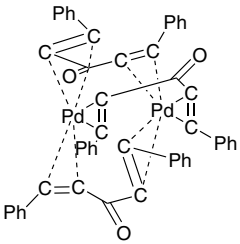
Particle size range: 60-200 microns
Palladium loading: 0.01 to 0.03 mmol/g

46-3005 **Tris[di(4-acetoxybenzylidene)acetone] dipalladium(0) di(4-acetoxybenzylidene)acetone adduct, min. 97%** *(1196118-15-6)*
$C_{63}H_{54}O_{15}Pd_2$; FW: 1263.93; dark purple pwdr.
air sensitive, moisture sensitive, (store cold)
Note: U.S. Patent No. 12/259,001
For detailed technical note visit strem.com.



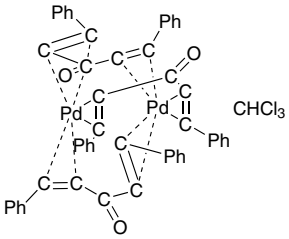
100mg
500mg

46-3000 **Tris(dibenzylideneacetone)dipalladium(0)**
(51364-51-3)
$(C_6H_5CH{=}CHCOCH{=}CHC_6H_5)_3Pd_2$; FW: 915.70; purple pwdr.; m.p. 152-155°
air sensitive, moisture sensitive
Note: Palladium Kit component.
For detailed technical note visit strem.com.



1g
5g
25g

46-3010 **Tris(dibenzylideneacetone)dipalladium(0) chloroform adduct** *(52522-40-4)*
$(C_6H_5CH{=}CHCOCH{=}CHC_6H_5)_3Pd_2{\cdot}CHCl_3$; FW: 1035.08; red to brown solid; m.p. 131-135°
air sensitive, moisture sensitive
Note: Palladium Kit component.
For detailed technical note visit strem.com.



500mg
2g
10g

46-3015 **Tris(dibenzylideneacetone)dipalladium(0)/tri-t-butylphosphonium tetrafluoroborate admixture (molar Pd/P = 1:1.2)**
$C_{51}H_{42}O_3Pd_2/[(C_4H_9)_3PH]^+BF_4^-$; purple pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.

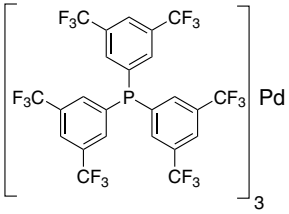
1g
5g

46-3020 **Tris(dibenzylideneacetone)dipalladium(0)/tri-t-butylphosphonium tetrafluoroborate admixture (molar Pd/P = 1:2)**
$C_{51}H_{42}O_3Pd_2/[(C_4H_9)_3PH]^+BF_4^-$; purple pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.

1g
5g

PALLADIUM (Compounds)

46-2185 **Tris{tris[3,5-bis(trifluoromethyl)phenyl]phosphine}palladium(0), 99%** *(1130784-80-3)*
$C_{72}H_{27}F_{54}P_3Pd$; FW: 2117.24; yellow xtl.
Note: Material can be stored at room temperature. Not sensitive to air, moisture, or light.
For detailed technical note visit strem.com.

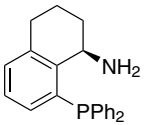


500mg
2g
10g

PHOSPHORUS (Compounds)

93-1501 **Allyltriphenylphosphonium bromide, 99%** *(1560-54-9)*
$(CH_2{=}CHCH_2)(C_6H_5)_3PBr$; FW: 383.26; white xtl.; m.p. 222-225°
25g
100g

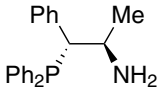
15-7143 **(R)-1-Amino-8-(diphenylphosphino)-1,2,3,4-tetrahydronaphthalene, min. 97%** *(960128-64-7)*
$C_{22}H_{22}NP$; FW: 331.39; white solid
air sensitive



250mg
1g

15-7144 **(S)-1-Amino-8-(diphenylphosphino)-1,2,3,4-tetrahydronaphthalene, min. 97%** *(1222630-45-6)*
$C_{22}H_{22}NP$; FW: 331.39; white solid
air sensitive
250mg
1g

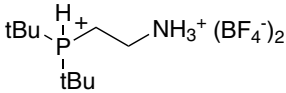
15-7107 **(1R,2R)-2-Amino-1-phenylpropyldiphenylphosphine, min. 97%** *(799297-44-2)*
$C_{21}H_{22}NP$; FW: 319.38; white solid
air sensitive



100mg
500mg

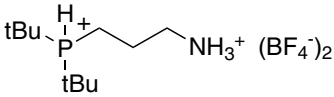
15-7108 **(1S,2S)-2-Amino-1-phenylpropyldiphenylphosphine, min. 97%** *(341968-71-6)*
$C_{21}H_{22}NP$; FW: 319.38; white solid
air sensitive
100mg
500mg

15-7176 **(2-Ammonioethyl)di-t-butylphosphonium bis(tetrafluoroborate), min. 97%**
(1222630-51-4)
$C_{10}H_{25}B_2F_8NP$; FW: 363.89; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.



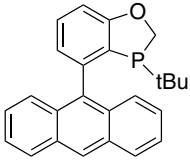
250mg
1g

15-7178 **(3-Ammoniopropyl)di-t-butylphosphonium bis(tetrafluoroborate), min. 97%**
$C_{11}H_{27}B_2F_8NP$; FW: 377.92; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.



250mg
1g

15-1960 NEW **4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3]oxaphosphole, 98+% rac-AntPhos** *(1268693-24-8)*
$C_{25}H_{23}O_3P$; FW: 370.42; pale yellow pwdr.
air sensitive, (store cold)
Note: Sold in collaboration with Zejun for research purposes only. Patents ZL201310020371.1, CN 201610056390.
For detailed technical note visit strem.com.

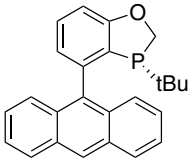


25mg
100mg
500mg

PHOSPHORUS (Compounds)

15-1963 NEW

(R)-4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3]oxaphosphole,98+% (>99% ee) [(R)-AntPhos] *(1456816-37-7)*
$C_{25}H_{23}O_3P$; FW: 370.42; light-yello xtl.
air sensitive, (store cold)
Note: Sold in collaboration with Zejun for research purposes only. Patents ZL201310020371.1, CN 201610056390.



25mg
100mg
500mg

Technical Note:
1. See 15-1960 (page 250)

15-1967 NEW

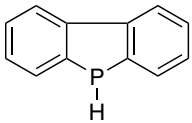
(S)-4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3]oxaphosphole,99+% (>99% ee) [(S)-AntPhos] *(1807740-34-6)*
$C_{25}H_{23}O_3P$; FW: 370.42; light yellow xtl.
air sensitive, (store cold)
Note: Sold in collaboration with Zejun for research purposes only. Patents ZL201310020371.1, CN 201610056390.

25mg
100mg
500mg

Technical Note:
1. See 15-1960 (page 250)

15-0033

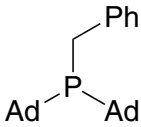
5H-Benzo[b]phosphindole, 99% *(244-87-1)*
$C_{12}H_9P$; FW: 184.17; white pwdr.
air sensitive



250mg
1g

15-0038

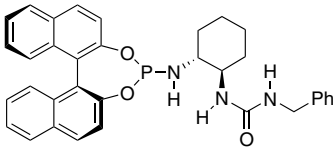
Benzyldi-1-adamantylphosphine, min. 85% [cataCXium® ABn] *(395116-70-8)*
$C_6H_5CH_2(C_{10}H_{15})_2P$; FW: 392.56; yellow pwdr.; m.p. 183°
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent WO 0210178. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



500mg
2g

15-2208

1-Benzyl-3-{(1R,2R)-2-[(11bS)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-ylamino] cyclohexyl}urea, min. 97% *(1198080-57-7)*
$C_{34}H_{32}N_3O_3P$; FW: 561.61; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

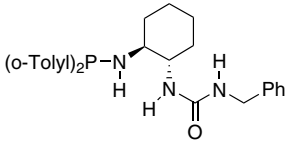
15-0040

Benzyldiphenylphosphine, 99% *(7650-91-1)*
$(C_6H_5CH_2)(C_6H_5)_2P$; FW: 276.32; white pwdr.; m.p. 74-75°
air sensitive

1g
5g

15-2210

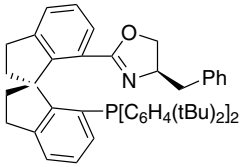
1-Benzyl-3-[(1S,2S)-2-(di-o-tolylphosphinoamino)cyclohexyl]urea, min. 97% *(1858223-87-6)*
$C_{28}H_{34}N_3OP$; FW: 459.56; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

15-5190

(R)-(+)-7'-[4(S)-(Benzyl)oxazol-2-yl]-7-di(3,5-di-t-butylphenyl)phosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Ra,S)-DTB-Bn-SIPHOX
$C_{55}H_{66}NOP$; FW: 788.09; white solid; m.p. 120-121°
moisture sensitive
For detailed technical note visit strem.com.

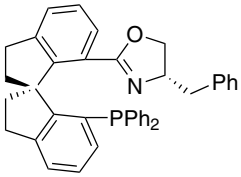


25mg
100mg

PHOSPHORUS (Compounds)

15-5191 **(S)-(-)-7'-[4(S)-(Benzyl)oxazol-2-yl]-7-di(3,5-di-t-butylphenyl)phosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Sa,S)-DTB-Bn-SIPHOX** *(1040274-10-9)*
$C_{55}H_{66}NOP$; FW: 788.09; white solid; m.p. 159-161°
moisture sensitive
For detailed technical note visit strem.com.
25mg
100mg

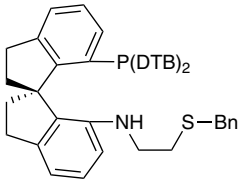
15-5186 **(R)-(+)-7-[4(S)-(Benzyl)oxazol-2-yl]-7'-diphenylphosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Ra,S)-Ph-Bn-SIPHOX**
$C_{39}H_{34}NOP$; FW: 563.67; white solid; m.p. 100-102°
moisture sensitive
For detailed technical note visit strem.com.



25mg
100mg

15-5187 **(S)-(-)-7-[4(S)-(Benzyl)oxazol-2-yl]-7-diphenylphosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Sa,S)-Ph-Bn-SIPHOX** *(913829-88-6)*
$C_{39}H_{34}NOP$; FW: 563.67; white solid; m.p. 164-166°
moisture sensitive
For detailed technical note visit strem.com.
25mg
100mg

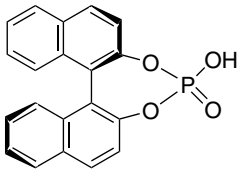
15-1613 NEW **(R)-(+)-7-[N-(2-Benzylthio)ethylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP-Bn]** *(1809609-52-6)*
$C_{54}H_{68}NPS$; FW: 794.16; off-white solid
air sensitive
For detailed technical note visit strem.com.



25mg
100mg

93-1573 HAZ **Benzyltriphenylphosphonium chloride, 99%** *(1100-88-5)*
$(C_6H_5CH_2)(C_6H_5)_3PCl$; FW: 388.88; white xtl.; m.p. 288°
25g
100g

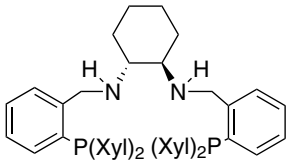
15-0052 **(R)-(-)-1,1'-Binaphthyl-2,2'-diyl hydrogenphosphate, min. 98%** *(39648-67-4)*
$C_{20}H_{13}O_4P$; FW: 348.30; white pwdr.
For detailed technical note visit strem.com.



1g
5g

15-0053 **(S)-(+)-1,1'-Binaphthyl-2,2'-diyl hydrogenphosphate, min. 98%** *(35193-64-7)*
$C_{20}H_{13}O_4P$; FW: 348.30; white pwdr.
For detailed technical note visit strem.com.
1g
5g

15-7320 **(1R,2R)-N,N-Bis{2-[bis(3,5-dimethylphenyl) phosphino]benzyl}cyclohexane-1,2-diamine, min. 97%** *(1150113-66-8)*
$C_{52}H_{60}N_2P_2$; FW: 774.99; yellow solid
air sensitive

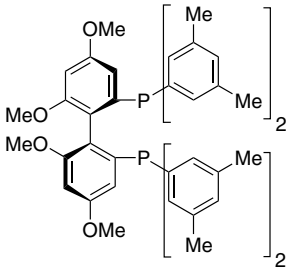


100mg
500mg

15-7321 **(1S,2S)-N,N-Bis{2-[bis(3,5-dimethylphenyl)phosphino]benzyl}cyclohexane-1,2-diamine, min. 97%**
$C_{52}H_{60}N_2P_2$; FW: 774.99; yellow solid
air sensitive
100mg
500mg

PHOSPHORUS (Compounds)

15-1661 **(R)-2,2'-Bis[bis(3,5-dimethylphenyl) phosphino]-4,4',6,6'-tetramethoxy-)-1,1'-biphenyl, min. 97% (R)-Xyl-Garphos™** *(1365531-89-0)*
$C_{48}H_{52}O_4P_2$; FW: 754.87; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

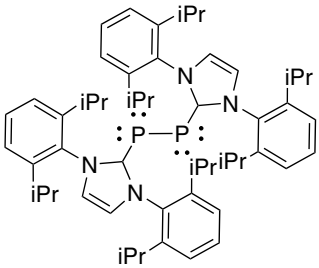


100mg
500mg

15-1662 **(S)-2,2'-Bis[bis(3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Xyl-Garphos™** *(1365531-90-3)*
$C_{48}H_{52}O_4P_2$; FW: 754.87; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg

15-7125 **1,2-Bis[1,3-bis(2,6-di-i-propylphenyl) imidazol-2-ylidene]diphosphine, min. 95%** *(1080030-13-2)*
$C_{54}H_{72}N_4P_2$; FW: 839.12; orange-red xtl.
air sensitive
Note: Sold under license from the University of Georgia Research Foundation, Inc. for research purposes only. US Patent 8,278,456.

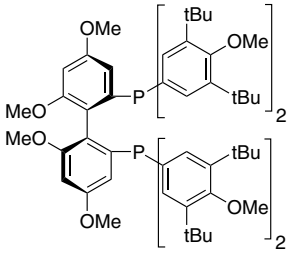


50mg
250mg

Technical Note:
1. A carbene-stabilized diphosphorus.

References:
1. *Inorg. Chem.*, **2011**, *50*, 12326.
2. *J. Am. Chem. Soc.*, **2008**, *130*, 14970.

15-1672 **(R)-2,2'-Bis[bis(4-methoxy-3,5-di-t-butylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-DTBM-Garphos™** *(1365531-98-1)*
$C_{76}H_{108}O_8P_2$; FW: 1211.61; white xtl.
air sensitive, light sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.



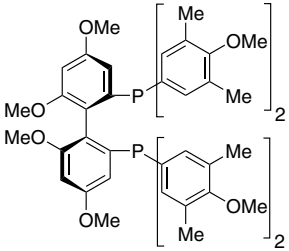
100mg
500mg

15-1673 **(S)-2,2'-Bis[bis(4-methoxy-3,5-di-t-butylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-DTBM-Garphos™** *(1365531-99-2)*
$C_{76}H_{108}O_8P_2$; FW: 1211.61; white xtl.
air sensitive, light sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg

PHOSPHORUS (Compounds)

15-1666 **(R)-2,2'-Bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-DMM-Garphos™** *(1365531-93-6)*
$C_{52}H_{60}O_8P_2$; FW: 874.98; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.



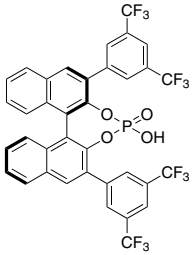
100mg
500mg

15-1667 **(S)-2,2'-Bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-DMM-Garphos™** *(1365531-94-7)*
$C_{52}H_{60}O_8P_2$; FW: 874.98; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg

26-0320 **1,1'-Bis[bis(5-methyl-2-furanyl) phosphino]ferrocene, 98% HiersoPHOS-3**
(756824-22-3)
See page 94

15-1366 **(11bR)-2,6-Bis[3,5-bis(trifluoromethyl)phenyl]-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin, 98%, (99% ee)** *(791616-62-1)*
$C_{36}H_{17}F_{12}O_4P$; FW: 772.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

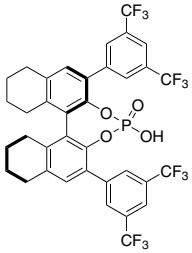


100mg

15-1367 **(11bS)-2,6-Bis[3,5-bis(trifluoromethyl)phenyl]-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(878111-17-2)*
$C_{36}H_{17}F_{12}O_4P$; FW: 772.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

100mg

15-1376 **(11bR)-2,6-Bis[3,5-bis(trifluoromethyl)phenyl]-8,9,10,11,12,13,14,15-octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(1011465-24-9)*
$C_{36}H_{25}F_{12}O_4P$; FW: 780.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



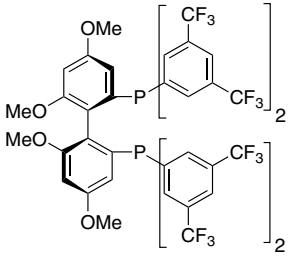
100mg

15-1377 **(11bS)-2,6-Bis[3,5-bis(trifluoromethyl)phenyl]-8,9,10,11,12,13,14,15-octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)**
$C_{36}H_{25}F_{12}O_4P$; FW: 780.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

100mg

PHOSPHORUS (Compounds)

15-1663 **(R)-2,2'-Bis[bis(3,5-trifluoromethylphenyl) phosphino]-4,4',6,6'-tetramethoxy)-1,1'-bi-phenyl, min. 97% (R)-BTFM-Garphos™** *(1365531-84-5)*
$C_{48}H_{28}F_{24}O_4P_2$; FW: 1186.64; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

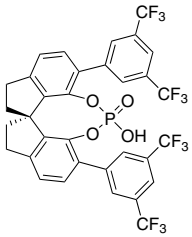


100mg
500mg

15-1664 **(S)-2,2'-Bis[bis(3,5-trifluoromethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-BTFM-Garphos™** *(1365531-85-6)*
$C_{48}H_{28}F_{24}O_4P_2$; FW: 1186.64; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg

15-0527 NEW **(11aR)-3,7-Bis[3,5-bis(trifluoromethyl)phenyl]-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diinde-no[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%** *(1297613-76-3)*
$C_{33}H_{19}F_{12}O_4P$; FW: 738.46; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



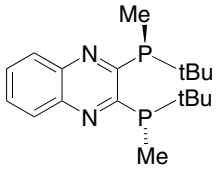
25mg
100mg

15-0528 NEW **(11aS)-3,7-Bis[3,5-bis(trifluoromethyl)phenyl]-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%** *(1258327-07-9)*
$C_{33}H_{19}F_{12}O_4P$; FW: 738.46; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.

25mg
100mg

26-0315 **1',4-Bis(t-butyl)-1,2-bis(diphenylphosphino)-3'-(di-i-propylphosphino) ferrocene, 98% HiersoPHOS-1** *(1313012-94-0)*
See page 94

15-0126 **(R,R)-(-)-2,3-Bis(t-butylmethylphosphino) quinoxaline, min. 98% (R,R)-QuinoxP*** *(866081-62-1)*
$C_{18}H_{28}N_2P_2$; FW: 334.38; orange pwdr.; m.p. 102-103°
Note: Sold in collaboration with JCI for research purposes only. US 7,608,709, JP4,500,289.
For detailed technical note visit strem.com.



100mg
500mg

15-0127 **(S,S)-(+)-2,3-Bis(t-butylmethylphosphino)quinoxaline, min. 98% (S,S)-QuinoxP*** *(1107608-80-9)*
$C_{18}H_{28}N_2P_2$; FW: 334.38; orange pwdr.; m.p. 102-103°
Note: Sold in collaboration with JCI for research purposes only. US 7,608,709, JP4,500,289.
For detailed technical note visit strem.com.

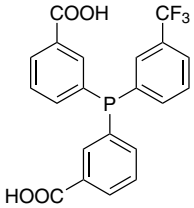
100mg
500mg

26-0326 **4,4'-Bis(t-butyl)-1,1',2,2'-tetrakis(diphenylphosphino)ferrocene, 98% HiersoPHOS-5** *(403815-19-0)*
See page 94

26-0318 **1',4-Bis(t-butyl)-1,2,3'-tris(diphenylphosphino) ferrocene, 98% HiersoPHOS-2** *(1159850-42-6)*
See page 94

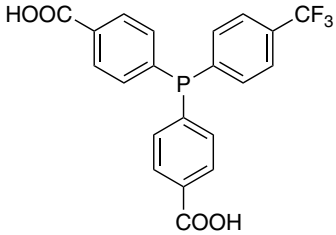
PHOSPHORUS (Compounds)

15-0270 **Bis(3-carboxyphenyl)(3-trifluoromethylphenyl)phosphine, min. 97% m-Miran2phos** *(1808959-39-8)*
$C_{21}H_{14}F_3O_4P$; FW: 418.30; white pwdr.
Note: Sold under license from UAB for research purposes only. Spanish Patent Application P201231702.



100mg
500mg

15-0268 **Bis(4-carboxyphenyl)(4-trifluoromethylphenyl)phosphine, min. 97% p-Miran2phos**
$C_{21}H_{14}F_3O_4P$; FW: 418.30; white solid
Note: Sold under license from UAB for research purposes only. Spanish Patent Application P201231702.

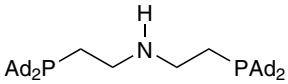


100mg
500mg

15-0075 **Bis(2-cyanoethyl)phenylphosphine, min. 97%** *(15909-92-9)*
$(NCCH_2CH_2)_2(C_6H_5)P$; FW: 216.22; colorless xtl.; m.p. 72-73°; b.p. 176-178°/0.5 mm
air sensitive

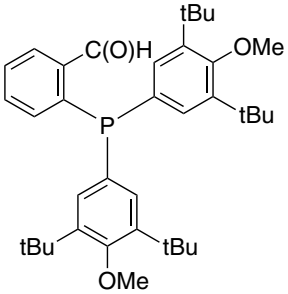
1g
5g

15-7312 **Bis[2-(di-1-adamantylphosphino)ethyl] amine, min. 97%** *(1086138-36-4)*
$C_{44}H_{69}NP_2$; FW: 673.97; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2004096735.



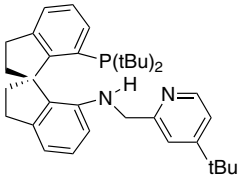
250mg
1g

15-7338 **2-[Bis(3,5-di-t-butyl-4-methoxyphenyl) phosphino]benzaldehyde, min. 97%**
(1202865-21-1)
$C_{37}H_{51}O_3P$; FW: 574.77; yellow solid



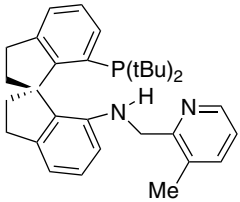
100mg
500mg

15-5147 NEW
(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(4-t-butylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-4-t-Bu *(1298133-38-6)*
$C_{55}H_{71}N_2P$; FW: 791.14; white solid; m.p. 86-88°
air sensitive
For detailed technical note visit strem.com.



25mg
100mg

15-5158 NEW
(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-3-Me *(1298133-36-4)*
$C_{52}H_{65}N_2P$; FW: 749.06; white to off-white solid; m.p. 160-161°
air sensitive
For detailed technical note visit strem.com.

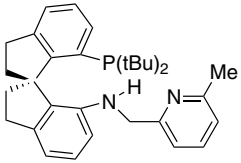


25mg
100mg

PHOSPHORUS (Compounds)

15-5148 NEW

(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(6-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-6-Me *(1298133-26-2)*
$C_{52}H_{65}N_2P$; FW: 749.06; white solid; m.p. 153-155°
air sensitive
For detailed technical note visit strem.com.



25mg
100mg

15-5159 NEW

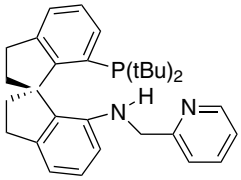
(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (S)-DTB-SpiroPAP-3-Me
$C_{52}H_{65}N_2P$; FW: 749.06; white to off-white solid; m.p. 162-164°
air sensitive

25mg
100mg

Technical Note:
1. See 15-5158 (page 256)

15-5166 NEW

(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(pyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP *(1298133-21-7)*
$C_{51}H_{63}N_2P$; FW: 735.03; white solid; m.p. 172-174°
air sensitive
For detailed technical note visit strem.com.



25mg
100mg

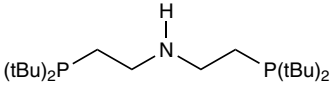
15-5167 NEW

(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(pyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (S)-DTB-SpiroPAP *(1415636-82-6)*
$C_{51}H_{63}N_2P$; FW: 735.03; white solid; m.p. 170-171°
air sensitive
For detailed technical note visit strem.com.

25mg
100mg

15-7309

Bis[2-(di-t-butylphosphino)ethyl] amine, min. 97% (10wt% in hexanes) *(944710-34-3)*
$C_{20}H_{45}NP_2$; FW: 361.53; colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2004096735.

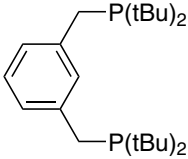


5g
25g

26-0150 **1,1'-Bis(di-t-butylphosphino)ferrocene, min. 98% DTBPF** *(84680-95-5)*
See page 95

15-0065

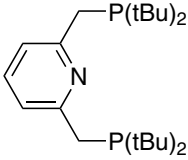
1,3-Bis(di-t-butylphosphinomethyl)benzene, 99% *(149968-36-5)*
$C_6H_4[CH_2P(C_4H_9)_2]_2$; FW: 394.56; white pwdr.
air sensitive



250mg
1g

15-0063

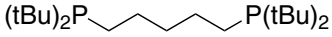
2,6-Bis(di-t-butylphosphinomethyl)pyridine, 99% *(338800-13-8)*
$C_5H_4N[CH_2P(C_4H_9)_2]_2$; FW: 395.54; white to light-yellow pwdr.
air sensitive



250mg
1g

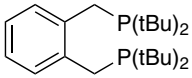
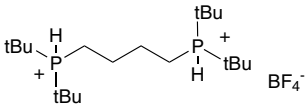
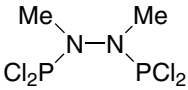
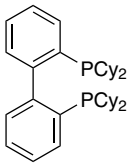
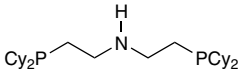
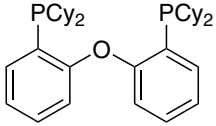
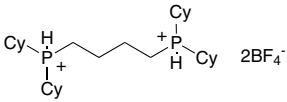
15-0061

1,5-Bis(di-t-butylphosphino)pentane, min. 97% *(65420-68-0)*
$(C_4H_9)_2P(CH_2)_5P(C_4H_9)_2$; FW: 360.54; colorless, viscous liq.
air sensitive
For detailed technical note visit strem.com.



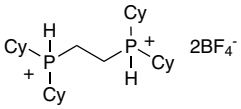
500mg
2g

PHOSPHORUS (Compounds)

15-0072	**α, α'-Bis(di-t-butylphosphino)-o-xylene, min. 97%** *(121954-50-5)* $C_6H_4[CH_2P(C_4H_9)_2]_2$; FW: 394.56; white xtl.; m.p. 59-62° *air sensitive* 	500mg 2g
15-9582	**1,4-Bis(di-t-butylphosphonium)butane bis(tetrafluoroborate), min. 97%** $(C_4H_9)_2PH^+CH_2CH_2CH_2CH_2PH^+(C_4H_9)_2$ $(BF_4)_2$; FW: 522.14; white solid; m.p. 257-259° 	1g 5g
15-0069 amp	**1,2-Bis(dichlorophosphino)benzene, min. 97%** *(82495-67-8)* $C_6H_4Cl_4P_2$; FW: 279.85; colorless to pale yellow liq. *moisture sensitive*	500mg 2g
15-0076 amp HAZ	**1,2-Bis(dichlorophosphino)-1, 2-dimethylhydrazine, min. 98%** *(37170-64-2)* $Cl_2PN(CH_3)N(CH_3)PCl_2$; FW: 261.84; colorless to slightly cloudy liq. *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.** 	2g 10g
15-0082 amp HAZ	**1,2-Bis(dichlorophosphino)ethane, min. 97%** *(28240-69-9)* $Cl_2PCH_2CH_2PCl_2$; FW: 231.81; colorless to pale yellow liq.; b.p. 70°/1 mm; d. 1.536 *air sensitive, moisture sensitive*	2g 10g 50g
15-0081 amp HAZ	**Bis(dichlorophosphino)methane, min. 90%** *(28240-68-8)* $Cl_2PCH_2PCl_2$; FW: 217.78; colorless liq.; b.p. 101-105°/22mm; d. 1.601 *air sensitive, moisture sensitive*	2g 10g
15-0116 amp HAZ	**Bis(dichlorophosphino)methylamine, min. 97%** *(17648-16-7)* $CH_3N(PCl_2)_2$; FW: 232.80; colorless to pale yellow liq. *moisture sensitive*	500mg 2g
15-9560	**2,2'-Bis(dicyclohexylphosphino)-1,1'-biphenyl, min. 97%** *(255897-36-0)* $C_{36}H_{52}P_2$; FW: 546.75; white to pale yellow pwdr. 	250mg 1g
15-9585	**1,2-Bis(dicyclohexylphosphino)ethane, min. 98%** *(23743-26-2)* $(C_6H_{11})_2PCH_2CH_2P(C_6H_{11})_2$; FW: 422.61; white xtl.; m.p. 96-97° *air sensitive*	1g 5g
15-7310	**Bis[2-(dicyclohexylphosphino)ethyl]amine, min. 97%** *(550373-32-5)* $C_{28}H_{53}NP_2$; FW: 465.67; white solid *air sensitive* Note: Sold under license from Kanata for research purposes only. WO 2004096735. 	250mg 1g
15-9590	**Bis(dicyclohexylphosphino)methane, min. 97%** *(137349-65-6)* $(C_6H_{11})_2PCH_2P(C_6H_{11})_2$; FW: 408.59; white xtl. *air sensitive*	1g 5g
15-0048	**Bis(2-dicyclohexylphosphinophenyl)ether, 98%** *(434336-16-0)* $C_{36}H_{52}OP_2$; FW: 562.75; white pwdr. 	500mg 2g
15-9562	**1,4-Bis(dicyclohexylphosphonium) butane bis(tetrafluoroborate), min. 97%** *(1389309-54-9)* $(C_6H_{11})_2PH^+CH_2CH_2CH_2CH_2PH^+(C_6H_{11})_2$ $(BF_4)_2$; FW: 626.29; white solid; m.p. 236-238° 	1g 5g

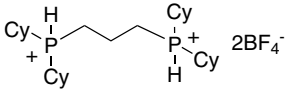
PHOSPHORUS (Compounds)

15-9558 **1,2-Bis(dicyclohexylphosphonium)ethane bis(tetrafluoroborate), min. 97%** *(1779389-90-0)*
$C_{26}H_{50}B_2F_8P_2$; FW: 598.23; white solid; m.p. 236-239°



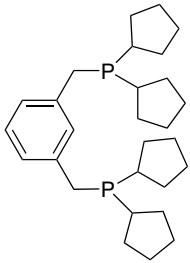
1g
5g

15-9593 **1,3-Bis(dicyclohexylphosphonium) propane bis(tetrafluoroborate), min. 97%** *(1002345-50-7)*
$[(C_6H_{11})_2PCH_2CH_2CH_2P(C_6H_{11})_2]\cdot 2HBF_4$;
FW: 612.26; white pwdr.
hygroscopic
For detailed technical note visit strem.com.



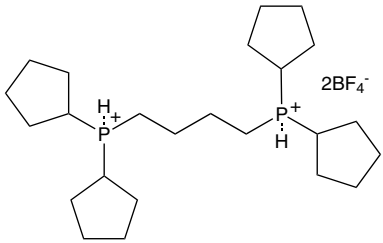
1g
5g

15-9595 **1,3-Bis(dicyclopentylphosphinomethyl)benzene, 99%** *(255874-48-7)*
$C_6H_4[CH_2P(C_5H_9)_2]_2$; FW: 442.60; white, waxy solid
air sensitive



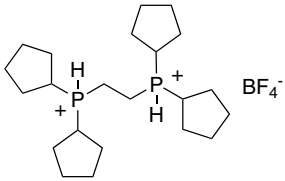
250mg
1g

15-9574 **1,4-Bis(dicyclopentylphosphonium)butane bis(tetrafluoroborate), min. 97%** *(1799401-51-6)*
$(C_5H_9)_2PH^+CH_2CH_2CH_2CH_2PH^+(C_5H_9)_2\ (BF_4)_2$; FW: 570.18; white solid; m.p. 195-197°



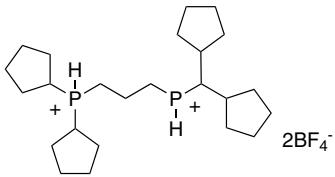
1g
5g

15-9568 **1,2-Bis(dicyclopentylphosphonium) ethane bis(tetrafluoroborate), min. 97%** *(1799401-52-7)*
$(C_5H_9)_2PH^+CH_2CH_2PH^+(C_5H_9)_2(BF_4)_2$;
FW: 542.13; white solid; m.p. 230-233°



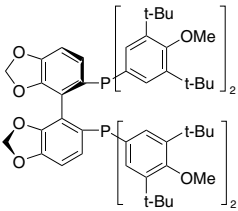
1g
5g

15-9572 **1,3-Bis(dicyclopentylphosphonium) propane bis(tetrafluoroborate), min. 97%** *(1799401-53-8)*
$(C_5H_9)_2PH^+CH_2CH_2CH_2PH^+(C_5H_9)_2\ (BF_4)_2$;
FW: 556.15; white pwdr.; m.p. 141-143°



1g
5g

15-0066 **(R)-(-)-5,5'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl) phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(-)-DTBM-SEGPHOS®** *(566940-03-2)*
$C_{74}H_{100}O_8P_2$; FW: 1179.53; off-white pwdr.; m.p. 126-128°
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ligand Kit component.
For detailed technical note visit strem.com.

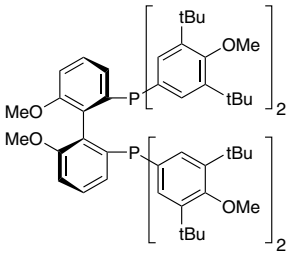


250mg
1g
5g

PHOSPHORUS (Compounds)

15-0067 **(S)-(+)-5,5'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(+)-DTBM-SEGPHOS®** *(210169-40-7)*
$C_{74}H_{100}O_8P_2$; FW: 1179.53; off-white pwdr.; m.p. 126-128°
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ligand Kit component.
For detailed technical note visit strem.com.
250mg
1g
5g

15-0042 **(R)-(-)-2,2'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(352655-61-9)*
$C_{74}H_{104}O_6P_2$; FW: 1151.60; white xtl.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

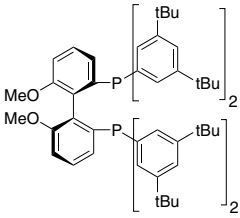


100mg
500mg
2g
10g

15-0043 **(S)-(+)-2,2'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(910134-30-4)*
$C_{74}H_{104}O_6P_2$; FW: 1151.60; white xtl.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.
100mg
500mg
2g
10g

Technical Note:
1. See 15-0042 (page 260)

15-0044 **(R)-(+)-2,2'-Bis[di(3,5-di-t-butylphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(192138-05-9)*
$C_{70}H_{96}O_2P_2$; FW: 1031.49; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

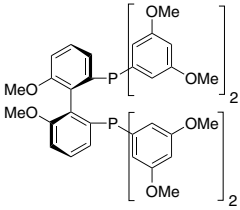


100mg
500mg
2g
10g

15-0045 **(S)-(-)-2,2'-Bis[di(3,5-di-t-butylphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(167709-31-1)*
$C_{70}H_{96}O_2P_2$; FW: 1031.49; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component,
100mg
500mg
2g
10g

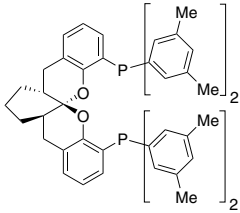
Technical Note:
1. See 15-0044 (page 260)

15-0185 NEW **(R)-(+)-2,2'-Bis[di(3,5-dimethoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, 98% (R)-ECNU-Phos** *(1448722-98-2)*
$C_{46}H_{48}O_{10}P_2$; FW: 822.82; white solid; m.p. 236-237°
air sensitive, (store cold)
Note: Sold under license from ECNU for research purposes only. Patent CN201310135176.3.
For detailed technical note visit strem.com.



25mg
100mg

15-4320 **(+)-1,13-Bis[di(3,5-dimethylphenyl)phosphino]-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (R,R,R)-(+)-Xyl-SKP** *(1429939-35-4)*
$C_{52}H_{54}O_2P_2$; FW: 772.93; white solid; m.p. 102-103°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents PCT/CN2013/071091, CN202110253896.5. SKP Ligand Kit component.
For detailed technical note visit strem.com.

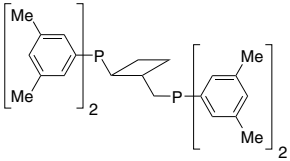


25mg
100mg

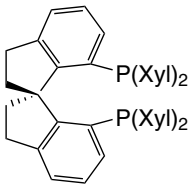
PHOSPHORUS (Compounds)

15-4321 **(-)-1,13-Bis[di(3,5-dimethylphenyl)phosphino]-(5aS,8aS,14aS)-5a,6,7,8,8a, 9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (S,S,S)-(-)-Xyl-SKP** 25mg 100mg
(1429939-31-0)
$C_{52}H_{54}O_2P_2$; FW: 772.93; white solid; m.p. 102-103°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents PCT/CN2013/071091, CN202110253896.5. SKP Ligand Kit component.
For detailed technical note visit strem.com.

15-5172 **racemic-trans-1,2-Bis[di(3,5-dimethylphenyl) phosphinomethyl]cyclobutane, min. 95%** 250mg 1g
(1226906-44-0)
$C_{38}H_{46}P_2$; FW: 564.72; white solid

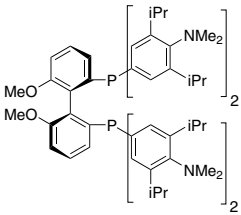


15-5168 **(R)-(+)-7,7'-Bis[di(3,5-dimethylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-Xyl-SDP** *(917377-75-4)* 25mg 100mg
$C_{49}H_{50}P_2$; FW: 700.87; off-white to pale yellow solid
air sensitive
Note: Spiro Bisphosphine Ligand Kit component.
For detailed technical note visit strem.com.



15-5169 **(S)-(-)-7,7'-Bis[di(3,5-dimethylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-Xyl-SDP** *(528521-89-3)* 25mg 100mg
$C_{49}H_{50}P_2$; FW: 700.87; off-white to pale yellow solid
air sensitive
Note: Spiro Bisphosphine Ligand Kit component.
For detailed technical note visit strem.com.

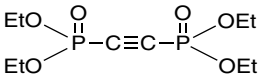
15-0652 **(R)-(-)-2,2'-Bis[di(3,5-di-i-propyl-4-dimethylaminophenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(352655-40-4)* 100mg 500mg 2g 10g
$C_{70}H_{100}N_4O_2P_2$; FW: 1091.55; white pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.



15-0653 **(S)-(+)-2,2'-Bis[di(3,5-di-i-propyl-4-dimethylaminophenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(919338-66-2)* 100mg 500mg 2g 10g
$C_{70}H_{100}N_4O_2P_2$; FW: 1091.55; white pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.

Technical Note:
1. See 15-0652 (page 261)

15-0119 **Bis(diethoxyphosphoryl)acetylene, 99%** 500mg 2g
(4851-53-0)
$C_{10}H_{20}O_6P_2$; FW: 298.21; yellow liq.; b.p. 181.5-182.5(2.5mm); d. 1.12
moisture sensitive

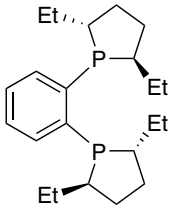


15-0084 amp HAZ **Bis(diethylamino)chlorophosphine, min. 97%** *(685-83-6)* 1g 5g
$[(C_2H_5)_2N]_2PCl$; FW: 210.68; colorless to light yellow liq. (may contain trace insolubles); b.p. 124-125°/15 mm; d. 1.002
air sensitive, moisture sensitive

15-0083 amp HAZ **1,2-Bis(diethylphosphino)ethane, 98%** *(6411-21-8)* 1g 5g
$(C_2H_5)_2PCH_2CH_2P(C_2H_5)_2$; FW: 206.25; colorless liq.; b.p. 124-126°/10 mm; d. 0.884 (25°)
air sensitive

PHOSPHORUS (Compounds)

15-0097 **(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano)benzene, 98+% (R,R)-Et-DUPHOS** *(136705-64-1)*
$C_{22}H_{36}P_2$; FW: 362.48; colorless oil; d. 1.01
air sensitive
For detailed technical note visit strem.com.

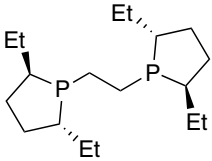


100mg
500mg
2g

15-0098 **(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano)benzene, 98+% (S,S)-Et-DUPHOS** *(136779-28-7)*
$C_{22}H_{36}P_2$; FW: 362.48; colorless oil; d. 1.010
air sensitive
For detailed technical note visit strem.com.

100mg
500mg
2g

15-0101 **(+)-1,2-Bis((2R,5R)-2,5-diethylphospholano)ethane, 98+% (R,R)-Et-BPE** *(136705-62-9)*
$(C_8H_{16})PCH_2CH_2P(C_8H_{16})$; FW: 314.43; colorless to pale-yellow liq.; b.p. 104-106°/0.05mm; d. 0.939
air sensitive
For detailed technical note visit strem.com.



100mg
500mg
2g

15-0102 **(-)-1,2-Bis((2S,5S)-2,5-diethylphospholano)ethane, 98+% (S,S)-Et-BPE** *(136779-27-6)*
$(C_8H_{16})PCH_2CH_2P(C_8H_{16})$; FW: 314.43; colorless to pale-yellow liq.; b.p. 104-106°/0.05mm
air sensitive

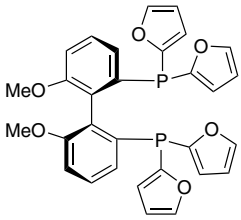
100mg
500mg
2g

26-1625 **1,1'-Bis[(2R,5R)-2,5-diethylphospholano]ferrocene, min. 97%**
(147762-89-8)
See page 95

26-1626 **1,1'-Bis[(2S,5S)-2,5-diethylphospholano]ferrocene, min. 97%**
(436863-50-2)
See page 95

26-0201 **(-)-1,1'-Bis((2S,4S)-2,4-diethylphosphonato)ferrocene, min. 95% (S,S)-Et-FerroTANE®** *(290347-66-9)*
See page 95

15-0112 **(R)-(+)-2,2'-Bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(145214-57-9)*
$C_{30}H_{24}O_6P_2$; FW: 542.47; off-white pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.



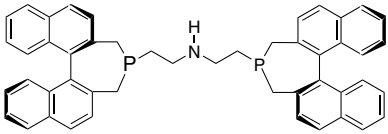
100mg
500mg
2g
10g

15-0113 **(S)-(-)-2,2'-Bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%**
(145214-59-1)
$C_{30}H_{24}O_6P_2$; FW: 542.47; off-white pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.

100mg
500mg
2g
10g

Technical Note:
1. See 15-0112 (page 262)

15-7301 **Bis{2-[(11bR)-3,5-dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]ethyl}amine, min. 97%** *(851870-89-8)*
$C_{48}H_{41}NP_2$; FW: 693.79; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2004096735.



100mg
500mg

PHOSPHORUS (Compounds)

15-0089 **1,2-Bis(dimethoxyphosphoryl)benzene, 99%** *(15104-46-8)* — 5g, 25g
$C_6H_4[P(O)(OCH_3)_2]_2$; FW: 294.18; white xtl.; m.p. 80-82°

26-0240 **(S,S)-(+)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(dicyclohexylphosphino)ferrocene, min. 97%** *(494227-35-9)*
See page 96

26-0248 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocene, min. 97%** *(494227-37-1)*
See page 96

26-0245 **(R,R)-(+)-2,2'-Bis[(S)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97%** *(847997-73-3)*
See page 96

26-0246 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97%** *(793718-16-8)*
See page 96

26-0253 **(R,R)-(+)-2,2'-Bis[(S)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(2-methylphenyl)phosphino)ferrocene, min. 97%** *(831226-39-2)*
See page 96

26-0252 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl) methyl]-1,1'-bis(diphenylphosphino)ferrocene, min. 97%** *(174467-31-3)*
See page 96

26-0244 **(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-trifluoromethylphenyl)phosphino]ferrocene, min. 97%** *(494227-36-0)*
See page 97

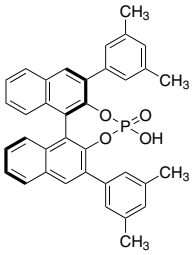
15-0087 HAZ **Bis(dimethylamino)phosphoryl chloride, 95+%** *(1605-65-8)* — 10g, 50g
$[(CH_3)_2N]_2P(O)Cl$; FW: 170.58; colorless liq.; b.p. 85°/0.35 mm; f.p. >230°F; d. 1.17
moisture sensitive

15-0111 HAZ **Bis(3,5-dimethyl-4-methoxyphenyl)chlorophosphine, min. 98%** *(136802-85-2)* — 500mg, 2g
$C_{18}H_{22}ClO_2P$; FW: 336.79; colorless, viscous liq.
moisture sensitive

26-1150 **(R)-(-)-1-{(S)-2-[Bis(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocenyl} ethyldicyclohexylphosphine, min. 97%** *(360048-63-1)*
See page 97

26-1130 **(R)-(+)-1-{(R)-2-[2'-Bis(3,5-dimethyl-4-methoxyphenyl)phosphinophenyl] ferrocenyl} ethylbis(di-3,5-tri fluoromethylphenyl) phosphine, min. 97%** *(494227-30-4)*
See page 97

15-1368 **(11bR)-2,6-Bis(3,5-dimethylphenyl)-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(861909-53-7)* — 100mg
$C_{36}H_{29}O_4P$; FW: 556.6; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

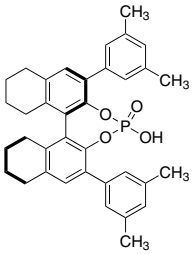


15-1369 **(11bS)-2,6-Bis(3,5-dimethylphenyl)-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(1170736-59-0)* — 100mg
$C_{36}H_{29}O_4P$; FW: 556.6; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

PHOSPHORUS (Compounds)

15-1373 **(11bR)-2,6-Bis(3,5-dimethylphenyl)-8,9,10,11,12,13,14,15-octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(1065214-95-0)* — 100mg

$C_{36}H_{37}O_4P$; FW: 564.7
Note: Sold in collaboration with Daicel for research purposes only.



15-1374 **(11bS)-2,6-Bis(3,5-dimethylphenyl)-8,9,10,11,12,13,14,15-octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** — 100mg

$C_{36}H_{37}O_4P$; FW: 564.7; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

15-0088 amp HAZ — **Bis(3,5-dimethylphenyl)phosphine, 98%** *(71360-06-0)* — 100mg, 500mg

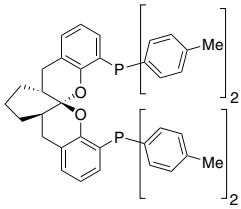
$[(CH_3)_2C_6H_3]_2PH$; FW: 242.30; colorless liq.
pyrophoric

15-6185 amp — **Bis(3,5-dimethylphenyl)phosphine, 98% (10wt% in hexanes)** *(71360-06-0)* — 1g, 5g

$[(CH_3)_2C_6H_3]_2PH$; FW: 242.30; colorless liq.
air sensitive

15-4330 **(+)-1,13-Bis[di(4-methylphenyl)phosphino]-(5aR, 8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzo-pyrano[3,2-d]xanthene, 97% (R,R,R)-(+)-Tol-SKP** *(1429939-32-1)* — 25mg, 100mg

$C_{48}H_{46}O_2P_2$; FW: 716.83; white solid; m.p. 90-92°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents PCT/CN2013/071091, CN202110253896.5. SKP Ligand Kit component.
For detailed technical note visit strem.com.

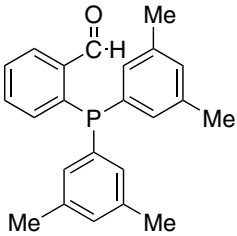


15-4331 **(-)-1,13-Bis[di(4-methylphenyl)phosphino]-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (S,S,S)-(-)-Tol-SKP** — 25mg, 100mg

(1548897-80-8)
$C_{48}H_{46}O_2P_2$; FW: 716.83; white pwdr.; m.p. 90-92°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents PCT/CN2013/071091, CN202110253896.5. SKP Ligand Kit component.
For detailed technical note visit strem.com.

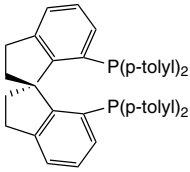
15-7340 **2-[Bis(3,5-dimethylphenyl)phosphino]benzalde-hyde, min. 97%** *(669091-00-3)* — 100mg, 500mg

$C_{23}H_{23}OP$; FW: 346.40; yellow solid



15-5180 **(R)-(+)-7,7'-Bis[di(4-methylphenyl)phosphi-no]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-Tol-SDP** *(528521-87-1)* — 25mg, 100mg

$C_{45}H_{42}P_2$; FW: 644.76; white solid; m.p. 150-152°
air sensitive
Note: Spiro Bisphosphine Ligand Kit component.
For detailed technical note visit strem.com.

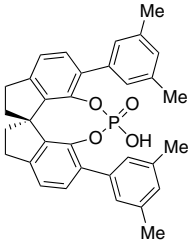


PHOSPHORUS (Compounds)

15-5181 **(S)-(-)-7,7'-Bis[di(4-methylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-Tol-SDP** *(817176-80-0)* — 25mg, 100mg
$C_{45}H_{42}P_2$; FW: 644.76; white solid; m.p. 150-152°
air sensitive
Note: Spiro Bisphosphine Ligand Kit component.

Technical Note:
1. See 15-5180 (page 264)

15-0542 NEW **(11aR)-3,7-Bis(3,5-dimethylphenyl)-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%** *(1297613-75-2)* — 25mg, 100mg
$C_{33}H_{31}O_4P$; FW: 522.57; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



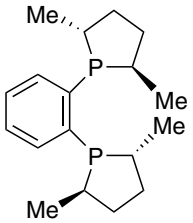
15-0543 NEW **(11aS)-3,7-Bis(3,5-dimethylphenyl)-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%** *(1412439-82-7)* — 25mg, 100mg
$C_{33}H_{31}O_4P$; FW: 522.57; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

Technical Note:
1. See 15-0542 (page 265)

15-0090 amp HAZ **1,2-Bis(dimethylphosphino)ethane, 98% DMPE** *(23936-60-9)* — 250mg, 1g, 5g
$(CH_3)_2PCH_2CH_2P(CH_3)_2$; FW: 150.14; colorless liq.; b.p. 180°; f.p. 2°F; d. 0.90
air sensitive

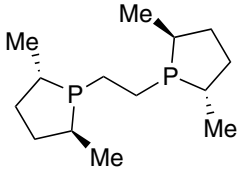
15-0093 amp HAZ **Bis(dimethylphosphino)methane, min. 98%** *(64065-08-3)* — 1g, 5g
$(CH_3)_2PCH_2P(CH_3)_2$; FW: 136.12; colorless liq.; b.p. 42°/12 mm; d. 0.86
air sensitive, pyrophoric

15-0096 **(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)benzene, 98+% (R,R)-Me-DUPHOS** *(147253-67-6)* — 100mg, 500mg, 2g
$C_{18}H_{28}P_2$; FW: 306.37; white xtl.; m.p. 82-84°
air sensitive
For detailed technical note visit strem.com.



15-0092 **(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene, 98+% (S,S)-Me-DUPHOS** *(136735-95-0)* — 100mg, 500mg, 2g
$C_{18}H_{28}P_2$; FW: 306.37; white xtl.; m.p. 82-84°
air sensitive
For detailed technical note visit strem.com.

15-0104 **(+)-1,2-Bis((2R,5R)-2,5-dimethylphospholano) ethane, 98+% (R,R)-Me-BPE** *(129648-07-3)* — 100mg, 500mg, 2g
$(C_6H_{12})PCH_2CH_2P(C_6H_{12})$; FW: 258.33; colorless to pale-yellow liq.; b.p. 64-67°/0.06mm; d. 0.940
air sensitive
For detailed technical note visit strem.com.



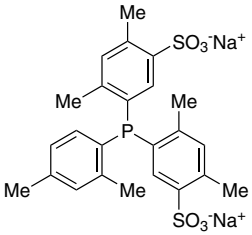
15-0105 **(-)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)ethane, 98+% (S,S)-Me-BPE** *(136779-26-5)* — 100mg, 500mg, 2g
$(C_6H_{12})PCH_2CH_2P(C_6H_{12})$; FW: 258.33; colorless to pale-yellow liq.; b.p. 64-67°/0.06mm; d. 0.938
air sensitive

PHOSPHORUS (Compounds)

26-1618 **1,1'-Bis((2R,5R)-2,5-dimethylphospholano)ferrocene, min. 97%**
(540475-45-4)
See page 97

26-1619 **1,1'-Bis((2S,5S)-2,5-dimethylphospholano)ferrocene, min. 97%**
(162412-87-5)
See page 97

15-0099 **Bis(4,6-dimethyl-3-sulfonatophenyl) (2,4-dimethylphenyl)phosphine, disodium salt hydrate, min. 95% TXPDS** — 250mg, 1g
$C_{24}H_{25}Na_2O_6PS_2$; FW: 550.54; white pwdr.
Note: Water soluble phosphine.

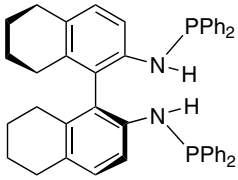


15-0094 **1,2-Bis(dipentafluorophenylphosphino)ethane, 99%** *(76858-94-1)* — 1g, 5g
$(C_6F_5)_2PCH_2CH_2P(C_6F_5)_2$; FW: 758.26; off-white xtl.; m.p. 188-190°

15-0100 **Bis(diphenylphosphino)acetylene, 97%** *(5112-95-8)* — 1g, 5g
$(C_6H_5)_2PC{\equiv}CP(C_6H_5)_2$; FW: 394.39; white xtl.; m.p. 85-87°

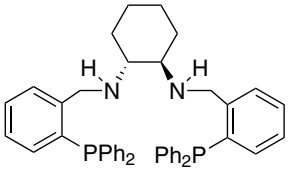
15-0110 **N,N-Bis(diphenylphosphino)amine, min. 98%** *(2960-37-4)* — 1g, 5g
$(C_6H_5)_2PNHP(C_6H_5)_2$; FW: 385.38; white xtl.; m.p. 143-145°

15-0402 **(S)-(-)-2,2'-Bis(N-diphenylphosphinoamino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl, min. 95% CTH-(S)-BINAM** *(229177-79-1)* — 100mg, 500mg
$C_{44}H_{42}N_2P_2$; FW: 660.77; white solid
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent US 5919981 and patents arising therefrom.
For detailed technical note visit strem.com.



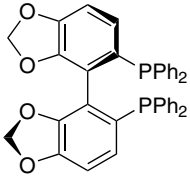
15-0130 **1,2-Bis(diphenylphosphino)benzene, 98%** *(13991-08-7)* — 1g, 5g
o-$C_6H_4[P(C_6H_5)_2]_2$; FW: 446.47; white xtl.; m.p. 185-187°

15-7325 **(1R,2R)-N,N-Bis[2-(diphenylphosphino) benzyl]cyclohexane-1,2-diamine, min. 97%** — 250mg, 1g
(174758-63-5)
$C_{44}H_{44}N_2P_2$; FW: 662.78; yellow solid
air sensitive



15-7326 **(1S,2S)-N,N-Bis[2-(diphenylphosphino)benzyl]cyclohexane-1,2-diamine, min. 97%** *(174677-83-9)* — 250mg, 1g
$C_{44}H_{44}N_2P_2$; FW: 662.78; yellow solid
air sensitive

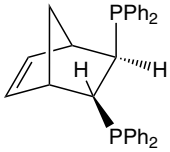
15-0136 **(R)-(+)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(+)-SEGPHOS®** *(244261-66-3)* — 250mg, 1g, 5g
$C_{38}H_{28}O_4P_2$; FW: 610.57; off-white pwdr.; m.p. 168-172°
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ligand Kit component.
For detailed technical note visit strem.com.



15-0137 **(S)-(-)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(-)-SEGPHOS®** *(210169-54-3)* — 250mg, 1g, 5g
$C_{38}H_{28}O_4P_2$; FW: 610.57; off-white pwdr.; m.p. 168-172°
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ligand Kit component.
For detailed technical note visit strem.com.

PHOSPHORUS (Compounds)

15-0140 **(2R,3R)-(-)-2,3-Bis(diphenylphosphino)-bicyclo[2.2.1]hept-5-ene, min. 95% (R,R)-NORPHOS** *(71042-55-2)*
$C_{31}H_{28}P_2$; FW: 462.51; white xtl.; m.p. 116-119°
air sensitive
For detailed technical note visit strem.com.

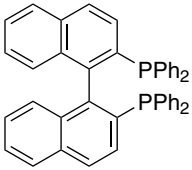


250mg
1g

15-0141 **(2S,3S)-(+)-2,3-Bis(diphenylphosphino)-bicyclo[2.2.1]hept-5-ene, min. 95% (S,S)-NORPHOS** *(71042-54-1)*
$C_{31}H_{28}P_2$; FW: 462.51; white xtl.; m.p. 112-115°
air sensitive

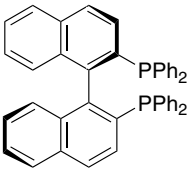
250mg
1g

15-0433 **racemic-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% rac-BINAP** *(98327-87-8)*
$C_{44}H_{32}P_2$; FW: 622.70; white to light-yellow xtl.
Note: Phosphine Ligand Kit component.
For detailed technical note visit strem.com.



1g
5g
25g
100g

15-0150 **(R)-(+)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% (R)-(+)-BINAP** *(76189-55-4)*
$C_{44}H_{32}P_2$; FW: 622.70; white to off-white pwdr.; m.p. 240.5-242°
Note: Manufactured under license of Takasago patent. Takasago BINAP Ligand Kit component.
For detailed technical note visit strem.com.

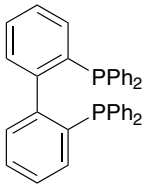


250mg
1g
5g

15-0151 **(S)-(-)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% (S)-(-)-BINAP** *(76189-56-5)*
$C_{44}H_{32}P_2$; FW: 622.70; white to off-white pwdr.; m.p. 241-242°
Note: Manufactured under license of Takasago patent. Takasago BINAP Ligand Kit component.
For detailed technical note visit strem.com.

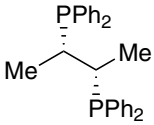
250mg
1g
5g

15-0145 **2,2'-Bis(diphenylphosphino)-1,1'- biphenyl, 98% BIPHEP** *(84783-64-2)*
$C_{36}H_{28}P_2$; FW: 522.57; white xtl.; m.p. 210-214°
For detailed technical note visit strem.com.



250mg
1g
5g

15-0160 **(2S,3S)-(-)-Bis(diphenylphosphino)butane (S,S)-CHIRAPHOS** *(64896-28-2)*
$(C_6H_5)_2PCH(CH_3)CH(CH_3)P(C_6H_5)_2$; FW: 426.48; white xtl.; m.p. 108-109°
air sensitive
For detailed technical note visit strem.com.

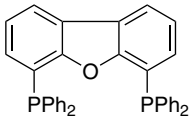


250mg
1g
5g

15-0170 **1,4-Bis(diphenylphosphino)butane, 98% DPPB** *(7688-25-7)*
$(C_6H_5)_2PCH_2CH_2CH_2CH_2P(C_6H_5)_2$; FW: 426.48; white xtl.; m.p. 132-134°

2g
10g
50g

15-0183 **4,6-Bis(diphenylphosphino) dibenzofuran, 98% DBFphos**
(133850-81-4)
$C_{36}H_{26}OP_2$; FW: 536.54; white pwdr.



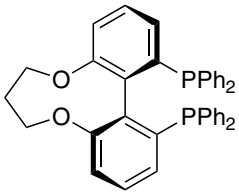
100mg
500mg
2g

PHOSPHORUS (Compounds)

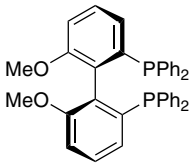
15-0176 **(S)-(+)-1,13-Bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin, 95% (S)-C_3-TUNEPHOS** *(486429-99-6)* — 100mg, 500mg
$C_{39}H_{32}O_2P_2$; FW: 594.62; white pwdr.
air sensitive
Note: Sold in collaboration with Chiral Quest for research purposes only. US Patent No. 6,521,769; additional patents pending. Chiral Quest Catalyst and Ligand Toolbox Kit component.

Technical Note:
1. See 15-0175 (page 268)

15-0175 **R-(-)-1,13-Bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin, 97% (R)-C_3-TUNEPHOS** *(301847-89-2)* — 100mg, 500mg
$C_{39}H_{32}O_2P_2$; FW: 594.62; white pwdr.
air sensitive
Note: Sold in collaboration with Chiral Quest for research purposes only. US Patent No. 6,521,769; additional patents pending. Chiral Quest Catalyst and Ligand Toolbox Kit component.
For detailed technical note visit strem.com.



15-0178 **(R)-(+)-2,2'-Bis(diphenylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% (R)-MeO-BIPHEP** *(133545-16-1)* — 100mg, 500mg, 2g, 10g
$C_{38}H_{32}O_2P_2$; FW: 582.53; off-white xtl.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

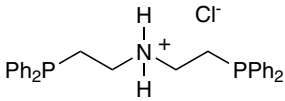


15-0179 **(S)-(-)-2,2'-Bis(diphenylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% (S)-MeO-BIPHEP** *(133545-17-2)* — 100mg, 500mg, 2g, 10g
$C_{38}H_{32}O_2P_2$; FW: 582.53; white xtl.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

15-0200 **1,2-Bis(diphenylphosphino)ethane, 99% DIPHOS** *(1663-45-2)* — 5g, 25g, 100g
$(C_6H_5)_2PCH_2CH_2P(C_6H_5)_2$; FW: 398.43; white pwdr.; m.p. 143-145°

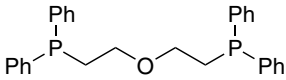
15-0205 **1,2-Bis(diphenylphosphino)ethane monooxide, min. 97%** *(984-43-0)* — 1g, 5g
$(C_6H_5)_2PCH_2CH_2P(O)(C_6H_5)_2$; FW: 414.42; white pwdr.

15-7306 **Bis[(2-diphenylphosphino)ethyl]ammonium chloride, min. 97%** *(66534-97-2)* — 500mg, 2g
$C_{28}H_{30}ClNP_2$; FW: 477.95; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2004096735.

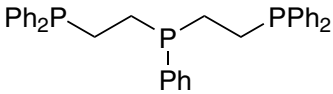


15-0250 **cis-1,2-Bis(diphenylphosphino)ethylene, min. 98%** *(983-80-2)* — 1g, 5g
cis-$(C_6H_5)_2PCH{=}CHP(C_6H_5)_2$; FW: 396.41; white xtl.; m.p. 125-126°

15-0383 NEW **[Bis(2-diphenylphosphino)ethyl]ether, min. 98%** *(50595-38-5)* — 1g, 5g, 25g
$C_{28}H_{28}OP_2$; FW: 442.47; pale yellow oil
air sensitive



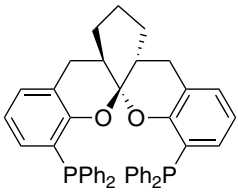
15-0350 **Bis(2-diphenylphosphinoethyl) phenylphosphine, 97% TRIPHOS** *(23582-02-7)* — 1g, 5g
$(C_6H_5)_2PCH_2CH_2P(C_6H_5)CH_2CH_2P(C_6H_5)_2$; FW: 534.56; white pwdr.; m.p. 130-134°



26-0270 **1,1'-Bis(diphenylphosphino)ferrocene, 99% DPPF** *(12150-46-8)*
See page 97

PHOSPHORUS (Compounds)

15-4310 **(+)-1,13-Bis(diphenyl)phosphino-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano [3,2-d]xanthene, 97% (R,R,R)-(+)-Ph-SKP** *(1360823-43-3)*
$C_{44}H_{38}O_2P_2$; FW: 660.72; white solid; m.p. 101-103°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents PCT/CN2013/071091, CN202110253896.5. SKP Ligand Kit component.
For detailed technical note visit strem.com.



25mg
100mg

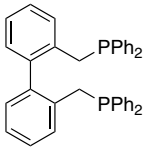
15-4311 **(-)-1,13-Bis(diphenyl)phosphino-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1] benzopyrano [3,2-d]xanthene, 97% (S,S,S)-(-)-Ph-SKP** *(1439556-82-7)*
$C_{44}H_{38}O_2P_2$; FW: 660.72; white solid; m.p. 101-103°
air sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patents PCT/CN2013/071091, CN202110253896.5. SKP Ligand Kit component.
For detailed technical note visit strem.com.

25mg
100mg

15-0400 **Bis(diphenylphosphino)methane, 97%** *(2071-20-7)*
$(C_6H_5)_2PCH_2P(C_6H_5)_2$; FW: 384.40; white xtl.; m.p. 116-119°

1g
5g
25g

15-2988 **2,2'-Bis(diphenylphosphinomethyl)-1,1'-biphenyl, 99% BISBI** *(111982-81-1)*
$C_{38}H_{32}P_2$; FW: 550.61; white solid; m.p. 84-86°
air sensitive
For detailed technical note visit strem.com.



250mg
1g

15-2970 **(4R,5R)-(-)-4,5-Bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane, 99.5% (R,R)-DIOP** *(32305-98-9)*
$C_{31}H_{32}O_2P_2$; FW: 498.55; white pwdr.; m.p. 87-91°
air sensitive

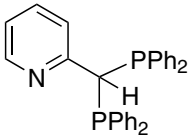
250mg
1g

15-2960 **(4S,5S)-(+)-4,5-Bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane, 99.5% (S,S)-DIOP** *(37002-48-5)*
$C_{31}H_{32}O_2P_2$; FW: 498.55; white pwdr.; m.p. 87-91°
air sensitive

250mg
1g

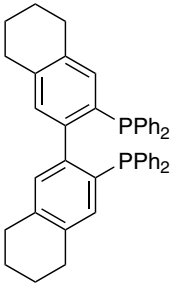
26-0290 **1,1'-Bis(1-diphenylphosphino-1-methylethyl)ferrocene ethanol adduct, 97% HiersoPHOS-6 (Sylphos)** *(109313-83-9)*
See page 97

15-1779 **2-[Bis(diphenylphosphino)methyl]pyridine, 98%** *(60398-55-2)*
$C_{30}H_{25}NP_2$; FW: 461.47; white pwdr.



100mg
500mg

15-0502 **3,3'-Bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octa-hydro [2,2']binaphthalene chloroform adduct, 99%** *(1067889-87-5)*
$C_{44}H_{40}P_2 \cdot 0.5CHCl_3$; FW: 630.74 (690.43); white to pale yellow pwdr.
Note: Sold under license from NCL for research purposes only. Patent Pending GB 0719134.9 and its international derivatives.



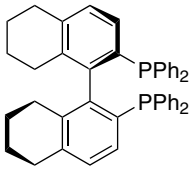
100mg
500mg

Technical Note:
1. Ligand used in the platinum-catalyzed asymmetric carbonyl-ene reaction.

References:
1. *Org. Lett.*, **2007**, *9*, 4925.

PHOSPHORUS (Compounds)

15-2972 **(R)-(+)-2,2'-Bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl (R)-(+)-H_8-BINAP** *(139139-86-9)* — 50mg, 250mg



$C_{44}H_{40}P_2$; FW: 630.74; off-white pwdr.; m.p. 207-208°
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

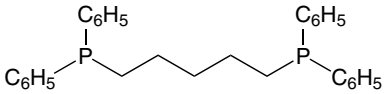
15-2973 **(S)-(-)-2,2'-Bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl (S)-(-)-H_8-BINAP** *(139139-93-8)* — 50mg, 250mg
$C_{44}H_{40}P_2$; FW: 630.74; off-white pwdr.; m.p. 207-208°
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

15-0420 **1,8-Bis(diphenylphosphino)octane, 99%** *(41625-30-3)* — 1g, 5g
$C_{32}H_{36}P_2$; FW: 482.58; white pwdr.

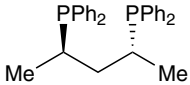
15-0425 **(R)-(-)-4,12-Bis(diphenylphosphino)-[2.2]-paracyclophane, min. 95% (R)-PHANEPHOS** *(364732-88-7)* — 100mg, 500mg
$C_{40}H_{34}P_2$; FW: 576.65; white solid; m.p. 222-225°
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No 5874629 and patents arising therefrom.
For detailed technical note visit strem.com.

15-0426 **(S)-(+)-4,12-Bis(diphenylphosphino)-[2.2]-paracyclophane, min. 95% (S)-PHANEPHOS** *(192463-40-4)* — 100mg, 500mg
$C_{40}H_{34}P_2$; FW: 576.65; white solid; m.p. 222-225°
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No 5874629 and patents arising therefrom.
For detailed technical note visit strem.com.

15-0430 **1,5-Bis(diphenylphosphino)pentane, min. 98%** *(27721-02-4)* — 1g, 5g
$(C_6H_5)_2P(CH_2)_5P(C_6H_5)_2$;
FW: 440.51; white to off-white solid; m.p. 46-49°

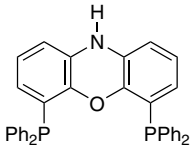


15-0432 **(2R,4R)-(+)-2,4-Bis(diphenylphosphino)pentane, 99% (R,R)-BDPP** *(96183-46-9)* — 500mg, 2g
$(C_6H_5)_2PCH(CH_3)CH_2CH(CH_3)P(C_6H_5)_2$; FW: 440.49; white xtl.; m.p. 78°
air sensitive

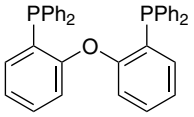


15-0431 **(2S,4S)-(-)-2,4-Bis(diphenylphosphino)pentane, 99% (S,S)-BDPP** *(77876-39-2)* — 250mg, 1g, 5g
$(C_6H_5)_2PCH(CH_3)CH_2CH(CH_3)P(C_6H_5)_2$; FW: 440.49; white xtl.; m.p. 81°
air sensitive

15-0437 **4,6-Bis(diphenylphosphino) phenoxazine, min. 98% NIXANTPHOS** *(261733-18-0)* — 500mg, 2g
$C_{36}H_{27}NOP_2$; FW: 551.55; white to off-white pwdr.
For detailed technical note visit strem.com.



15-0380 **Bis(2-diphenylphosphinophenyl)ether, 98% DPEphos** *(166330-10-5)* — 5g, 25g, 100g
$(C_6H_5)_2PC_6H_4OC_6H_4P(C_6H_5)_2$; FW: 538.56; off-white pwdr.; m.p. 181-184°
Note: Phosphine Ligand Kit component.
For detailed technical note visit strem.com.



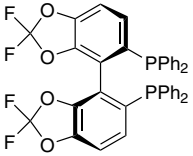
15-0450 **1,3-Bis(diphenylphosphino)propane, 98% DPPP** *(6737-42-4)* — 10g, 50g
$(C_6H_5)_2PCH_2CH_2CH_2P(C_6H_5)_2$; FW: 412.45; white xtl.; m.p. 60-63°

15-0440 **R-(+)-1,2-Bis(diphenylphosphino)propane, 99% (R)-PROPHOS** *(67884-32-6)* — 250mg, 1g
$(C_6H_5)_2PCH(CH_3)CH_2P(C_6H_5)_2$; FW: 412.45; white xtl.; m.p. 69-71° (sealed tube)
air sensitive

15-0449 **1,3-Bis(diphenylphosphino)propane monooxide, min. 97%** *(85685-99-0)* — 1g, 5g
$(C_6H_5)_2PCH_2CH_2CH_2P(O)(C_6H_5)_2$; FW: 428.44; white pwdr.

PHOSPHORUS (Compounds)

15-0486 **R-(-)-5,5'-Bis(diphenylphosphino)-2,2,2',2'-tetrafluoro-4,4'-bi-1,3-benzodioxole, dichloromethane adduct, min. 97% (R)-DIFLUORPHOS™** *(503538-69-0)*
$C_{38}H_{24}F_4O_4P_2{\cdot}XCH_2Cl_2$; FW: 682.54; white pwdr.
air sensitive
Note: Sold under license from SYNKEM for research purposes only-not for drug use. Patent application WO 03/029259. US Patent No. 6.878.665 B2. For directions of use and safety see SDS available at www.strem.com.
Optical purity: 99.5+%
For detailed technical note visit strem.com.

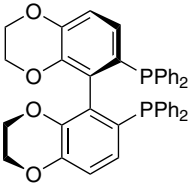


100mg
500mg

15-0487 **S-(+)-5,5'-Bis(diphenylphosphino)-2,2,2',2'-tetrafluoro-4,4'-bi-1,3-benzodioxole, dichloromethane adduct, min. 97% (S)-DIFLUORPHOS™** *(503538-70-3)*
$C_{38}H_{24}F_4O_4P_2{\cdot}XCH_2Cl_2$; FW: 682.54; white pwdr.
air sensitive
Note: Sold under license from SYNKEM for research purposes only-not for drug use. Patent application WO 03/029259. US Patent No. 6.878.665 B2. For directions of use and safety see MSDS sheet available at www.strem.com. Optical purity: 99.5+%
For detailed technical note visit strem.com.

100mg
500mg

15-0490 **R-(+)-6,6'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-5,5'-bi-1,4-benzodioxin, min. 94% (R)-SYNPHOS™** *(445467-61-8)*
$C_{40}H_{32}O_4P_2$; FW: 638.63; white pwdr.
Note: Sold under license from SYNKEM for research purposes only - not for drug use. Patent application WO 03/029259. US Patent No. 6.878.665 B2. For directions of use and safety see MSDS sheet available at www.strem.com
For detailed technical note visit strem.com.

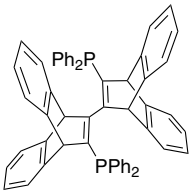


100mg
500mg

15-0491 **S-(-)-6,6'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-5,5'-bi-1,4-benzodioxin, min. 97% (S)-SYNPHOS™** *(503538-68-9)*
$C_{40}H_{32}O_4P_2$; FW: 638.63; white pwdr.
Note: Sold under license from SYNKEM for research purposes only - not for drug use. Patent applicatio n WO 03/029259. US Patent No. 6.878.665 B2. For directions of use and safety see MSDS sheet available at www.strem.com
For detailed technical note visit strem.com.

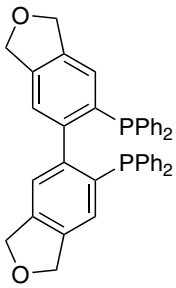
100mg
500mg

15-0442 **12,12'-Bis(diphenylphosphino)-9,9',10,10'-tetrahydro-11,11'-bi-9,10-ethenoanthracene, min. 98% CATPHOS** *(1020670-88-5)*
$C_{56}H_{40}P_2$; FW: 774.86; white xtl.
For detailed technical note visit strem.com.



250mg
1g

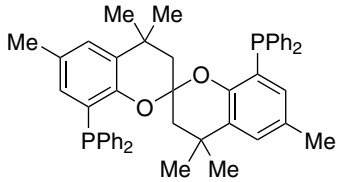
15-0504 **6,6'-Bis(diphenylphosphino)-1,1',3,3'-tetrahydro[5,5'] biisobenzofuran, 99%** *(959864-38-1)*
$C_{40}H_{32}O_2P_2$; FW: 606.63; white to off-white pwdr.
Note: Sold under license from NCL for research purposes only. Patent Pending GB 0719134.9 and its international derivatives.
For detailed technical note visit strem.com.



100mg
500mg

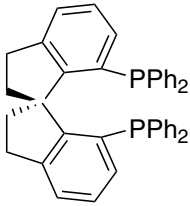
PHOSPHORUS (Compounds)

15-5165 **racemic-8,8'-Bis(diphenylphosphino)-3,3',4,4'-tetrahydro-4,4,4',4',6,6'-hexamethyl-2,2'-spiro-bi[2H-1-benzopyran], min. 95% SPANphos** *(556797-94-5)*
$C_{47}H_{46}O_2P_2$; FW: 704.81; white pwdr.
For detailed technical note visit strem.com.



100mg
500mg

15-5174 **(R)-(+)-7,7'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-SDP** *(917377-74-3)*
$C_{41}H_{34}P_2$; FW: 588.66; white solid; m.p. 200-202°
air sensitive
Note: Spiro Bisphosphine Ligand Kit component.
For detailed technical note visit strem.com.



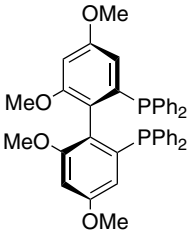
25mg
100mg

15-5175 **(S)-(-)-7,7'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-SDP** *(528521-86-0)*
$C_{41}H_{34}P_2$; FW: 588.66; white solid; m.p. 206-208°
air sensitive
Note: Spiro Bisphosphine Ligand Kit component.

25mg
100mg

Technical Note:
1. See 15-5174 (page 272)

15-1653 **(R)-2,2'-Bis(diphenylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-Ph-Garphos™** *(1365531-75-4)*
$C_{40}H_{36}O_4P_2$; FW: 642.66; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

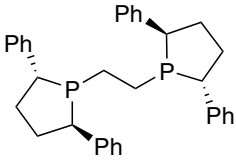


100mg
500mg

15-1654 **(S)-2,2'-Bis(diphenylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Ph-Garphos™** *(1365531-76-5)*
$C_{40}H_{36}O_4P_2$; FW: 642.66; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.

100mg
500mg

15-0473 **(-)-1,2-Bis((2R,5R)-2,5-diphenylphospholano) ethane, min. 95% (R,R)-Ph-BPE** *(528565-79-9)*
$(C_{16}H_{16})PCH_2CH_2P(C_{16}H_{16})$; FW: 506.60; white solid; m.p. 144°
air sensitive
For detailed technical note visit strem.com.



100mg
500mg
2g

15-0474 **(+)-1,2-Bis((2S,5S)-2,5-diphenylphospholano)ethane, min. 98% (S,S)-Ph-BPE** *(824395-67-7)*
$(C_{16}H_{16})PCH_2CH_2P(C_{16}H_{16})$; FW: 506.60; white solid; m.p. 144°
air sensitive

100mg
500mg
2g

15-0448 HAZ **Bis(di-i-propylamino)chlorophosphine, min. 97%** *(56183-63-2)*
$[(C_3H_7)_2N]_2PCl$; FW: 266.80; white to off-white pwdr.
air sensitive, moisture sensitive

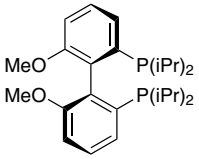
5g
25g

15-0650 amp HAZ **1,4-Bis(di-i-propylphosphino)butane, min. 98%** *(80499-19-0)*
$(C_3H_7)_2PCH_2CH_2CH_2CH_2P(C_3H_7)_2$; FW: 290.41; colorless to pale yellow liq.
air sensitive

100mg
500mg

PHOSPHORUS (Compounds)

15-0654 **(R)-(+)-2,2'-Bis(di-i-propylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(150971-45-2)*
$C_{26}H_{40}O_2P_2$; FW: 446.56; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

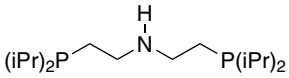
15-0655 **(S)-(-)-2,2'-Bis(di-i-propylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(150971-43-0)*
$C_{26}H_{40}O_2P_2$; FW: 446.56; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

15-0610 amp HAZ **1,2-Bis(di-i-propylphosphino)ethane, 98%** *(87532-69-2)*
$C_{14}H_{32}P_2$; FW: 262.35; colorless to pale yellow liq.
air sensitive

100mg
500mg

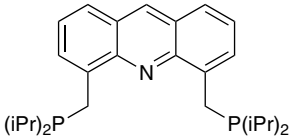
15-7304 HAZ **Bis[(2-di-i-propylphosphino)ethyl]amine, min. 97% (10 wt% in tetrahydrofuran)**
(131890-26-1)
$C_{16}H_{37}NP_2$; FW: 305.42; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2004096735.
For detailed technical note visit strem.com.



5g
20g

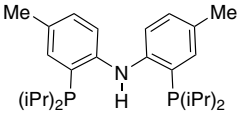
26-0275 **1,1'-Bis(di-i-propylphosphino)ferrocene, min. 98% DiPPF** *(97239-80-0)*
See page 98

15-0415 **4,5-Bis-(di-i-propylphosphinomethyl)acridine, 98+%** *(1101230-28-7)*
$C_{27}H_{39}NP_2$; FW: 439.55; yellow xtl.
air sensitive
Note: Patents: US provisional 61/087,708, PCT/IL2009/000778.
For detailed technical note visit strem.com.



50mg
250mg

15-0670 NEW **Bis[2-(di-i-propylphosphino)-4-methylphenyl] amine, min. 98%** *(666856-94-6)*
$C_{26}H_{41}NP_2$; FW: 429.56; white pwdr.
air sensitive
For detailed technical note visit strem.com.

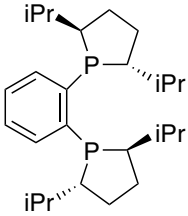


100mg
500mg

15-0680 HAZ **1,3-Bis(di-i-propylphosphino)propane, min. 98% (dippp)** *(91159-11-4)*
$(C_3H_7)_2PCH_2CH_2CH_2P(C_3H_7)_2$; FW: 276.38; colorless to pale yellow liq.
air sensitive
For detailed technical note visit strem.com.

100mg
500mg
2g

15-0410 **(+)-1,2-Bis((2R,5R)-2,5-di-i-propylphospholano) benzene, 98+% (R,R)-i-Pr-DUPHOS** *(136705-65-2)*
$C_{26}H_{44}P_2$; FW: 418.58; white xtl.; m.p. 40°
air sensitive
For detailed technical note visit strem.com.



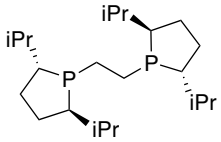
100mg
500mg
2g

15-0411 **(-)-1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)benzene, 98+% (S,S)-i-Pr-DUPHOS** *(147253-69-8)*
$C_{26}H_{44}P_2$; FW: 418.58; white xtl.; m.p. 40°
air sensitive
For detailed technical note visit strem.com.

100mg
500mg
2g

PHOSPHORUS (Compounds)

15-7357 amp
1,2-Bis((2R,5R)-2,5-di-i-propylphospholano) ethane, 96% *(136705-63-0)*
$C_{22}H_{44}P_2$; FW: 370.53; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg

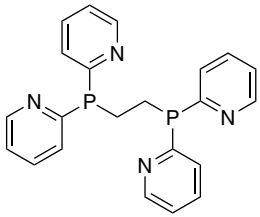


15-7358
1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)ethane, min. 97% *(528854-34-4)*
$C_{22}H_{44}P_2$; FW: 370.53; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg

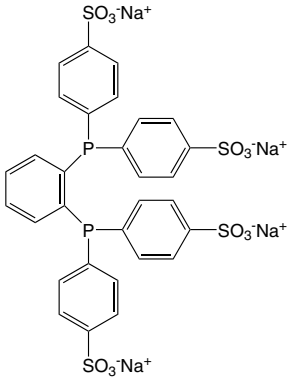
26-1610
1,1'-Bis((2R,5R)-2,5-di-i-propylphospholano)ferrocene, min. 97%
(849950-54-5)
See page 98

26-1611
1,1'-Bis((2S,5S)-2,5-di-i-propylphospholano)ferrocene, min. 97%
(540475-73-8)
See page 98

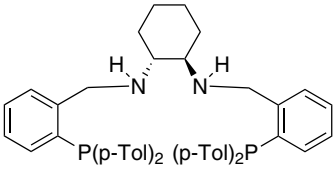
15-0683
1,2-Bis(di-2-pyridylphosphino)ethane, min. 98% *(106308-26-3)*
$C_{22}H_{20}N_4P_2$; FW: 402.37; white pwdr.
100mg
500mg



15-0155
1,2-Bis(di-4-sulfonatophenylphosphino) benzene tetrasodium salt DMSO adduct
$C_6H_4[P(C_6H_4SO_3^-)_2]_2 \cdot 4Na^+(CH_3SOCH_3)\cdot$;
FW: 854.65; off-white pwdr.
1g
5g



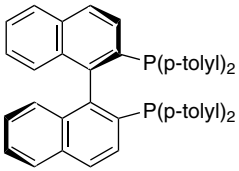
15-7328
(1R,2R)-N,N-Bis[2-(di-p-tolylphosphino) benzyl]cyclohexane-1,2-diamine, min. 97% *(1150113-65-7)*
$C_{48}H_{52}N_2P_2$; FW: 718.89; yellow solid
air sensitive
250mg
1g



15-7329
(1S,2S)-N,N-Bis[2-(di-p-tolylphosphino)benzyl]cyclohexane-1,2-diamine, min. 97% *(1224727-08-5)*
$C_{48}H_{52}N_2P_2$; FW: 718.89; yellow solid
air sensitive
250mg
1g

PHOSPHORUS (Compounds)

15-0152 **(R)-(+)-2,2'-Bis(di-p-tolylphosphino)-1,1'-binaphthyl, 98% (R)-(+)-TolBINAP** *(99646-28-3)*
$C_{48}H_{40}P_2$; FW: 678.79; white pwdr.; m.p. 255-257°
Note: Manufactured under license of Takasago patent. Takasago BINAP Ligand Kit component.
For detailed technical note visit strem.com.

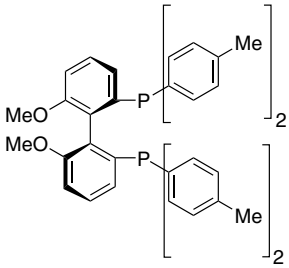


250mg
1g
5g

15-0153 **(S)-(-)-2,2'-Bis(di-p-tolylphosphino)-1,1'-binaphthyl, 98% (S)-(-)-TolBINAP** *(100165-88-6)*
$C_{48}H_{40}P_2$; FW: 678.79; white pwdr.; m.p. 255-257°
Note: Manufactured under license of Takasago patent. Takasago BINAP Ligand Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

15-0156 **(R)-(+)-2,2'-Bis(di-p-tolylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(133545-24-1)*
$C_{42}H_{40}O_2P_2$; FW: 638.73; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

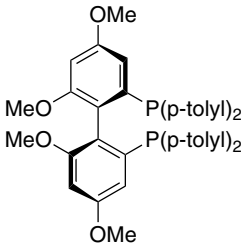


100mg
500mg
2g
10g

15-0157 **(S)-(-)-2,2'-Bis(di-p-tolylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(133545-25-2)*
$C_{42}H_{40}O_2P_2$; FW: 638.73; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

15-1657 **(R)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-Tol-Garphos™** *(1365531-81-2)*
$C_{44}H_{44}O_4P_2$; FW: 698.77; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.



100mg
500mg

15-1658 **(S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Tol-Garphos™** *(1365531-82-3)*
$C_{44}H_{44}O_4P_2$; FW: 698.77; white xtl.
air sensitive
Note: Sold in collaboration with KCT. Patent US App No. 61/381,493. Garphos™ Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg

15-0114 HAZ **Bis(3,5-di(trifluoromethyl)phenyl)chlorophosphine, min. 98%** *(142421-57-6)*
$C_{16}H_6ClF_{12}P$; FW: 492.63; colorless liq.; m.p. 25-29°
moisture sensitive

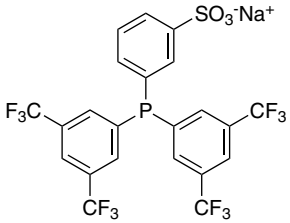
500mg
2g

26-0960 **(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino]ferrocenyl} ethyldicyclohexylphosphine, min. 97%** *(292638-88-1)*
See page 98

26-0965 **(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino]ferrocenyl} ethyldi-3,5-xylylphosphine, min. 97%** *(166172-63-0)*
See page 98

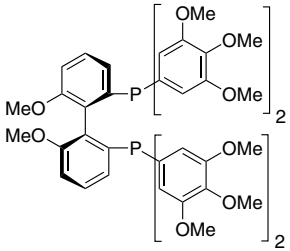
PHOSPHORUS (Compounds)

15-0572 **Bis(3,5-di-trifluoromethylphenyl)(3-sulfonatophenyl)phosphine, sodium salt, min. 97% DAN2PHOS** *(1289463-91-7)*
$C_{22}H_{10}F_{12}NaO_3PS$; FW: 636.32; white solid
Note: Sold under license from UAB for research purposes only. PCT/EP2010/06553.



100mg
500mg

15-0158 **(R)-(+)-2,2'-Bis[di(3,4,5-trimethoxyphenyl) phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(256390-47-3)*
$C_{50}H_{56}O_{14}P_2$; FW: 942.94; off-white pwdr.
air sensitive, (store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

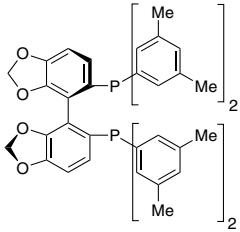


100mg
500mg
2g
10g

15-0159 **(S)-(-)-2,2'-Bis[di(3,4,5-trimethoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(256235-61-7)*
$C_{50}H_{56}O_{14}P_2$; FW: 942.94; off-white pwdr.
air sensitive, (store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g
10g

15-0478 **(R)-(+)-5,5'-Bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(+)-DM-SEGPHOS®** *(850253-53-1)*
$C_{46}H_{44}O_4P_2$; FW: 722.79; off white to pale yellow pwdr.; m.p. 256-261°
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ligand Kit component.
For detailed technical note visit strem.com.

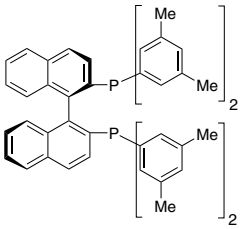


250mg
1g
5g

15-0479 **(S)-(-)-5,5'-Bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(-)-DM-SEGPHOS®** *(210169-57-6)*
$C_{46}H_{44}O_4P_2$; FW: 722.79; off-white to pale yellow pwdr.; m.p. 256-261°
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ligand Kit component.

250mg
1g
5g

15-0476 **(R)-(+)-2,2'-Bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl, 98% (R)-(+)-XylBINAP** *(137219-86-4)*
$C_{52}H_{48}P_2$; FW: 734.90; white to pale yellow xtl.; m.p. 203-206°
Note: Manufactured under license of Takasago patent. Takasago BINAP Ligand Kit component.
For detailed technical note visit strem.com.



250mg
1g
5g

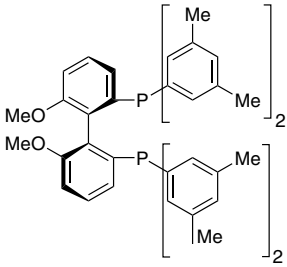
15-0477 **(S)-(-)-2,2'-Bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl, 98% (S)-(-)-XylBINAP** *(135139-00-3)*
$C_{52}H_{48}P_2$; FW: 734.90; white to pale yellow xtl.; m.p. 203-206°
Note: Manufactured under license of Takasago patent. Takasago BINAP Ligand Kit component.

250mg
1g
5g

Technical Note:
1. See 15-0476 (page 276)

PHOSPHORUS (Compounds)

15-0488 **(R)-(+)-2,2'-Bis[di(3,5-xylyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(394248-45-4)*
$C_{46}H_{48}O_2P_2$; FW: 694.84; white pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (R)-MeO BIPHEP Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

15-0489 **(S)-(-)-2,2'-Bis[di(3,5-xylyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%** *(362634-22-8)*
$C_{46}H_{48}O_2P_2$; FW: 694.84; white pwdr.
(store cold)
Note: Sold in collaboration with Solvias for research purposes only. Solvias (S)-MeO BIPHEP Ligand Kit component.

100mg
500mg
2g
10g

Technical Note:
1. See 15-0488 (page 277)

15-0730 **(R)-(-)-4,12-Bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane, min. 97% CTH-(R)-3,5-xylyl-PHANEPHOS** *(325168-89-6)*
$C_{48}H_{50}P_2$; FW: 688.86; white pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No 5874629 and patents arising therefrom.
For detailed technical note visit strem.com.

100mg
500mg

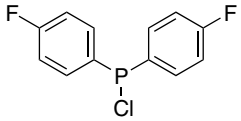
15-0731 **(S)-(+)-4,12-Bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane, min. 97% CTH-(S)-3,5-xylyl-PHANEPHOS** *(325168-88-5)*
$C_{48}H_{50}P_2$; FW: 688.86; white pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No 5874629 and patents arising therefrom.
For detailed technical note visit strem.com.

100mg
500mg

26-1261 **1,1'-Bis{1-[(R)-ferrocenyl-2-(S)-ethyl-1-(diethylamino) phenyl]-(R)-phosphino} ferrocene, min. 97% Trifer** *(899811-43-9)*
See page 98

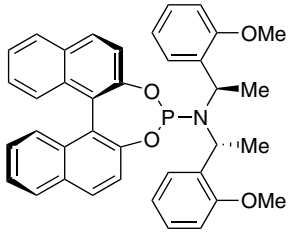
26-1260 **1,1'-Bis{1-[(S)-ferrocenyl-2-(R)-ethyl-1-(dimethylamino) phenyl]-(S)-phosphino} ferrocene, min. 97% Trifer** *(900505-82-0)*
See page 98

15-7318 HAZ **Bis(4-fluorophenyl) chlorophosphine, min. 98%** *(23039-97-6)*
$(FC_6H_4)_2ClP$; FW: 256.62; pale yellow liq.
moisture sensitive



250mg
1g

15-0522 **(11bR)-N,N-Bis[(R)-(-)-1-(2-methoxyphenyl) ethyl]dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-amine, min. 98%** *(736158-72-8)*
$C_{38}H_{34}NO_4P$; FW: 599.65; white pwdr.
moisture sensitive
For detailed technical note visit strem.com.



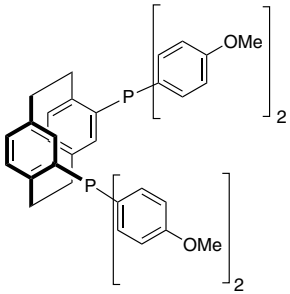
100mg
500mg

15-0523 **(11bS)-N,N-Bis[(S)-(+)-1-(2-methoxyphenyl)ethyl]dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-amine, min. 98%** *(776316-48-4)*
$C_{38}H_{34}NO_4P$; FW: 599.65; white pwdr.
moisture sensitive
For detailed technical note visit strem.com.

100mg
500mg

PHOSPHORUS (Compounds)

15-0710 **(R)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane R-An-Phanephos** *(364732-86-5)*
$C_{44}H_{42}O_4P$; FW: 696.75; white pwdr.
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg

15-0711 **(S)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane S-An-Phanephos**
$C_{44}H_{42}O_4P$; FW: 696.75; white pwdr.
Note: Sold in collaboration with JM for research purposes only.

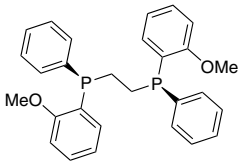
100mg
500mg

Technical Note:
1. See 15-0710 (page 278)

15-0466 **Bis(2-methoxyphenyl)phenylphosphine, min. 98%** *(36802-41-2)*
$(C_6H_4OCH_3)_2P(C_6H_5)$; FW: 322.34; white xtl.; m.p. 163-164°

1g
5g
25g

15-0481 **(R,R)-(-)-1,2-Bis[(2-methoxyphenyl)(phenyl)phosphino]ethane, 98% (-)-DIPAMP** *(55739-58-7)*
$(C_6H_4OCH_3)(C_6H_5)PCH_2CH_2P(C_6H_4OCH_3)(C_6H_5)$;
FW: 458.47; white xtl.; m.p. 102-103°
For detailed technical note visit strem.com.

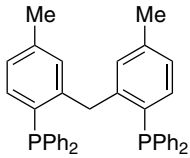


250mg
1g

15-0482 **(S,S)-(+)-1,2-Bis[(2-methoxyphenyl)(phenyl)phosphino]ethane, 98% (+)-DIPAMP** *(97858-62-3)*
$(C_6H_4OCH_3)(C_6H_5)PCH_2CH_2P(C_6H_4OCH_3)(C_6H_5)$; FW: 458.47; white xtl.; m.p. 102-103°
For detailed technical note visit strem.com.

250mg
1g

15-0358 NEW
Bis[2-(4-methyldiphenylphosphino)phenyl]methane, 90%
$C_{39}H_{34}P_2$; FW: 564.64; white pwdr.
For detailed technical note visit strem.com.

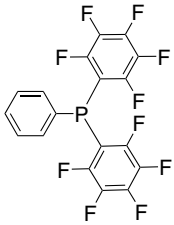


100mg
500mg
2g

15-0115 **Bis(1-naphthyl)chlorophosphine, min. 97%** *(36042-99-6)*
$C_{20}H_{14}ClP$; FW: 320.75; white to pale yellow xtl.
moisture sensitive

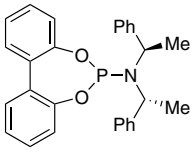
500mg
2g

15-0374 NEW
Bis(pentafluorophenyl)phenylphosphine, 97% *(5074-71-5)*
$C_{18}H_5F_{10}P$; FW: 442.20; white pwdr.; m.p. 59-61°;
b.p. 105°C/0.3mm; f.p. >110°C
air sensitive



250mg
1g

15-0518 **N,N-Bis[(1R)-(+)-phenylethyl]dibenzo[d,f][1,3,2]dioxaphosphepin-6-amine** *(500103-26-4)*
$C_{28}H_{26}NO_2P$; FW: 439.49; white pwdr.
moisture sensitive
For detailed technical note visit strem.com.



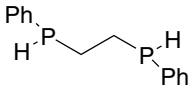
100mg
500mg

PHOSPHORUS (Compounds)

15-0519 **N,N-Bis[(1S)-(-)-phenylethyl]dibenzo[d,f][1,3,2]dioxaphosphepin-6-amine** *(376355-58-7)* — 100mg, 500mg
$C_{28}H_{26}NO_2P$; FW: 439.49; white pwdr.
moisture sensitive
For detailed technical note visit strem.com.

15-0405 amp HAZ — **1,2-Bis(phenylphoshino)ethane, min. 90%** *(18899-64-4)* — 500mg, 2g
$(C_6H_5)HPCH_2CH_2PH(C_6H_5)$; FW: 246.22; colorless to yellow liq.
pyrophoric

15-0409 HAZ — **1,2-Bis(phenylphosphino)ethane, min. 95% (10wt% in hexanes)** *(18899-64-4)* — 5g, 20g
$(C_6H_5)HPCH_2CH_2PH(C_6H_5)$; FW: 246.22; colorless liq.
air sensitive



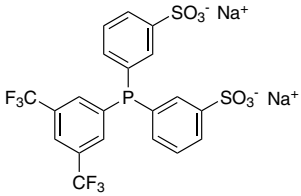
15-0456 amp HAZ — **1,3-Bis(phenylphosphino)propane, 90-95%** *(28240-66-6)* — 1g, 5g
$C_6H_5P(H)CH_2CH_2CH_2(H)PC_6H_5$; FW: 260.26; colorless liq.; b.p. 160-165°/1 mm
air sensitive

15-0461 amp HAZ — **1,2-Bis(phosphino)benzene, 98+%** *(80510-04-9)* — 1g, 5g
$C_6H_4(PH_2)_2$; FW: 142.08; colorless liq.; b.p. 53-55°/0.25mm; d. 1.101
pyrophoric

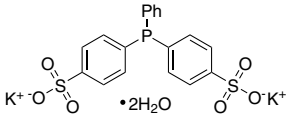
15-0462 HAZ — **1,2-Bis(phosphino)benzene, 98+% (10 wt% in hexanes)** *(80510-04-9)* — 10g, 50g
$C_6H_4(PH_2)_2$; FW: 142.08; colorless liq.
air sensitive

15-0459 amp HAZ — **1,2-Bis(phosphino)ethane, 99%** *(5518-62-7)* — 250mg, 1g
$H_2PCH_2CH_2PH_2$; FW: 92.02; colorless liq.; b.p. 109-110°
pyrophoric

15-0570 — **Bis(3-sulfonatophenyl)(3,5-di-trifluoromethylphenyl)phosphine, disodium salt monohydrate, min. 97% DANPHOS (water soluble)** *(1289463-82-6)* — 100mg, 500mg
$C_{20}H_{13}F_6Na_2O_6PS_2 \cdot H_2O$; FW: 604.39 (622.41); white pwdr.
Note: Water soluble phosphine. Sold under license from UAB for research purposes only.
PCT/EP2010/065531.

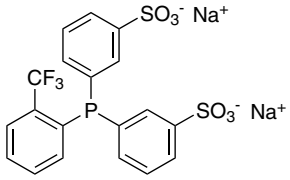


15-0638 NEW — **Bis(p-sulfonatophenyl)phenylphosphine di-hydrate dipotassium salt, 97%** *(308103-66-4)* — 100mg, 500mg
$C_{18}H_{13}K_2O_6PS_2$; FW: 498.60(534.63); white pwdr.; m.p. 98-102°
air sensitive



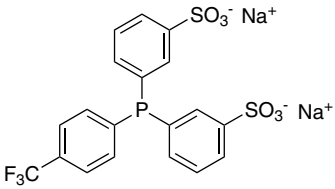
15-0463 — **Bis(p-sulfonatophenyl)phenylphosphine dihydrate dipotassium salt, min. 97%** *(151888-20-9)* — 500mg, 2g, 10g
$C_6H_5P(C_6H_4SO_3K)_2 \cdot 2H_2O$; FW: 498.58 (534.62); white pwdr.
For detailed technical note visit strem.com.

15-0577 — **Bis(3-sulfonatophenyl)(2-trifluoromethyl-phenyl)phosphine, disodium dihydrate, min. 97% o-DANPHOS** *(1289463-84-8)* — 100mg, 500mg
$C_{19}H_{12}F_3Na_2O_6PS_2 \cdot 2H_2O$; FW: 534.38 (570.41); white pwdr.
Note: Water soluble phosphine. Sold under license from UAB for research purposes only.
PCT/EP2010/065531.



PHOSPHORUS (Compounds)

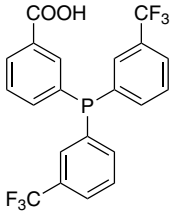
15-0575 **Bis(3-sulfonatophenyl)(4-trifluoromethylphenyl)phosphine disodium dihydrate, min. 97% p-DANPHOS** *(1289463-79-1)*
$C_{19}H_{12}F_3Na_2O_6PS_2 \cdot 2H_2O$;
FW: 534.38 (570.41); white pwdr.
Note: Water soluble phosphine. Sold under license from UAB for research purposes only. PCT/EP2010/065531.



100mg
500mg

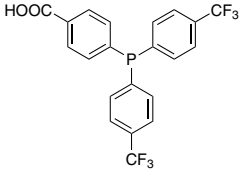
26-0650 **(R)-(-)-1-{(S)-2-[Bis(4-trifluoromethylphenyl) phosphino]ferrocenyl} ethyl-di-t-butylphosphine, min. 97%** *(246231-79-8)*
See page 99

15-0265 **Bis(3-trifluoromethylphenyl)(3-carboxyphenyl) phosphine, min. 97% m-Miranphos** *(1808959-38-7)*
$C_{21}H_{13}F_6O_2P$; FW: 442.29; white solid
Note: Sold under license from UAB for research purposes only. Spanish Patent Application P201231702.



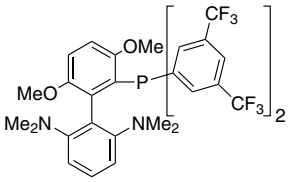
100mg
500mg

15-0260 **Bis(4-trifluoromethylphenyl)(4-carboxyphenyl) phosphine, min. 97% p-Miranphos**
(1808959-36-5)
$C_{21}H_{13}F_6O_2P$; FW: 442.29; white pwdr.
Note: Sold under license from UAB for research purposes only. Spanish Patent Application P201231702.



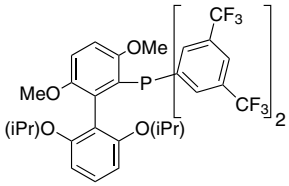
100mg
500mg

15-3015 NEW **2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-dimethylamino-1,1'-biphenyl, 98%** *(1810068-30-4)*
$C_{34}H_{29}F_{12}N_2O_2P$; FW: 756.56; white to off-white pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



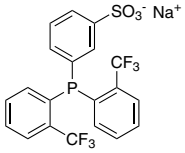
100mg
500mg
2g

15-3020 NEW **2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-di-i-propoxy-1,1'-biphenyl, 98%** *(1810068-31-5)*
$C_{36}H_{31}F_{12}O_4P$; FW: 786.58; white to off-white pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



250mg
1g
5g

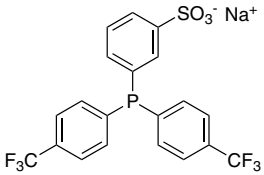
15-0579 **Bis(2-trifluoromethylphenyl)(3-sulfonatophenyl) phosphine, sodium salt, min. 97% o-DAN2PHOS**
(1289463-93-9)
$C_{20}H_{12}F_6NaO_3PS$; FW: 500.33; white pwdr.
Note: Sold under license from UAB for research purposes only. PCT/EP2010/065531.



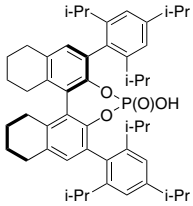
100mg
500mg

PHOSPHORUS (Compounds)

15-0582 **Bis(4-trifluoromethylphenyl) (3-sulfonatophenyl)phosphine, sodium salt, min. 97% p-DAN2PHOS** *(1289463-87-1)* — 100mg, 500mg
$C_{20}H_{12}F_6NaO_3PS$; FW: 500.33; white pwdr.
Note: Sold under license from UAB for research purposes only. PCT/EP2010/065531.

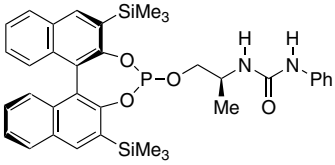


15-1395 **(R)-3,3'-Bis2,4,6-triisopropylphenyl)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl-2,2'-diyl Hydrogenphosphate, 98%, (99% ee)** *(929294-27-9)* — 100mg
$C_{50}H_{65}O_4P$; FW: 761; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



15-1394 **(S)-3,3'-Bis2,4,6-triisopropylphenyl)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl-2,2'-diyl Hydrogenphosphate, 98%, (99% ee)** *(878111-20-7)* — 100mg
$C_{50}H_{65}O_4P$; FW: 761; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

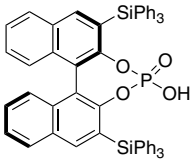
15-2216 **1-{2S)-1-[(11bR)-2,6-Bis(trimethylsilyl) dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%** *(1357562-70-9)* — 50mg, 250mg
$C_{36}H_{41}N_2O_4PSi_2$; FW: 652.87; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



93-1570 HAZ **Bis(triphenylphosphine)iminium borohydride, min. 97%** *(65013-26-5)* — 2g, 10g
$[(C_6H_5)_3P]_2NBH_4$; FW: 553.44; white pwdr.
moisture sensitive

15-0455 **Bis(triphenylphosphine)iminium chloride, 97%** *(21050-13-5)* — 5g, 25g
$[(C_6H_5)_3P]_2NCl$; FW: 574.04; white pwdr.; m.p. 260-265°

15-0340 NEW **(R)-(-)-3,3'-Bis(triphenylsilyl)-1,1'-binaphthyl-2,2'-diyl hydrogen phosphate, min. 98% [(R)-TiPSY]** *(791616-55-2)* — 10mg, 100mg
$C_{56}H_{41}O_4PSi_2$; FW: 865.07; white to light-yellow pwdr.; m.p. 329-335°
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.



15-0341 NEW **(S)-(+)-3,3'-Bis(triphenylsilyl)-1,1'-binaphthyl-2,2'-diyl hydrogen phosphate, min. 98% [(S)-TiPSY]** *(929097-92-7)* — 10mg, 100mg
$C_{56}H_{41}O_4PSi_2$; FW: 865.07; white to light-yellow solid; m.p. 329-335°
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.

15-0125 **2-Bromophenyldiphenylphosphine, 98%** *(62336-24-7)* — 1g, 5g
$C_{18}H_{14}BrP$; FW: 341.18; white pwdr.

96-5500 **Buchwald Biaryl Phosphine Ligand Master Kit for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
See page 501

96-5485 **Buchwald Biaryl Phosphine Ligand Mini Kit 1 for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
See page 504

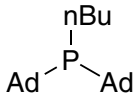
PHOSPHORUS (Compounds)

96-5490 **Buchwald Biaryl Phosphine Ligand Mini Kit 2 for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
See page 505

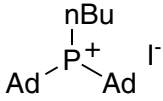
96-5495 **Buchwald Biaryl Phosphine Ligand Mini Kit 3 for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
See page 505

26-0324 **4-(t-Butyl)-1,2-bis(diphenylphosphino)-1'-(di-i-propylphosphino)ferrocene, 98% HiersoPHOS-4** *(776315-37-8)*
See page 99

15-0483 **Butyldi-1-adamantylphosphine, min. 95% [cataCXium® A]** *(321921-71-5)* — 1g, 5g
$C_4H_9(C_{10}H_{15})_2P$; FW: 358.54; white to yellow pwdr.; m.p. 100°
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent WO 0210178. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



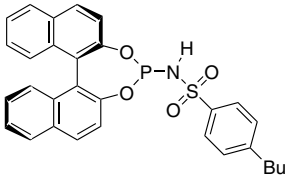
15-0495 **n-Butyl-di-(1-adamantyl)phosphonium iodide, min. 95% [cataCXium® AHI]** *(714951-87-8)* — 250mg, 1g
$[(C_4H_9)(C_{10}H_{15})_2PH]^+I^-$; FW: 486.45; white pwdr.
light sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent US7148176. Solvias cataCXium® Ligand Kit component.



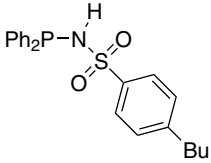
15-0500 amp HAZ **t-Butyldichlorophosphine, 98%** *(25979-07-1)* — 2g, 10g
$(CH_3)_3CPCl_2$; FW: 159.00; white to pale yellow xtl.; m.p. 47-48°; b.p. 146-148°
air sensitive, moisture sensitive

15-0540 **t-Butyldicyclohexylphosphine, min. 95%** *(93634-87-8)* — 500mg, 2g
$[(CH_3)_3C](C_6H_{11})_2P$; FW: 254.40; colorless liq.; d. 0.939
air sensitive

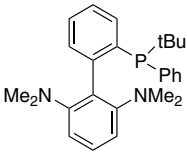
15-2218 **4-Butyl-N-[(11bR)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl]benzenesulfonamide triethylamine adduct, min. 97%** *(1150592-91-8)* — 50mg, 250mg
$C_{30}H_{26}NO_4PS\cdot(CH_3CH_2)_3N$;
FW: 527.57 (628.76); white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2009/065856. UREAPhos and METAMORPhos Ligand Kit component.



15-2220 **4-Butyl-N-(diphenylphosphino)benzenesulfonamide, min. 97%** *(1025096-61-0)* — 50mg, 250mg
$C_{22}H_{26}NO_2PS$; FW: 397.47; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2009/065856. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.

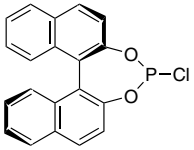
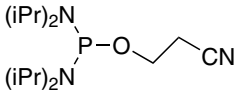


15-3010 NEW **2-(t-Butylphenylphosphino)-2',6'-dimethylamino-1,1'-biphenyl, 98% (t-Bu)PhCPhos** *(1660153-91-2)* — 250mg, 1g, 5g, 25g
$C_{26}H_{33}N_2P$; FW: 404.53; white to off-white pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



15-0966 amp HAZ **t-Butylphosphine, min. 95% TBP** *(2501-94-2)* — 1g, 5g
$(C_4H_9)PH_2$; FW: 90.10; colorless liq.; b.p. 54°; d. 0.7
pyrophoric, STENCH

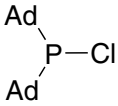
PHOSPHORUS (Compounds)

15-0967 HAZ	**t-Butylphosphine, min. 95% TBP (10 wt% in hexanes)** *(2501-94-2)* $(C_4H_9)PH_2$; FW: 90.10; colorless liq. *air sensitive*	10g 50g
26-1270	**(R,S(p), R(SPO)-(1-t-Butylphosphinoyl)-2-[1-(diphenylphosphino)ethyl] ferrocene, min. 97% JoSPOphos** *(1221745-90-9)* *See* page 100	
26-1271	**(S, R(p), S(SPO)-(1-t-Butylphosphinoyl)-2-[1-(diphenylphosphino)ethyl] ferrocene, min. 97% JoSPOphos** *(1221746-31-1)* *See* page 100	
96-5900	**Chiral Quest Catalyst and Ligand Toolbox Kit for Asymmetric Hydrogenation** *See* page 478	
28-0110	**Chlorobis(triphenylphosphino)phenylnickel(II), 98%** *(33571-43-6)* *See* page 173	
15-0690 NEW HAZ	**Chloro(t-butyl)phenylphosphine, 97%** *(29949-69-7)* $C_{10}H_{14}ClP$; FW: 200.65; colorless liq. *air sensitive, moisture sensitive*	1g 5g
15-0685	**(R)-(-)-4-Chlorodinaphthol[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, min. 97%** *(155613-52-8)* $C_{20}H_{12}ClO_2P$; FW: 350.74; white pwdr. *moisture sensitive* 	1g 5g
15-0686	**(S)-(+)-4-Chlorodinaphthol[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, min. 97%** *(137156-22-0)* $C_{20}H_{12}ClO_2P$; FW: 350.74; white pwdr. *moisture sensitive*	1g 5g
15-0695	**2-Cyanoethyl N,N,N',N'-tetra(i-propyl)phosphorodiamidite, min. 98%** *(102691-36-1)* $\{[(CH_3)_2CH]_2N\}POCH_2CH_2CN$; FW: 301.41; colorless liq.; b.p. 100° (0.5mm); d. 0.949 *moisture sensitive, (store cold)* 	1g 5g
15-0795	**(2-Cyanophenyl)diphenylphosphine, min. 98%** *(34825-99-5)* $(NCC_6H_4)(C_6H_5)_2P$; FW: 287.30; white to off-white pwdr.; m.p. 148-150°	500mg 2g
15-1010 HAZ	**Cyclohexyldi-t-butylphosphine, 97%** *(436865-11-1)* $[(CH_3)_3C]_2(C_6H_{11})P$; FW: 228.36; colorless liq. *air sensitive*	500mg 2g
15-1011 NEW	**Cyclohexyldi-t-butylphosphine, 98% (10wt% in hexanes)** *(436865-11-1)* $C_{14}H_{29}P$; FW: 228.36; colorless liq. *air sensitive*	5g 25g
15-0800 amp HAZ	**Cyclohexyldichlorophosphine, 98%** *(2844-89-5)* $C_6H_{11}PCl_2$; FW: 185.03; colorless liq.; b.p. 100°/17mm *air sensitive, moisture sensitive*	1g 5g
15-0900	**Cyclohexyldiphenylphosphine, 98%** *(6372-42-5)* $(C_6H_{11})(C_6H_5)_2P$; FW: 268.34; white xtl.; m.p. 58-62° *air sensitive*	1g 5g
15-0950 amp HAZ	**Cyclohexylphosphine, min. 97%** *(822-68-4)* $C_6H_{11}PH_2$; FW: 116.14; colorless liq.; b.p. 145°; d. 0.8750 *pyrophoric*	10g 50g
15-0952 HAZ	**Cyclohexylphosphine, min. 97% (Sure/Seal™ bottle)** *(822-68-4)* $C_6H_{11}PH_2$; FW: 116.14; colorless liq.; b.p. 145°; d. 0.8750 *pyrophoric*	50g
15-0953 HAZ	**Cyclohexylphosphine, min. 97% (10 wt% in hexanes)** *(822-68-4)* $C_6H_{11}PH_2$; FW: 116.14; colorless liq.; d. 0.684 *air sensitive*	100g

PHOSPHORUS (Compounds)

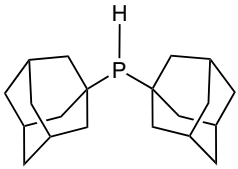
15-0958 **n-Decylphosphonic acid, min. 97%** *(6874-60-8)*
$CH_3(CH_2)_9P(O)(OH)_2$; FW: 222.26; white to off-white pwdr.; m.p. 103-104°
Note: Long-Chain n-Alkylphosphonic Acid Kit component.
1g
5g

15-1095 HAZ **Di-1-adamantylchlorophosphine, min. 97%** *(157282-19-4)*
$(C_{10}H_{15})_2ClP$; FW: 336.88; white solid
moisture sensitive



250mg
1g

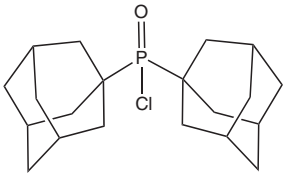
15-0954 **Di-1-adamantylphosphine, min. 97%** *(131211-27-3)*
$(C_{10}H_{15})_2PH$; FW: 302.43; white pwdr.
air sensitive



250mg
1g

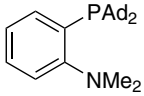
15-0956 **Di-1-adamantylphosphine oxide, min. 90%** *(131266-79-0)*
$(C_{10}H_{15})_2P(O)H$; FW: 318.43; white pwdr.
250mg
1g

15-0955 **Di-1-adamantylphosphinic chloride, 98%**
(126683-99-6)
$(C_{10}H_{15})_2POCl$; FW: 352.88; white xtl.; m.p. 214°
moisture sensitive



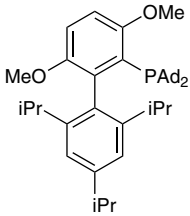
250mg
1g

15-1090 **2-(Di-1-adamantylphosphino) dimethylaminobenzene, 97%**
Me-DalPhos *(1219080-77-9)*
$C_{28}H_{40}NP$; FW: 421.60; white to yellow xtl.
air sensitive
For detailed technical note visit strem.com.



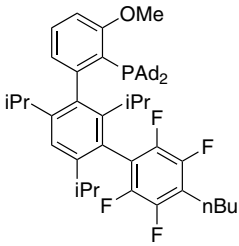
250mg
1g

15-1138 **2-(Di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 95%**
AdBrettPhos *(1160861-59-5)*
$C_{43}H_{61}O_2P$; FW: 640.92; off-white to pale yellow pwdr.
Note: Buchwald Biaryl Phosphine Ligand Master Kit component. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



100mg
500mg
2g

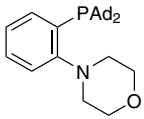
15-2065 NEW **2-(Diadamantylphosphino)-3-methoxy-2',4',6'-tri-i-propyl-3'-(2,3,5,6-tetrafluoro-4-butylphenyl)-1,1'-biphenyl AlPhos** *(1805783-60-1)*
$C_{52}H_{67}F_4OP$; FW: 815.06; white to yellow pwdr.
air sensitive
Note: Patents: US 6,395,916, US 6,307,087



100mg
500mg
2g

Technical Note:
1. See 46-0241 (page 227)

15-1092 **N-[2-(di-1-adamantylphosphino)phenyl]morpholine, 98%**
Mor-DalPhos *(1237588-12-3)*
$C_{30}H_{42}NOP$; FW: 463.63; white to yellow xtl.
air sensitive
For detailed technical note visit strem.com.

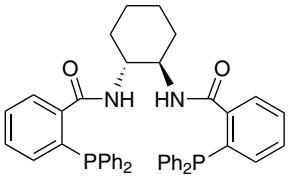


250mg
1g
5g

PHOSPHORUS (Compounds)

15-0961 **(1S,2S)-(-)-1,2-Diaminocyclohexane-N,N'-bis(2'-diphenylphosphinobenzoyl), 95% (S,S)-DACH-Phenyl Trost Ligand** *(169689-05-8)*
$C_{44}H_{40}N_2O_2P_2$; FW: 690.76; white to off-white pwdr.; m.p. 134-136°
For detailed technical note visit strem.com.
100mg
500mg
2g

15-0960 **(1R,2R)-(+)-1,2-Diaminocyclohexane-N,N'-bis(2'-diphenylphosphinobenzoyl), 98% (R,R)-DACH-Phenyl Trost Ligand** *(138517-61-0)*
$C_{44}H_{40}N_2O_2P_2$; FW: 690.76; white to off-white pwdr.; m.p. 134-136°
For detailed technical note visit strem.com.

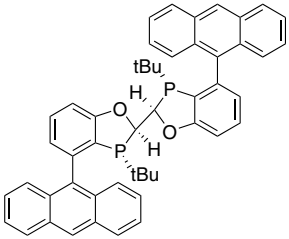


100mg
500mg
2g

15-0963 **(1R,2R)-(+)-1,2-Diaminocyclohexane-N,N'-bis(2-diphenylphosphino-1-naphthoyl), min. 94% (R,R)-DACH-Naphthyl Trost Ligand** *(174810-09-4)*
$C_{52}H_{44}N_2O_2P_2$; FW: 790.88; off-white pwdr.
For detailed technical note visit strem.com.
100mg
500mg
2g

15-0964 **(1S,2S)-(-)-1,2-Diaminocyclohexane-N,N'-bis(2-diphenylphosphino-1-naphthoyl), min. 94% (S,S)-DACH-Naphthyl Trost Ligand** *(205495-66-5)*
$C_{52}H_{44}N_2O_2P_2$; FW: 790.88; off-white pwdr.
For detailed technical note visit strem.com.
100mg
500mg
2g

15-1970 NEW **(2R,2'R,3R,3'R)-4,4'-Di(anthracen-9-yl)-3,3'-di-t-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole, min 98% (>90% ee), [(2R,2'R,3R,3'R)-WingPhos]** *(1884680-45-8)*
$C_{50}H_{44}O_2P_2$; FW: 738.83; light yello pwdr.
air sensitive, (store cold)
Note: Sold in collaboration with Zejun for research purposes only. Patents ZL201310020371.1, CN 201610056390.
For detailed technical note visit strem.com.

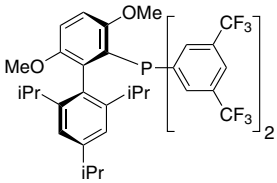


25mg
100mg
500mg

15-1975 NEW **(2S,2'S,3S,3'S)-4,4'-Di(anthracen-9-yl)-3,3'-di-t-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole, min 98%, (>99% ee), [(2S,2'S,3S,3'S)-WingPhos]** *(1435940-19-4)*
$C_{50}H_{44}O_2P_2$; FW: 738.83; light yellow pwdr.
air sensitive, (store cold)
Note: Sold in collaboration with Zejun for research purposes only. Patents ZL201310020371.1, CN 201610056390.
25mg
100mg
500mg

Technical Note:
1. See 15-1970 (page 285)

15-1157 **2-Di[3,5-bis(trifluoromethyl)phenylphosphino]-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% JackiePhos** *(1160861-60-8)*
$C_{39}H_{37}F_{12}O_2P$; FW: 796.66; white xtl.; m.p. 185-190°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



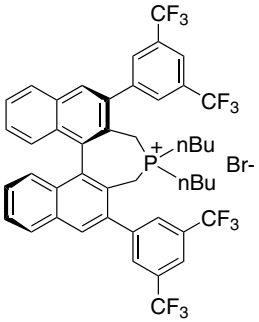
100mg
500mg
2g
10g

15-0990 **Dibromotriphenylphosphorane, 98%** *(1034-39-5)*
$(C_6H_5)_3PBr_2$; FW: 422.10; light brown pwdr.
air sensitive, moisture sensitive
10g
50g

PHOSPHORUS (Compounds)

15-1457

(11bR)-(+)-4,4-Dibutyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% R-MARUOKA CAT P-NB
$[C_{46}H_{38}F_{12}P]^+Br^-$; FW: 929.65; white xtl.; m.p. 262-263°
Note: Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit component.
For detailed technical note visit strem.com.



50mg
250mg

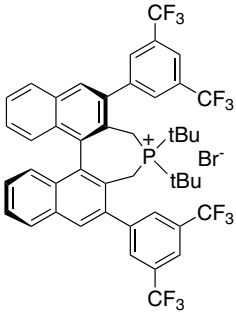
15-1458

(11bS)-(-)-4,4-Dibutyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% S-Maruoka CAT P-NB *(1110711-01-7)*
$[C_{46}H_{30}F_{12}P]^+Br^-$; FW: 929.65; white xt.; m.p. 262-263°
Note: Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit component.
For detailed technical note visit strem.com.

50mg
250mg

15-1464

(11bR)-(+)-4,4-Di-t-butyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% R-MARUOKA CAT P-TB
$[C_{46}H_{38}F_{12}P]^+Br^-$; FW: 929.65; white xtl.; m.p. 202-204°
Note: Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit component.
For detailed technical note visit strem.com.



50mg
250mg

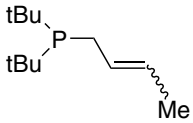
15-1465

(11bS)-(-)-4,4-Di-t-butyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% S-MARUOKA CAT P-TB
$[C_{46}H_{38}F_{12}P]^+Br^-$; FW: 929.65; white xtl.; m.p. 202-203°
Note: Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit component.
For detailed technical note visit strem.com.

50mg
250mg

15-1725
NEW
HAZ

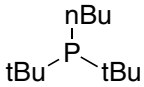
Di-t-butyl(2-butenyl)phosphine (40% in xylene), 98% m-Crophos®
$C_{12}H_{25}P$; FW: 200.30; colorless liq.; b.p. 76-77° (4.0mm)
air sensitive
For detailed technical note visit strem.com.



5g
25g
100g

15-1128
amp
HAZ

Di-t-butyl(n-butyl)phosphine, min. 97% *(29949-72-2)*
$C_{12}H_{27}P$; FW: 202.32; colorless liq.
air sensitive, pyrophoric



250mg
1g
5g

15-1000
amp
HAZ

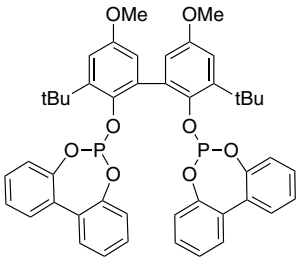
Di-t-butylchlorophosphine, min. 98% *(13716-10-4)*
$[(CH_3)_3C]_2PCl$; FW: 180.66; colorless to light yellow liq.; m.p. 2-3°; b.p. 69-70°/10 mm; f.p. 142°F; d. 0.951
air sensitive, moisture sensitive

1g
5g
25g

PHOSPHORUS (Compounds)

15-0107

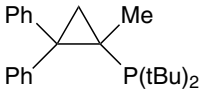
6,6'-[(3,3'-Di-t-butyl-5,5'-dimethoxy-1,1'-biphenyl-2,2'-diyl)bis(oxy)] bis(dibenzo[d,f][1,3,2]dioxaphosphepin) hemi ethyl acetate adduct, min. 95% BIPHEPHOS
(121627-17-6)
$C_{46}H_{44}O_8P_2 \cdot 0.5EtOAc$; FW: 786.78 (830.84); white to off-white pwdr.; m.p. 188-190°
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



250mg
1g
5g

15-1005

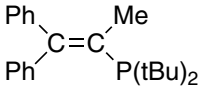
Di-t-butyl(2,2-diphenyl-1-methyl-1-cyclopropyl) phosphine cBRIDP *(742103-27-1)*
$C_{24}H_{33}P$; FW: 352.49; white to pale yellow solid
air sensitive, (store cold)
Note: Manufactured under license of Takasago patent US7129367B2.
For detailed technical note visit strem.com.



250mg
1g
5g

15-1065

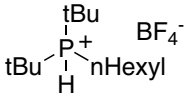
Di-t-butyl(2,2-diphenyl-1-methylvinyl)phosphine, min. 98% vBRIDP *(384842-25-5)*
$C_{23}H_{31}P$; FW: 338.47; white to pale yellow xtl.
air sensitive, (store cold)
Note: Manufactured under license of Takasago patent US6455720.
For detailed technical note visit strem.com.



250mg
1g
5g

15-7230

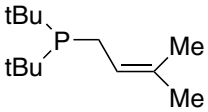
Di-t-butyl(n-hexyl)phosphonium tetrafluoroborate, 98%
$C_{14}H_{32}BF_4P$; FW: 318.18; white pwdr.
hygroscopic



500mg
2g

15-1729
NEW
HAZ

Di-t-butyl(3-methyl-2-butenyl)phosphine (40% in xylene), 98% Crophos®
$C_{13}H_{27}P$; FW: 214.33; colorless liq.
air sensitive



5g
25g
100g

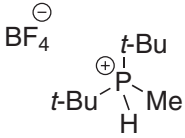
15-1020
amp
HAZ

Di-t-butylmethylphosphine, 98+% *(6002-40-0)*
$[(CH_3)_3C]_2(CH_3)P$; FW: 160.26; colorless liq.; d. 0.824
air sensitive

1g
5g

15-1023

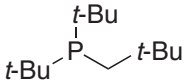
Di-t-butylmethylphosphonium tetrafluoroborate, 99%
(870777-30-3)
$(C_4H_9)_2(CH_3)PH^+BF_4^-$; FW: 248.05; white pwdr.
Note: Phosphine Ligand Kit component.
For detailed technical note visit strem.com.



1g
5g

15-1017
amp
HAZ

Di-t-butylneopentylphosphine, min. 95% (DTBNpP)
(60633-21-8)
$(C_4H_9)_2(C_5H_{11})P$; FW: 216.35; colorless to yellow liq.
pyrophoric
For detailed technical note visit strem.com.



1g
5g

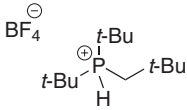
15-1018
HAZ

Di-t-butylneopentylphosphine, min. 95% (DTBNpP) (10 wt% in hexanes)
(60633-21-8)
$(C_4H_9)_2(C_5H_{11})P$; FW: 216.35; colorless to pale yellow liq.
air sensitive

10g
50g

15-1019

Di-t-butylneopentylphosphonium tetrafluoroborate, min. 95% *(886059-84-3)*
$[(C_4H_9)_2(C_5H_{11})PH]^+BF_4^-$; FW: 304.17; white solid
For detailed technical note visit strem.com.

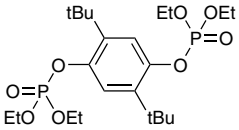


1g
5g

PHOSPHORUS (Compounds)

15-1375
NEW

2,5-Di-t-butyl-1,4-phenylene tetraethyl bis(phosphonate), 99+% Redox shuttle ANL-RS6
(1350767-15-5)
$C_{22}H_{40}O_8P_2$; FW: 494.50; white solid
air sensitive, moisture sensitive
Note: U.S. Patents: 8,969,625
For detailed technical note visit strem.com.



500mg
2g

15-1093
Di-t-butylphenylphosphine, min. 98% (50wt% in toluene) *(32673-25-9)*
$C_{14}H_{23}P$; FW: 222.31; colorless liq.
air sensitive
2g
10g

15-1028
Di-t-butylphenylphosphonium tetrafluoroborate, 97%
$[[(CH_3)_3C]_2(C_6H_5)PH]^+BF_4^-$; FW: 310.12; white pwdr.
For detailed technical note visit strem.com.
1g
5g

15-1030
amp
HAZ
Di-i-butylphosphine, min. 97% *(4006-38-6)*
$(C_4H_9)_2PH$; FW: 146.21; colorless liq.; f.p. -1°F
air sensitive, pyrophoric
1g
5g
25g

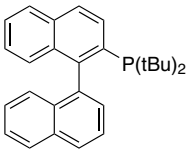
15-1031
HAZ
Di-i-butylphosphine, min. 97% (10 wt% in hexanes) *(4006-38-6)*
$(C_4H_9)_2PH$; FW: 146.22; colorless liq.
air sensitive
10g
50g
250g

15-1040
amp
HAZ
Di-t-butylphosphine, 98+% *(819-19-2)*
$[(CH_3)_3C]_2PH$; FW: 146.22; colorless liq.; m.p. -17°; b.p. 38-40°; f.p. -1°F; d. 0.790
pyrophoric
1g
5g
25g

15-1042
HAZ
Di-t-butylphosphine, 98+% (10 wt% in hexanes) *(819-19-2)*
$[(CH_3)_3C]_2PH$; FW: 146.22; colorless liq.
air sensitive
50g
250g

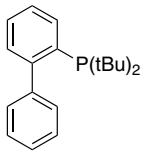
15-1041
Di-t-butylphosphine oxide, 98% *(684-19-5)*
$(C_4H_9)_2P(O)H$; FW: 162.21; white xtl.
hygroscopic
250mg
1g

15-1043
racemic-2-Di-t-butylphosphino-1, 1'-binaphthyl, 98% TrixiePhos *(255836-67-0)*
$C_{28}H_{31}P$; FW: 398.53; white xtl.; m.p. 147-149°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 2 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



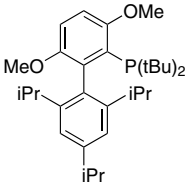
250mg
1g
5g

15-1045
2-(Di-t-butylphosphino))-1,1'-biphenyl, 99% JohnPhos
(224311-51-7)
$C_{20}H_{27}P$; FW: 298.41; white xtl.; m.p. 85°
Note: Phosphine Ligand Kit component. Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 2 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g
50g

15-1164
2-(Di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuBrettPhos
(1160861-53-9)
$C_{31}H_{49}O_2P$; FW: 484.69; white xtl.
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.

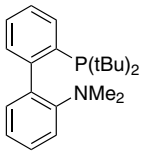


100mg
500mg
2g
10g
50g

PHOSPHORUS (Compounds)

15-1048

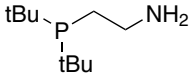
2-Di-t-butylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% tBuDavePhos *(224311-49-3)*
$(CH_3)_2NC_6H_4C_6H_4P(C_4H_9)_2$; FW: 341.47; white xtl.
Note: Buchwald Biaryl Phosphine Ligand Master Kit component..
Buchwald Biaryl Phosphine Ligand Mini Kit 2 component..
Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g

15-7128
HAZ

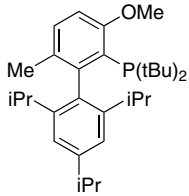
2-(Di-t-butylphosphino)ethylamine, min. 97% (10 wt% in THF) *(1053658-84-6)*
$(tBu)_2P(CH_2)_2NH_2$; FW: 189.28; pale yellow to colorless liq.
air sensitive, moisture sensitive



5g
25g

15-1168

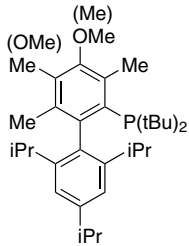
2-(Di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% RockPhos *(1262046-34-3)*
$C_{31}H_{49}OP$; FW: 468.69; white xtl.; m.p. 129-130°
Note: Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



100mg
500mg
2g

15-1063

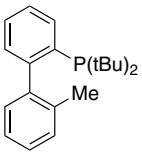
2-Di-t-butylphosphino-4-methoxy-3,5,6-trimethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% [~1:1 mixture with regioisomer, 2-Di-t-butylphosphino-5-methoxy-3,4,6-trimethyl-2',4',6'-tri-i-propylbiphenyl] *(1359986-21-2)*
$C_{33}H_{53}OP$; FW: 496.75; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



250mg
1g
5g

15-1049

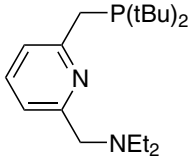
2-Di-t-butylphosphino-2'-methyl)-1,1'-biphenyl, 99% t-BuMePhos *(255837-19-5)*
$C_{21}H_{29}P$; FW: 312.43; white xtl.
Note: Buchwald Biaryl Phosphine Ligand Master Kit component..
Buchwald Biaryl Phosphine Ligand Mini Kit 2 component..
Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g
50g

15-0073

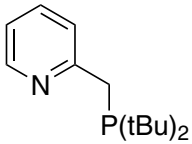
2-(Di-t-butylphosphinomethyl)-6-(diethylaminomethyl)pyridine, 98% *(863971-66-8)*
$C_{19}H_{35}N_2P$; FW: 322.47; yellow liq.
air sensitive
For detailed technical note visit strem.com.



100mg
500mg

15-7350

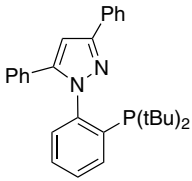
2-(Di-t-butylphosphinomethyl)pyridine, 99% *(494199-72-3)*
$C_{14}H_{24}NP$; FW: 237.32; pale yellow liq.
air sensitive



100mg
500mg

15-1720
NEW

1-(2-Di-t-butylphosphinophenyl)-3,5-diphenyl-1H-pyrazole, 98% *(628333-86-8)*
$C_{29}H_{33}N_2P$; FW: 440.56; white xtl.; m.p. 138-142°
air sensitive

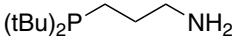


250mg
1g

PHOSPHORUS (Compounds)

15-7130
HAZ

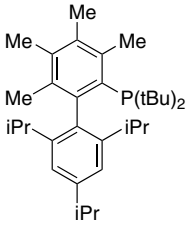
3-(Di-t-butylphosphino)propylamine, min. 97% (10 wt% in THF) *(1196147-72-4)*
$C_{11}H_{26}NP$; FW: 203.30; pale yellow to colorless liq.
air sensitive



5g
25g

15-1051

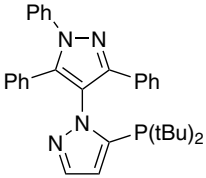
2-Di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% Me$_4$ t-BuXPhos
(857356-94-6)
$C_{33}H_{53}P$; FW: 480.75; white microxtl.; m.p. 166-168°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



250mg
1g
5g
25g

15-1037

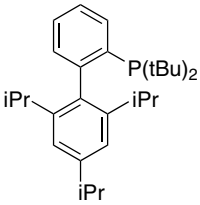
5-(Di-t-butylphosphino)-1',3',5'-triphenyl-1,4'-bi-1H-pyrazole, min. 95% t-Bu-BippyPhos
(894086-00-1)
$C_{32}H_{35}N_4P$; FW: 506.62; white to pale yellow solid; m.p. 169-173°
air sensitive



250mg
1g

15-1052

2-Di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuXPhos *(564483-19-8)*
$C_{29}H_{45}P$; FW: 424.64; white xtl.; m.p. 147-149°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g
50g
250g

93-1518

Di-n-butylphosphite, 96% *(1809-19-4)*
$(C_4H_9O)_2P(O)H$; FW: 194.21; colorless liq.; b.p. 118-119°/11 mm; f.p. 250°F; d. 0.995

50g
250g

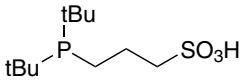
15-1054
HAZ

Di-t-butyl(i-propyl)phosphine, min. 98% *(25032-49-9)*
$(C_4H_9)_2(C_3H_7)P$; FW: 118.29; colorless liq.
pyrophoric

250mg
1g

15-1067

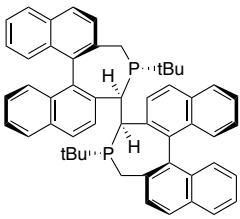
Di-t-butyl(3-sulfonatopropyl)phosphine, min. 98% *(1055888-89-5)*
$(C_4H_9)_2PCH_2CH_2CH_2SO_3H$; FW: 268.35; white solid
moisture sensitive



250mg
1g

15-1053
NEW

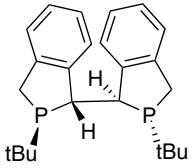
(3S,3'S,4S,4'S,11bS,11'bS)-(+)-4,4'-Di-t-butyl-4,4',5,5'-tetrahydro-3,3'-bi-3H-dinaphtho[2,1-c:1',2'-e]phosphepin, 97% (S)-BINAPINE
(610304-81-9)
$C_{52}H_{48}P_2$; FW: 734.89; white to light yellow pwdr.
air sensitive
Note: Sold in collaboration with Chiral Quest for research purposes only. US Patent No. 7105702, 7153809, 7169953.
For detailed technical note visit strem.com.



50mg
250mg

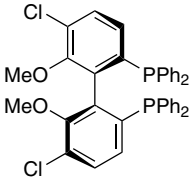
PHOSPHORUS (Compounds)

15-1060 **(1R,1'R,2S,2'S)-(+)-2,2'-Di-t-butyl-2,3,2',3'-tetrahydro-1,1'-bi-1H-isophosphindole, min. 98% (R,R,S,S)-DUANPHOS** *(528814-26-8)*
$C_{24}H_{32}P_2$; FW: 382.46; white xtl.
air sensitive
Note: Sold in collaboration withe Chiral Quest for research purposes only. Patent pending, PCT/US02/35788. Chiral Quest Catalyst and Ligand Toolbox Kit component.
For detailed technical note visit strem.com.



100mg
500mg

15-1055 **(R)-(+)-5,5'-Dichloro-6,6'- dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl, min. 95% (R)-Cl-MeO-BIPHEP** *(185913-97-7)*
$C_{38}H_{30}Cl_2O_2P_2$; FW: 651.50; yellow-white pwdr.; m.p. 178°
Note: Sold in collaboration with Lanxess for research purposes only. US Patents 5,710,339 and 5,801,261.
For detailed technical note visit strem.com.



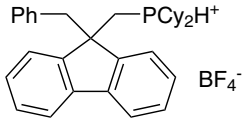
250mg
1g

15-1056 **(S)-(-)-5,5'-Dichloro-6,6'-dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl, min. 95% (S)-Cl-MeO-BIPHEP** *(185913-98-8)*
$C_{38}H_{30}Cl_2O_2P_2$; FW: 651.50; yellow-white pwdr.; m.p. 178°
Note: Sold in collaboration with Lanxess for research purposes only. US Patents 5,710,339 and 5,801,261.
For detailed technical note visit strem.com.

250mg
1g

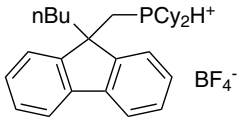
26-0985 **Dichlorophosphinoferrocene, 98%** *(1291-31-2)*
See page 101

15-1072 **Dicyclohexyl(9-benzylfluoren-9-yl)phosphonium tetrafluoroborate, min. 97% [cataCXium® FBn]** *(937378-18-2)*
$C_{32}H_{38}BF_4P$; FW: 540.42; white pwdr.
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application Pending. Solvias cataCXium® Ligand Kit component.



500mg
2g

15-1074 **Dicyclohexyl(9-butylfluoren-9-yl)phosphonium tetrafluoroborate, min. 95% [cataCXium® FBu]** *(1007311-98-9)*
$C_{29}H_{40}BF_4P$; FW: 506.41; white pwdr.
Note: Sold in collaboration with Solvias for research purposes only. Patent Application Pending. Solvias cataCXium® Ligand Kit component.

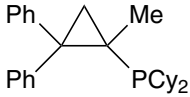


500mg
2g

15-1050 amp HAZ **Dicyclohexylchlorophosphine, min. 98%** *(16523-54-9)*
$(C_6H_{11})_2PCl$; FW: 232.74; colorless to pale yellow, cloudy liq.; b.p. 96-99°/0.1 mm; d. 1.054
air sensitive, moisture sensitive

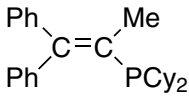
1g
5g

15-1007 **Dicyclohexyl(2,2-diphenyl-1-methylcyclopropyl)phosphine Cy-cBRIDP** *(1023330-38-2)*
$C_{28}H_{37}P$; FW: 404.57; white to pale yellow solid
air sensitive, (store cold)
Note: Manufactured under license of Takasago patent US7129367B2.
For detailed technical note visit strem.com.



250mg
1g
5g

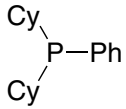
15-1062 **Dicyclohexyl(2,2-diphenyl-1-methylvinyl)phosphine Cy-vBRIDP** *(384842-24-4)*
$C_{25}H_{35}P$; FW: 366.52; white to pale yellow solid
air sensitive, (store cold)
Note: Manufactured under license of Takasago patent US6455720.
For detailed technical note visit strem.com.



250mg
1g
5g

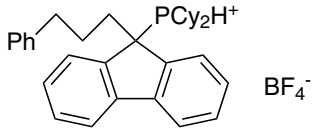
PHOSPHORUS (Compounds)

15-1100 **Dicyclohexylphenylphosphine, min. 95%** *(6476-37-5)*
$(C_6H_{11})_2(C_6H_5)P$; FW: 274.38; white solid
air sensitive



1g
5g

15-1076 **Dicyclohexyl[9-(3-phenylpropyl)fluoren-9-yl] phosphonium tetrafluoroborate, min. 95% [cataCXium® FPrPh]** *(1007311-95-6)*
$C_{34}H_{42}BF_4P$; FW: 568.48; white pwdr.
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application Pending. Solvias cataCXium® Ligand Kit component.



500mg
2g

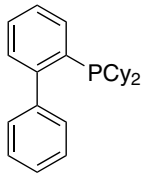
15-1120 amp HAZ
Dicyclohexylphosphine, 98% *(829-84-5)*
$(C_6H_{11})_2PH$; FW: 198.29; light yellow liq.; b.p. 129°/8 mm; d. 0.98
pyrophoric

2g
10g
50g

15-1122 HAZ
Dicyclohexylphosphine, 98% (10 wt% in hexanes) *(829-84-5)*
$(C_6H_{11})_2PH$; FW: 198.29; colorless liq.
air sensitive

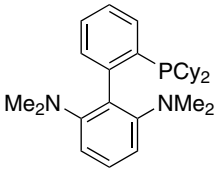
20g
100g

15-1140 **2-(Dicyclohexylphosphino))-1,1'-biphenyl, 98% CyJohnPhos** *(247940-06-3)*
$C_{24}H_{31}P$; FW: 350.49; white xtl.; m.p. 103°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 2 component..
Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



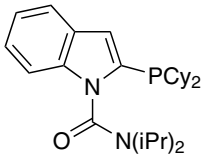
1g
5g
25g
100g

15-1147 **2-Dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% CPhos** *(1160556-64-8)*
$C_{28}H_{41}N_2P$; FW: 436.61; yellow-orange xtl.; m.p. 111-113°
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



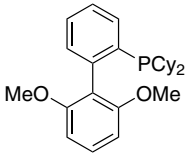
250mg
1g
5g

15-1086 **2-(Dicyclohexylphosphino)-N,N-bis(1-methylethyl)-1H-indole-1-carboxamide, min. 98% Amidole-Phos** *(1067175-36-3)*
$C_{27}H_{41}N_2OP$; FW: 440.60; white to off-white pwdr.; m.p. 192.1-193.8°
For detailed technical note visit strem.com.



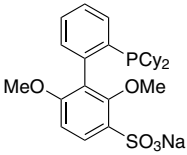
100mg
500mg

15-1143 **2-Dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl, min. 98% SPhos** *(657408-07-6)*
$C_{26}H_{35}O_2P$; FW: 410.53; white xtl.; m.p. 164-166°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g
50g

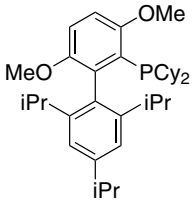
15-1142 **2'-Dicyclohexylphosphino-2,6-dimethoxy-3-sulfonato-1,1'-biphenyl hydrate sodium salt (water soluble SPhos), min. 98%** *(1049726-96-6)*
$C_{26}H_{34}NaO_5PS{\cdot}XH_2O$; FW: 512.58; light yellow solid
Note: Water soluble version of 15-1143 S-Phos. Buchwald Biaryl Ligand Master Kit component. Patents: US 6,395,916 and US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g

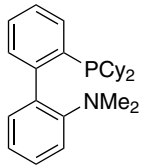
PHOSPHORUS (Compounds)

15-1152 **2-(Dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% BrettPhos** *(1070663-78-3)*
$C_{35}H_{53}O_2P$; FW: 536.77; white xtl.; m.p. 191-193°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



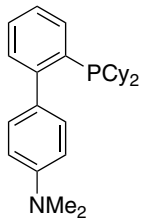
250mg
1g
5g
25g
100g

15-1145 **2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% DavePhos** *(213697-53-1)*
$C_{26}H_{36}NP$; FW: 393.55; white xtl.; m.p. 115-119°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component. Buchwald Biaryl Phosphine Ligand Mini Kit 2 component. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



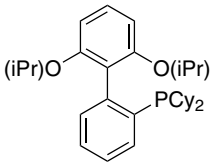
500mg
2g
10g
50g

15-1154 NEW **2-Dicyclohexylphosphino-4'-(N,N-dimethylamino)-1,1'-biphenyl, 98%** *(1185899-00-6)*
$C_{26}H_{36}NP$; FW: 393.55; white xtl.
Note: Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



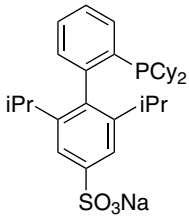
250mg
1g
5g

15-1146 **2-Dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl, min. 98% RuPhos** *(787618-22-8)*
$C_{30}H_{43}O_2P$; FW: 466.64; white pwdr.; m.p. 123-124°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component. Buchwald Biaryl Phosphine Ligand Mini Kit 1 component. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



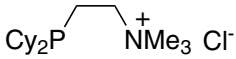
1g
5g
25g
100g

15-1135 **2'-Dicyclohexylphosphino-2,6-di-i-propyl-4-sulfonato-1,1'-biphenyl hydrate sodium salt (XPhos-SO_3Na)** *(870245-84-4)*
$C_{30}H_{42}NaO_3PS{\cdot}XH_2O$; FW: 536.68; beige solid
Note: Water soluble phosphine. Buchwald Biaryl Phosphine Ligand Master Kit component. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



100mg
500mg
2g

15-1144 **[2-(Dicyclohexylphosphino)ethyl] trimethylammonium chloride, min. 95%** *(181864-78-8)*
$(C_6H_{11})_2PCH_2CH_2N(CH_3)_3^+Cl^-$; FW: 319.89; white pwdr.
hygroscopic



1g
5g

26-0955 **(S)-(-)-[(S)-2-Dicyclohexylphosphinoferrocenyl](N,N-dimethylamino)(2-dicyclohexylphosphinophenyl)methane, min. 97%** *(914089-00-2)*
See page 101

26-0975 **(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%** *(158923-11-6)*
See page 101

26-1000 **(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldicyclohexylphosphine, min. 97%** *(167416-28-6)*
See page 101

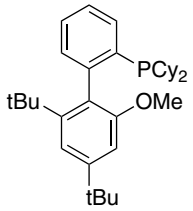
PHOSPHORUS (Compounds)

26-1001 **(S)-(+)-1-[(R)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldicyclohexylphosphine, min. 97%** *(246231-77-6)*
See page 101

26-1230 **(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldiphenylphosphine, min. 97%** *(158923-09-2)*
See page 101

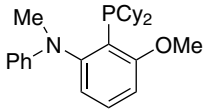
26-1101 **(S)-(+)-1-[(R)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldiphenylphosphine, min. 97%** *(162291-01-2)*
See page 101

15-1105 NEW
2-Dicyclohexylphosphino-2'-methoxy-4',6'-di-t-butyl-1,1'-biphenyl, min. 98% VPhos *(1848244-75-6)*
$C_{33}H_{49}OP$; FW: 492.72; white to off-white solid
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



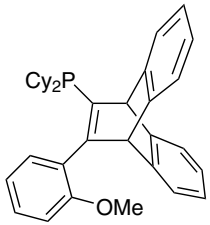
250mg
1g
5g

15-6528 NEW
[2-Dicyclohexylphosphino-3-methoxy-N-methyl-N-phenylbenzenamine, 98% Zheda-Phos *(1398565-95-1)*
$C_{26}H_{36}NOP$; FW: 409.54; white pwdr.; m.p. 169-170°
Note: Sold under license from ZJU for research purposes only. Patent CN201210146220.6, PCT/CN2012/078129.
For detailed technical note visit strem.com.



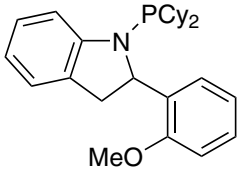
250mg
1g

15-1082
11-Dicyclohexylphosphino-12-(2-methoxyphenyl)-9,10-ethenoanthracene dichloromethane adduct, min. 98% o-MeO-KITPHOS *(1166994-78-0)*
$C_{35}H_{39}OP$; FW: 506.66; white pwdr.
Note: Sold under license from NCL for research purposes only. Patent Pending.
For detailed technical note visit strem.com.



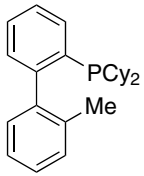
100mg
500mg

15-1087
1-(Dicyclohexylphosphino)-2-(2-methoxyphenyl)-1H-indole, min. 98% NPCy o-Andole-Phos *(947402-60-0)*
$C_{27}H_{34}NOP$; FW: 419.54; white to off-white pwdr.; m.p. 131.1-132.5°
For detailed technical note visit strem.com.



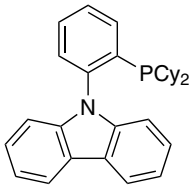
100mg
500mg

15-1148
2-Dicyclohexylphosphino-2'-methyl-)-1,1'-biphenyl, min. 98% MePhos *(251320-86-2)*
$C_{25}H_{33}P$; FW: 364.51; white xtl.; m.p. 107-110°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component. Buchwald Biaryl Phosphine Ligand Mini Kit 2 component. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g
50g

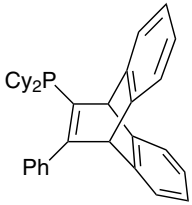
15-0445
9-[2-(Dicyclohexylphosphino) phenyl]-9H-carbazole, min. 98% PhenCar-Phos *(1308652-64-3)*
$C_{30}H_{34}NP$; FW: 439.57; white pwdr.
air sensitive
Note: PhenCar-Phos Ligand Kit component.
For detailed technical note visit strem.com.



250mg
1g

PHOSPHORUS (Compounds)

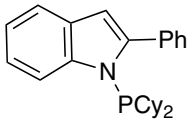
15-1084 **11-Dicyclohexylphosphino-12-phenyl-9,10-ethenoanthracene dichloromethane adduct, min. 98% KITPHOS** *(1166994-77-9)*
$C_{34}H_{37}P$; FW: 476.63; white pwdr.
Note: Sold under license from NCL for research purposes only. Patent Pending.
For detailed technical note visit strem.com.



100mg
500mg

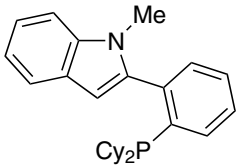
26-1120 **(R)-(+)-1-[(R)-2-(2'-Dicyclohexylphosphinophenyl)ferrocenyl]ethyl-bis(3,5-trifluoromethylphenyl)phosphine, min. 97%** *(821009-34-1)*
See page 102

15-1089 **1-(Dicyclohexylphosphino)-2-phenyl-1H-indole, min. 98% NPCy Phendole-Phos** *(947402-57-5)*
$C_{26}H_{32}NP$; FW: 389.51; white to off-white pwdr.
For detailed technical note visit strem.com.



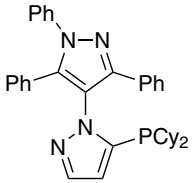
100mg
500mg

15-1088 **2-[2-(Dicyclohexylphosphino)phenyl]-1-methyl-1H-indole, min. 98% CM-Phos** *(1067883-58-2)*
$C_{27}H_{34}NP$; FW: 403.54; white to off-white pwdr.; m.p. 171.9-174.9°
For detailed technical note visit strem.com.



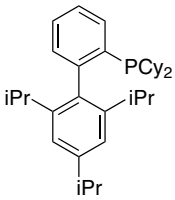
100mg
500mg

15-1039 **5-(Dicyclohexylphosphino)-1',3',5'-triphenyl-[1,4']-bi-1H-pyrazole, min. 95% Cy-BippyPhos** *(1021176-69-1)*
$C_{36}H_{39}N_4P$; FW: 558.70; white pwdr.
air sensitive



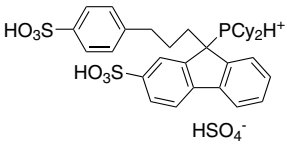
250mg
1g

15-1149 **2-(Dicyclohexylphosphino)-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% XPhos** *(564483-18-7)*
$C_{33}H_{49}P$; FW: 476.72; white pwdr.; m.p. 185°
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.
Buchwald Biaryl Phosphine Ligand Mini Kit 1 component.
Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.



500mg
2g
10g
100g
500g

15-1078 **Dicyclohexyl-{9-[3-(4-sulfonylphenyl)propyl]-2-sulfonylfluoren-9-yl}phosphonium hydrogen sulfate, min. 95% [cataCXium® FSulf]**
$C_{34}H_{43}O_{10}PS_3$; FW: 738.87
Note: Sold in collaboration with Solvias for research purposes only. Patent Application Pending. Solvias cataCXium® Ligand Kit component.



500mg
2g

15-1130 amp HAZ
Dicyclopentylphosphine, 97+% *(39864-68-1)*
$(C_5H_9)_2PH$; FW: 170.23; colorless liq.; d. 0.933
air sensitive, pyrophoric

1g
5g

15-1131 HAZ
Dicyclopentylphosphine, 97+% (10 wt% in hexanes) *(39864-68-1)*
$(C_5H_9)_2PH$; FW: 170.23; colorless liq.
air sensitive

10g
50g

PHOSPHORUS (Compounds)

15-1150
amp
HAZ

Diethylchlorophosphine, min. 95% *(686-69-1)*
$(C_2H_5)_2PCl$; FW: 124.55; colorless to light yellow liq.; b.p. 131-132°; f.p. 66°F; d. 1.023
air sensitive, moisture sensitive, (store cold)
1g
5g

93-1520
HAZ

Di-(2-ethylhexyl)phosphoric acid (contains some mono) *(298-07-7)*
$[C_4H_9CH(C_2H_5)CH_2O]_2P(O)(OH)$; FW: 322.42; colorless liq.; d. 0.974
100g
500g

15-1210
amp
HAZ

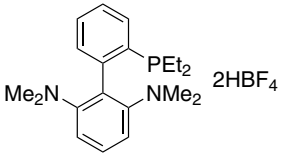
Diethylphosphine, 99% *(627-49-6)*
$(C_2H_5)_2PH$; FW: 90.11; colorless liq.; b.p. 85°; d. 0.7862
pyrophoric, STENCH
1g
5g

15-1211
HAZ

Diethylphosphine, 99% (10 wt% in hexanes) *(627-49-6)*
$(C_2H_5)_2PH$; FW: 90.11; colorless liq.; d. 0.66
air sensitive
10g
50g

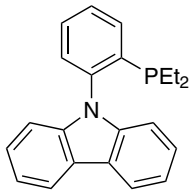
15-1151
NEW

2-Diethylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl di(hydrogen tetrafluoroborate) salt, min. 98% EtCPhos
$C_{20}H_{29}N_2P\cdot2(HBF_4)$; FW: 504.01; white pwdr.
Note: Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.
100mg
500mg



15-0496

9-[2-(Diethylphosphino)phenyl]-9H-carbazole, min. 97% Et PhenCar-Phos *(1308652-66-5)*
$C_{22}H_{22}NP$; FW: 331.39; white pwdr.
air sensitive
Note: PhenCar-Phos Ligand Kit component.
100mg
500mg

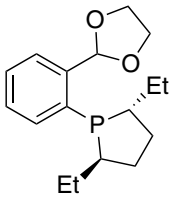


93-1521

Diethylphosphite, min. 95% *(762-04-9)*
$(C_2H_5O)_2P(O)H$; FW: 138.11; colorless liq.; b.p. 50-51°/2 mm; f.p. 195°F; d. 1.072
100g
500g

15-7332

2-{2-[(2R,5R)-2,5-Diethyl-1-phospholano]phenyl}1,3-dioxolane, min. 97%
$C_{17}H_{25}O_2P$; FW: 292.35; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg

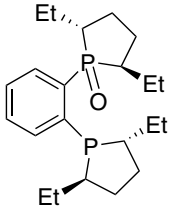


15-7333

2-{2-[(2S,5S)-2,5-Diethyl-1-phospholano]phenyl}1,3-dioxolane, min. 97% *(1217655-83-8)*
$C_{17}H_{25}O_2P$; FW: 292.35; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg

15-7354

[1-(2R,5R)-2,5-Diethylphospholanyl]-[2-(2R,5R)-2,5-diethylphospholanyl-1-oxide]benzene, min. 97% *(924294-55-3)*
$C_{22}H_{36}OP_2$; FW: 378.47; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg



15-7355

[1-(2S,5S)-2,5-Diethylphospholanyl]-[2-(2S,5S)-2,5-diethylphospholanyl-1-oxide]benzene, min. 97%
$C_{22}H_{36}OP_2$; FW: 378.47; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg

PHOSPHORUS (Compounds)

93-1571
HAZ

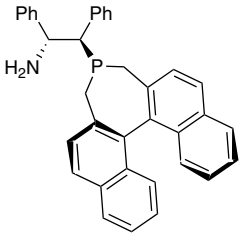
Difluorophosphoric acid hemihydrate, tech. gr. *(13779-41-4)*
$HPO_2F_2 \cdot 0.5H_2O$; FW: 101.98 (110.99); yellow fuming liq.; m.p. -96.5°; b.p. 115.9°; d. 1.583 (25°)
250g
1kg

26-1170

(S)-(+)-1-[(R)-2-(Di-2-furylphosphino)ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97% *(649559-66-0)*
See page 102

15-7137

(1R,2R)-2-[(4S,11bR)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1,2-diphenylethanamine, min. 97% *(1469882-57-2)*
$C_{36}H_{30}NP$; FW: 507.60; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2008148202.



100mg
500mg

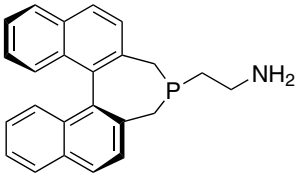
15-7136

(1S,2S)-2-[(4R,11bS)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1,2-diphenylethanamine, min. 97% *(1092064-02-2)*
$C_{36}H_{30}NP$; FW: 507.60; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2008148202.

100mg
500mg

15-7134

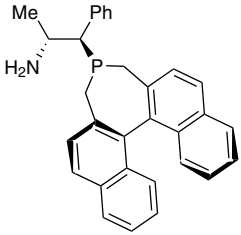
2-[(11bS)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]ethyl]amine, min. 97% *(1053659-64-5)*
$C_{24}H_{22}NP$; FW: 355.41; pale yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2008148202.



100mg
500mg

15-7141

(1R,2R)-2-[(4S,11bR)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1-phenylpropan-2-amine, min. 97%
$C_{31}H_{28}NP$; FW: 445.53; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2008148202.



100mg
500mg

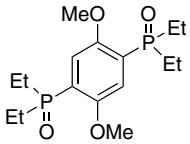
15-7140

(1S,2S)-2-[(4R,11bS)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1-phenylpropan-2-amine, min. 97% *(1092064-04-4)*
$C_{31}H_{28}NP$; FW: 445.53; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2008148202.

100mg
500mg

15-1372
NEW

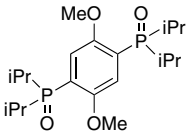
(2,5-Dimethoxy-1,4-phenylene)bis(diethylphosphine oxide), 99+% Redox shuttle ANL-RS51 *(1802015-49-1)*
$C_{16}H_{28}O_4P_2$; FW: 346.34; white solid
air sensitive, moisture sensitive
Note: U.S. Patent: 14/171,556.
For detailed technical note visit strem.com.



500mg
2g

15-1365
NEW

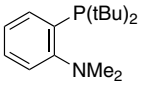
(2,5-Dimethoxy-1,4-phenylene)bis(di-i-propylphosphine oxide), 99+% Redox shuttle ANL-RS5 *(1426397-81-0)*
$C_{20}H_{36}O_4P_2$; FW: 402.45; white pwdr.
air sensitive, moisture sensitive
Note: U.S. Patent: 14/171,556.
For detailed technical note visit strem.com.



250mg
1g

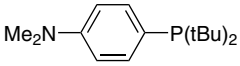
PHOSPHORUS (Compounds)

15-1260 NEW
[2-(N,N-Dimethylamino)phenyl]di-t-butylphosphine, min. 95% *(415941-58-1)*
$C_{16}H_{28}NP$; FW: 265.37; white to light-brown xtl.; m.p. 50-53°
Note: Ligand used in the copper-catalyzed coupling of arylboronate esters with aryl and heteroaryl halides.
For detailed technical note visit strem.com.



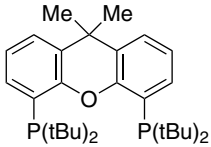
1g
5g

15-1248
[4-(N,N-Dimethylamino)phenyl]di-t-butylphosphine, min. 95% amphos *(932710-63-9)*
$C_{16}H_{28}NP$; FW: 265.37; white to light-brown xtl.; m.p. 57-61°
For detailed technical note visit strem.com.



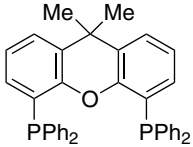
1g
5g
25g

15-1241
9,9-Dimethyl-4,5-bis(di-t-butylphosphino)xanthene, min. 97% t-Bu-XANTPHOS *(856405-77-1)*
$C_{31}H_{48}OP_2$; FW: 498.66; white to light yellow pwdr.
For detailed technical note visit strem.com.



500mg
2g

15-1242
9,9-Dimethyl-4,5-bis(diphenylphosphino)xanthene, min. 98% XANTPHOS *(161265-03-8)*
$C_{39}H_{32}OP_2$; FW: 578.63; light-yellow xtl.; m.p. 221-222°
For detailed technical note visit strem.com.

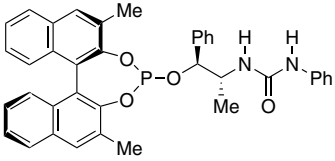


1g
5g
25g
100g

15-1250
amp
HAZ
Dimethylchlorophosphine, min. 97% *(811-62-1)*
$(CH_3)_2PCl$; FW: 96.50; colorless to pale yellow liq.; b.p. 76-77°; f.p. -1°F; d. 1.22
moisture sensitive, pyrophoric

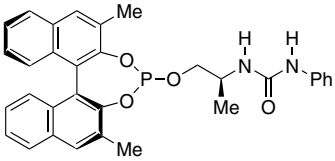
1g
5g

15-2206
1-{(1S,2R)-1-[(11bR)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97% *(1858223-86-5)*
$C_{38}H_{33}N_2O_4P$; FW: 612.65; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



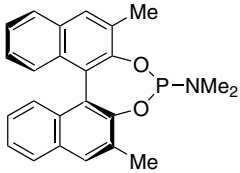
50mg
250mg

15-2204
1-{(2S)-1-[(11bS)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% *(1357562-63-0)*
$C_{32}H_{29}N_2O_4P$; FW: 536.56; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

15-1255
(S)-(+)-(2,6-Dimethyl-3,5-dioxa-4-phosphacyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl) dimethylamine, min. 98% *(185449-86-9)*
$C_{24}H_{22}NO_2P$; FW: 387.41; off-white pwdr.; m.p. 228-229°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

PHOSPHORUS (Compounds)

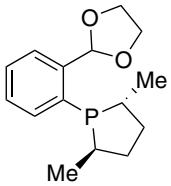
15-1280 **Dimethyldiphenylphosphonium iodide, 98%** *(1017-88-5)* — 5g, 25g
$(CH_3)_2(C_6H_5)_2PI$; FW: 342.16; white xtl.
hygroscopic

93-1523 **Dimethylmethylphosphonate, 97%** *(756-79-6)* — 100g, 500g, 2kg
$(CH_3O)_2P(O)(CH_3)$; FW: 124.08; colorless liq.; b.p. 92-97°/50 mm; f.p. 156°F; d. 1.160

15-1400 amp HAZ **Dimethylphenylphosphine, 99%** *(672-66-2)* — 2g, 10g
$(CH_3)_2(C_6H_5)P$; FW: 138.15; colorless liq.; b.p. 75-79°/12 mm; f.p. 122°F; d. 0.967
air sensitive

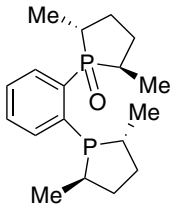
15-1425 **Dimethylphosphine oxide, min. 97%** *(7211-39-4)* — 500mg, 2g
C_2H_7OP; FW: 78.05; white solid
air sensitive

15-7335 **2-{2-[(2R,5R)-2,5-Dimethyl-1-phospholano] phenyl}1,3-dioxolane, min. 97%** *(1044256-04-3)* — 100mg, 500mg
$C_{15}H_{21}O_2P$; FW: 264.30; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only.



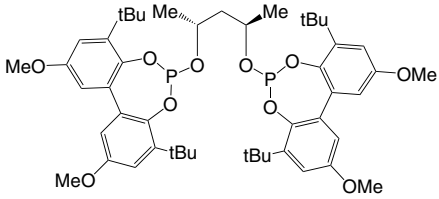
15-7336 **2-{2-[(2S,5S)-2,5-Dimethyl-1-phospholano]phenyl}1,3-dioxolane, min. 97%** *(695816-47-8)* — 100mg, 500mg
$C_{15}H_{21}O_2P$; FW: 264.30; pale yellow to colorless liq.
air sensitive
Note: Sold under license from Kanata for research purposes only.

15-7360 **[1-(2R,5R)-2,5-Dimethylphos-pholanyl]-[2-(2R,5R)-2,5-dimethylphospholanyl-1-ox-ide]benzene, min. 97%** *(638132-66-8)* — 100mg, 500mg
$C_{18}H_{28}OP_2$; FW: 322.36; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only.



15-7361 **[1-(2S,5S)-2,5-Dimethylphospholanyl]-[2-(2S,5S)-2,5-dimethyl-phospholanyl-1-oxide]benzene, min. 97%** *(1380079-15-1)* — 100mg, 500mg
$C_{18}H_{28}OP_2$; FW: 322.36; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

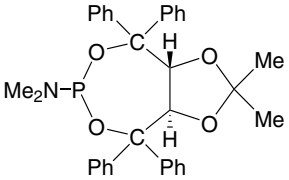
15-1455 **(+)-6,6'-{[(1R,3R)-1,3-Dimethyl-1,3-propanediyl]bis(oxy)}bis[4,8-bis(t-butyl)-2,10-dimethoxy-bibenzo[d,f][1,3,2]dioxaphosphepin], min. 95% (R,R)-Chiraphite** *(149646-83-3)* — 100mg, 500mg
$C_{49}H_{66}O_{10}P_2$; FW: 876.99; off-white pwdr.
air sensitive, moisture sensitive
Note: Sold in collaboration with Chirotech for research purposes only. US Patent No. 5,491,266.
For detailed technical note visit strem.com.



15-1456 **(-)-6,6'-{[(1S,3S)-1,3-Dimethyl-1,3-propanediyl]bis(oxy)}bis[4,8-bis(t-butyl)-2,10-dimethoxy-bibenzo[d,f][1,3,2]dioxaphosphepin], min. 95% (S,S)-Chiraphite** *(852042-07-0)* — 100mg, 500mg
$C_{49}H_{66}O_{10}P_2$; FW: 876.99; off-white pwdr.
air sensitive, moisture sensitive
Note: Sold in collaboration with Chirotech for research purposes only. US Patent 5,491,266.

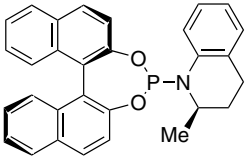
PHOSPHORUS (Compounds)

15-1505 **(3aR,8aR)-(-)-(2,2-Dimethyl-4,4,8,8-tetraphenyl-tetrahydro-[1,3]dioxolo[4,5-e][1,3,2]dioxaphosphepin-6-yl)dimethylamine, min. 98%** *(213843-90-4)*
$C_{33}H_{34}NO_4P$; FW: 539.60; white pwdr.; m.p. 218-221°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's Mono-Phos™ Ligand Kit component.
For detailed technical note visit strem.com.



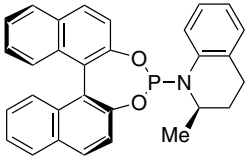
100mg
500mg

15-7203 **(2R)-1-(11bR)-(Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl)-2-methyl-1,2,3,4-tetrahydroquinoline, 98%** *(1186392-43-7)*
$C_{30}H_{24}NO_2P$; FW: 461.49; yellow pwdr.
moisture sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patent ZL200910048438.6.
For detailed technical note visit strem.com.



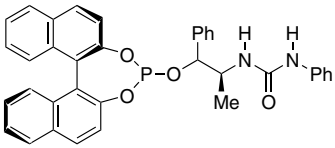
250mg
1g

15-7204 **(2R)-1-(11bS)-(Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl)-2-methyl-1,2,3,4-tetrahydroquinoline, 98%** *(1186392-32-4)*
$C_{30}H_{24}NO_2P$; FW: 461.49; white to off-white pwdr.
moisture sensitive
Note: Sold in collaboration with SIOC for research purposes only. Patent ZL200910048438.6.
For detailed technical note visit strem.com.



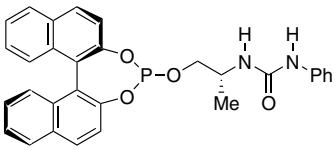
250mg
1g

15-2202 **1-{(1R,2S)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97%** *(1198080-55-5)*
$C_{36}H_{29}N_2O_4P$; FW: 584.60; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

15-2200 **1-{(2R)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% UREAPhos** *(1198080-53-3)*
$C_{30}H_{25}N_2O_4P$; FW: 508.50; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2009/065856. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

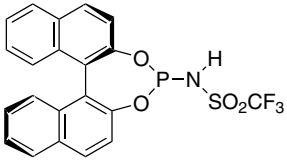
15-2201 **1-{(2S)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%** *(1357562-63-0)*
$C_{30}H_{25}N_2O_4P$; FW: 508.50; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559, WO2009/065853. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.

50mg
250mg

PHOSPHORUS (Compounds)

15-2228

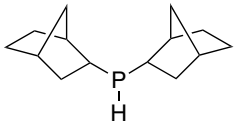
N-[(11bS)-Dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-yl]-1,1,1-trifluoromethanesulfonamide triethylamine adduct, min. 97% METAMORPhos *(1493790-73-0)*
$C_{21}H_{13}F_3NO_4PS\cdot(C_2H_5)_3N$; FW: 564.56; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2009/065856. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

15-1460
HAZ

Di-2-norbornylphosphine, min. 98% (mixture of endo and exo isomers) *(148432-44-4)*
$(C_7H_{11})_2PH$; FW: 222.31; colorless liq.; d. 0.88
pyrophoric



1g
5g

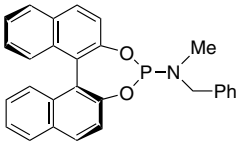
15-1461
HAZ

Di-2-norbornylphosphine, min. 98% (mixture of endo and exo isomers) (10 wt% in hexanes) *(148432-44-4)*
$(C_7H_{11})_2PH$; FW: 222.31; colorless liq.
air sensitive

10g
50g

15-1510

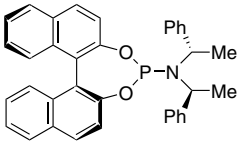
(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)benzyl(methyl)amine, 99% *(490023-37-5)*
$C_{28}H_{22}NO_2P$; FW: 435.45; white pwdr.; m.p. 155°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

15-1521

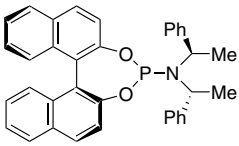
(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)bis[(1S)-1-phenylethyl] amine, min. 95% *(380230-02-4)*
$C_{36}H_{30}NO_2P$; FW: 539.60; off-white pwdr.; m.p. 88-89°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component..
For detailed technical note visit strem.com.



100mg
500mg

15-1520

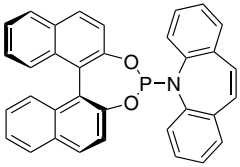
(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)bis[(1R)-1-phenylethyl] amine, dichloromethane adduct, min. 95% *(415918-91-1)*
$C_{36}H_{30}NO_2P$; FW: 539.60; white pwdr.; m.p. 102-103°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

15-1227
NEW

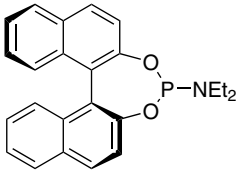
(S)-(+)-(3,5-Dioxa-4-phosphacyclohepta[2,1-a;3,4-a'] dinaphthalen-4-yl)-5H-dibenz[b,f]azepine, min. 97% *(942939-38-0)*
$C_{34}H_{22}NO_2P$; FW: 507.52; yellow solid
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



100mg
500mg

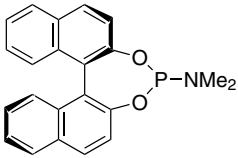
PHOSPHORUS (Compounds)

15-1231 **(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)diethylamine, min. 97%** *(252288-04-3)*
$C_{24}H_{22}NO_2P$; FW: 387.41; white pwdr.
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



250mg
1g

15-1232 **(R)-(-)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, min. 97% (R)-MONOPHOS** *(157488-65-8)*
$C_{22}H_{18}NO_2P$; FW: 359.36; white xtl.; m.p. 190°
air sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent no. WO02 04466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.

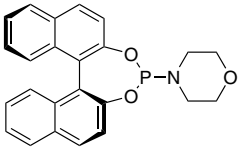


250mg
1g

15-1233 **(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, min. 97% (S)-MONOPHOS** *(185449-80-3)*
$C_{22}H_{18}NO_2P$; FW: 359.36; white xtl.; m.p. 190°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent no. WO02 04466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.

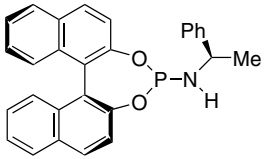
250mg
1g

15-1235 **(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)morpholine, min. 97% (S)-MorfPhos** *(185449-81-4)*
$C_{24}H_{20}NO_3P$; FW: 401.39; white pwdr.
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



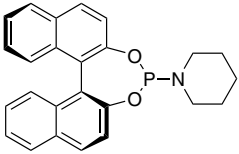
100mg
500mg

15-1525 **(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)[(1R)-1-phenylethyl] amine, min. 95%** *(422509-53-3)*
$C_{28}H_{22}NO_2P$; FW: 435.45; white pwdr.; m.p. 212-213°
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

15-1234 **(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)piperidine, min. 97% (S)-PipPhos** *(284472-79-3)*
$C_{25}H_{22}NO_2P$; FW: 399.42; white pwdr.
moisture sensitive
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg
2g

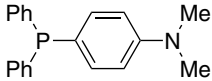
15-1551 HAZ **Diphenylchlorophosphine, min. 95%** *(1079-66-9)*
$(C_6H_5)_2PCl$; FW: 220.64; yellow liq.; b.p. 100-102°/1mm; f.p. >230°F; d. 1.19
air sensitive, moisture sensitive

50g
250g
1kg

15-1549 HAZ **Diphenylchlorophosphine, 98%** *(1079-66-9)*
$C_{12}H_{10}ClP$; FW: 220.64; yellow liq.; b.p. 100-102°/1 mmm; f.p. >230°F; d. 1.19
moisture sensitive

25g
100g
500g

15-1380 NEW **Diphenyl[4-(N,N-dimethylamino)phenyl]phosphine, min. 95%** *(739-58-2)*
$C_{20}H_{20}NP$; FW: 305.35; white solid; m.p. 151-154°
air sensitive



1g
5g

PHOSPHORUS (Compounds)

15-1700
amp
HAZ

Diphenylphosphine, 99% *(829-85-6)*
$(C_6H_5)_2PH$; FW: 186.20; colorless liq.; b.p. 116-119°/2.6 mm; d. 1.07
pyrophoric

10g
50g
250g

15-1702
HAZ

Diphenylphosphine, 99% (10 wt% in hexanes) *(829-85-6)*
$(C_6H_5)_2PH$; FW: 186.20; colorless liq.; d. 0.68
air sensitive

100g
500g

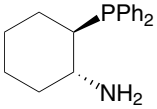
15-1740
HAZ

Diphenylphosphinic chloride, 98% *(1499-21-4)*
$(C_6H_5)_2P(O)Cl$; FW: 236.64; colorless to pale yellow liq.; b.p. 138-139°/0.15 mm; f.p. 79°F; d. 1.240
moisture sensitive

5g
25g
100g

15-7153

(1R,2R)-2-(Diphenylphosphino)-1-aminocyclohexane, min. 97% *(452304-59-5)*
$C_{18}H_{22}NP$; FW: 283.35; white solid
air sensitive



100mg
500mg

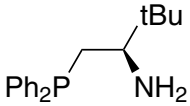
15-7154

(1S,2S)-2-(Diphenylphosphino)-1-aminocyclohexane, min. 97% *(452304-63-1)*
$C_{18}H_{22}NP$; FW: 283.35; white solid; m.p. 51-56°
air sensitive

100mg
500mg

15-7253
HAZ

(R)-1-(Diphenylphosphino)-2-amino-3,3-dimethylbutane, min. 97% (10wt% in hexanes) *(1366384-12-4)*
$C_{18}H_{24}NP$; FW: 285.36; colorless liq.
air sensitive



1g
5g

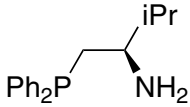
15-7255
HAZ

(S)-1-(Diphenylphosphino)-2-amino-3,3-dimethylbutane, min. 97% (10wt% in hexanes) *(286454-86-2)*
$C_{18}H_{24}NP$; FW: 285.36; colorless liq.
air sensitive

1g
5g

15-7146

(R)-1-(Diphenylphosphino)-2-amino-3-methylbutane, min. 97% *(1400149-69-0)*
$C_{17}H_{22}NP$; FW: 271.34; colorless oil
air sensitive



100mg
500mg

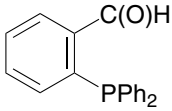
15-7147

(S)-1-(Diphenylphosphino)-2-amino-3-methylbutane, min. 97% *(146476-37-1)*
$C_{17}H_{22}NP$; FW: 271.34; colorless oil
air sensitive

100mg
500mg

15-0120

2-(Diphenylphosphino)benzaldehyde, min. 97% *(50777-76-9)*
$(C_6H_5)_2P(C_6H_5COH)$; FW: 290.30; white to yellow pwdr.; m.p. 112-115°



250mg
1g

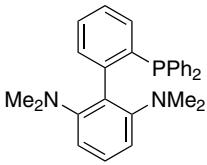
15-0133

2-(Diphenylphosphino)benzoic acid, min. 97% *(17261-28-8)*
$(C_6H_5)_2P(C_6H_5COOH)$; FW: 306.30; white to yellow solid; m.p. 174-181°

1g
5g

15-1125
NEW

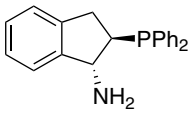
2-Diphenylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% PhCPhos *(1447963-71-4)*
$C_{28}H_{29}N_2P$; FW: 424.52; tan solid
Note: Patents: US 6,395,916, US 6,307,087
For detailed technical note visit strem.com.



100mg
500mg

15-7110
HAZ

(1R,2R)-2-(Diphenylphosphino)-2,3-dihydro-1H-inden-1-amine, min. 97% (10wt% in THF) *(1091606-70-0)*
$C_{21}H_{20}NP$; FW: 317.36; colorless to pale yellow liq.
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2008148202.

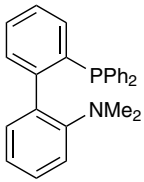


1g
5g

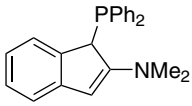
PHOSPHORUS (Compounds)

15-7111 HAZ
(1S,2S)-2-(Diphenylphosphino)-2,3-dihydro-1H-inden-1-amine, min. 97% (10wt% in THF) *(1091606-69-7)*
$C_{21}H_{20}NP$; FW: 317.36; colorless to pale yellow liq.
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2008148202.
1g, 5g

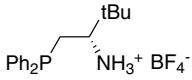
15-1745
2-Diphenylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% PhDavePhos *(240417-00-9)*
$C_{26}H_{24}NP$; FW: 381.46; white pwdr.
Note: Buchwald Biaryl Phosphine Ligand Master Kit component.. Buchwald Biaryl Phosphine Ligand Mini Kit 2 component.. Patents: US 6,395,916, US 6,307,087.
For detailed technical note visit strem.com.
500mg, 2g, 10g



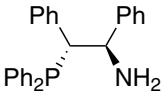
15-1748
1-Diphenylphosphino-2-(N,N-dimethylamino)-1H-indene, 99% (contains vinylic isomer) *(628323-64-8)*
$C_{23}H_{22}NP$; FW: 343.40; off-white xtl.
(store cold)
For detailed technical note visit strem.com.
250mg, 1g



15-7194
(S)-1-(Diphenylphosphino)-3,3-dimethylbutan-2-aminium tetrafluoroborate, min. 97%
$C_{18}H_{25}BF_4NP$; FW: 373.18; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.
100mg, 500mg

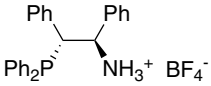


15-7102
(1R,2R)-2-(Diphenylphosphino)-1,2-diphenylethylamine, min. 97% *(1091606-68-6)*
$C_{26}H_{24}NP$; FW: 318.45; white solid
air sensitive
Note: Sold under license from Kanata for research purposes onlly. WO2008148202.
100mg, 500mg

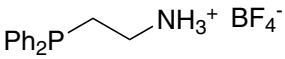


15-7103
(1S,2S)-2-(Diphenylphosphino)-1,2-diphenylethylamine, min. 97%
(1091606-67-5)
$C_{26}H_{24}NP$; FW: 318.45; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO2008148202.
100mg, 500mg

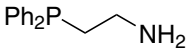
15-7156
(1R,2R)-2-(Diphenylphosphino)-1,2-diphenylethylammonium tetrafluoroborate, min. 97%
$C_{26}H_{25}BF_4NP$; FW: 469.26; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.
100mg, 500mg



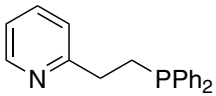
15-7174
2-(Diphenylphosphino)ethanammonium tetrafluoroborate, min. 97% *(1222630-32-1)*
$C_{14}H_{17}BF_4NP$; FW: 317.06; white to beige solid
air sensitive
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.
500mg, 2g



15-1762
2-(Diphenylphosphino)ethylamine, min. 95%
(4848-43-5)
$(C_6H_5)_2PCH_2CH_2NH_2$; FW: 229.26; colorless to yellow liq.
air sensitive
For detailed technical note visit strem.com.
1g, 5g



15-1765
2-[2-(Diphenylphosphino)ethyl]pyridine, min. 97%
(10150-27-3)
$C_{19}H_{18}NP$; FW: 291.33; white pwdr.
air sensitive
For detailed technical note visit strem.com.
100mg, 500mg



26-1153
(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl] [2-bis(3,5-dimethyl-4-methoxyphenyl)phosphinophenyl]methanol, min. 97% *(851308-47-9)*
See page 103

PHOSPHORUS (Compounds)

26-1160 **(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl] [2-diphenylphosphinophenyl] methanol, min. 97%** *(851308-43-5)*
See page 103

26-1155 **(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl] (N,N-dimethylamino) (2-diphenylphosphinophenyl)methane, min. 97% TANIAPHOS**
(850444-36-9)
See page 103

26-1425 **(R)-1-((S)-2-Diphenylphosphino)ferrocenylethylamine, min. 97%**
(607389-84-4)
See page 103

26-1426 **(S)-1-((R)-2-Diphenylphosphino)ferrocenylethylamine, min. 97%**
See page 103

26-1200 **(R)-(-)-1-[(S)-2-(Diphenylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%** *(155830-69-6)*
See page 103

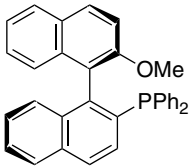
26-1201 **(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%** *(277306-29-3)*
See page 103

26-1210 **(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldicyclohexylphosphine ethanol adduct, min. 97% (R)-(S)-JOSIPHOS** *(155806-35-2)*
See page 104

26-1211 **(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]ethyldicyclohexylphosphine ethanol adduct, min. 97% (S)-(R)-JOSIPHOS** *(162291-02-3)*
See page 104

26-1255 **(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%** *(184095-69-0)*
See page 104

15-1775 **(R)-(+)-2-(Diphenylphosphino)-2'-methoxy-1,1'-binaphthyl, 99% (R)-MOP** *(145964-33-6)*
$C_{33}H_{25}OP$; FW: 468.53; white pwdr.; m.p. 177-179°
air sensitive
Note: Sold in collaboration with Takasago for research purposes only. Patents US 5231202, EP 0503884, JP 05-017491.
For detailed technical note visit strem.com.

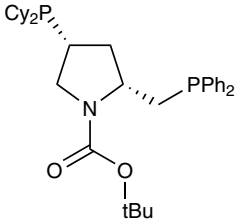


100mg
500mg

15-1776 **(S)-(-)-2-(Diphenylphosphino)-2'-methoxy-1,1'-binaphthyl, 99% (S)-MOP**
(134484-36-9)
$C_{33}H_{25}OP$; FW: 468.53; white pwdr.; m.p. 175-179°
air sensitive
Note: Sold in collaboration with Takasago for research purposes only. Patents US 5231202, EP 0503884, JP 05-017491.

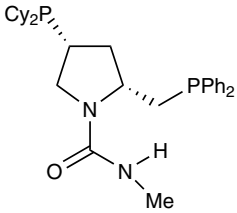
100mg
500mg

15-7220 **(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-(t-butoxycarbonyl) pyrrolidine, min. 97% (R,R-BCPM)** *(114751-47-2)*
$C_{34}H_{49}NO_2P_2$; FW: 565.71; white pwdr.
air sensitive



50mg
250mg

15-7224 **(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-methyl-1-pyrrolidinecarboxamide, min. 95% (R,R-MCCPM)**
(122709-72-2)
$C_{31}H_{44}N_2OP_2$; FW: 522.64; white pwdr.
air sensitive



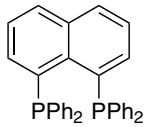
50mg
250mg

PHOSPHORUS (Compounds)

15-7225	**(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-methyl-1-pyrrolidinecarboxamide, min. 97% (S,S-MCCPM)** *(112521-97-8)* $C_{31}H_{44}N_2OP_2$; FW: 522.64; white pwdr. *air sensitive*	50mg 250mg
15-7211	**(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino) pyrrolidine, min. 97% (S,S-PPM)** *(61478-29-3)* $C_{29}H_{29}NP_2$; FW: 453.50; white pwdr. *air sensitive*	100mg 500mg
15-7210	**(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4- (diphenylphosphino) pyrrolidine, min. 97% (R,R-PPM)** *(77450-05-6)* $C_{29}H_{29}NP_2$; FW: 453.50; white pwdr. *air sensitive*	100mg 500mg
15-7216	**(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (R,R-BPPM)** *(72598-03-9)* $C_{34}H_{37}NO_2P_2$; FW: 553.61; white pwdr. *air sensitive*	100mg 500mg
15-7217	**(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (S,S-BPPM)** *(61478-28-2)* $C_{34}H_{49}NO_2P$; FW: 565.71; white pwdr. *air sensitive*	100mg 500mg
15-1804	**2-Diphenylphosphino-6-methylpyridine, 98%** *(132682-77-0)* $C_{18}H_{16}NP$; FW: 277.30; white to off-white xtl.; m.p. 81-83°	500mg 2g
15-7116	**(S)-2-[(Diphenylphosphino)methyl]pyrrolidine, min. 97%** *(60261-46-3)* $C_{17}H_{20}NP$; FW: 269.32; colorless to pale yellow liq. *air sensitive*	250mg 1g
15-7115 HAZ	**(R)-2-[(Diphenylphosphino)methyl]pyrrolidine, min. 97% (10 wt% in tetrahydrofuran)** *(428514-91-4)* $C_{17}H_{20}NP$; FW: 269.32; colorless liq. *air sensitive*	2g 10g
15-7165	**(R)-2-[(Diphenylphosphino)methyl]pyrrolidinium tetrafluoroborate, min. 97%** $C_{17}H_{21}BF_4NP$; FW: 357.13; white solid *air sensitive* Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.	100mg 500mg
15-7166	**(S)-2-[(Diphenylphosphino)methyl]pyrrolidinium tetrafluoroborate, min. 97%** *(1222630-36-5)* $C_{17}H_{21}BF_4NP$; FW: 357.13; white solid *air sensitive* Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.	100mg 500mg

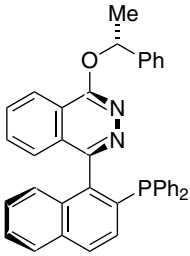
PHOSPHORUS (Compounds)

15-7123 **1,8-(Diphenylphosphino)naphthalene, 99%** *(153725-04-3)*
$C_{34}H_{26}P_2$; FW: 496.52; yellow xtl.
air sensitive



250mg
1g

15-1782 **(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethoxy]phthalazine, min. 97% (R,R)-O-PINAP** *(828927-95-3)*
$C_{38}H_{29}N_2OP$; FW: 560.62; colorless xtl.; m.p. 64-65°
air sensitive
Note: PINAP Ligand Kit component.
For detailed technical note visit strem.com.



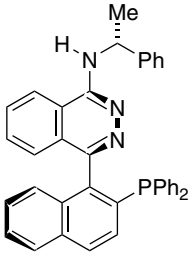
250mg
1g

15-1783 **(S)-(-)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethoxy] phthalazine, min. 97% (R,S)-O-PINAP** *(828927-94-2)*
$C_{38}H_{29}N_2OP$; FW: 560..62; colorless xtl.; m.p. 178-181°
air sensitive
Note: PINAP Ligand Kit component.

250mg
1g

Technical Note:
1. See 15-1782 (page 307)

15-1784 **(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethyl]-1-phthalazinamine, min. 97% (R,R)-N-PINAP** *(828927-97-5)*
$C_{38}H_{30}N_3P$; FW: 559.64; colorless xtl.; m.p. 185-188°
air sensitive
Note: PINAP Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

15-1787 **(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(S)-1-phenylethyl]-1-phthalazinamine, min. 97% (S,R)-N-PINAP** *(1173836-08-2)*
$C_{38}H_{30}N_3P$; FW: 559.64; colorless xtl.; m.p. >210°
air sensitive
Note: PINAP Ligand Kit component.
For detailed technical note visit strem.com.

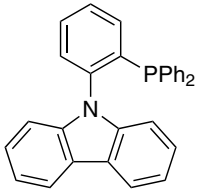
250mg
1g

15-1786 **(S)-(-)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethyl]-1-phthalazinamine, min. 97% (R,S)-N-PINAP** *(828927-96-4)*
$C_{38}H_{30}N_3P$; FW: 559.64; colorless xtl.; m.p. >210°
air sensitive
Note: PINAP Ligand Kit component.

250mg
1g

Technical Note:
1. See 15-1787 (page 307)

15-0498 **9-[2-(Diphenylphosphino)phenyl]-9H-carbazole, min. 97% Ph PhenCar-Phos** *(1308652-67-6)*
$C_{30}H_{22}NP$; FW: 427.48; white pwdr.
air sensitive
Note: PhenCar-Phos Ligand Kit component.



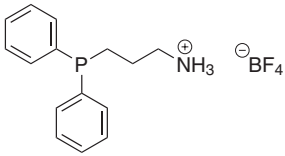
250mg
1g

PHOSPHORUS (Compounds)

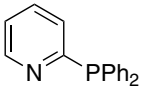
15-7118	**(R)-1-[2-(Diphenylphosphino)phenyl]ethylamine, min. 97%** *(192057-60-6)* $C_{20}H_{20}NP$; FW: 305.35; white solid *air sensitive*	250mg 1g
15-7119	**(S)-1-[2-(Diphenylphosphino)phenyl]ethylamine, min. 97%** *(913196-43-7)* $C_{20}H_{20}NP$; FW: 305.35; white solid *air sensitive*	250mg 1g
15-7121	**(R)-2-(Diphenylphosphino)-1-phenylethylamine, min. 97%** *(141096-35-7)* $C_{20}H_{20}NP$; FW: 381.45; white solid *air sensitive*	250mg 1g
15-7122	**(S)-2-(Diphenylphosphino)-1-phenylethylamine, min. 97%** *(1103533-85-2)* $C_{20}H_{20}NP$; FW: 381.45; white solid *air sensitive*	250mg 1g
26-1300	**(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethylbis(di-3,5-trifluoromethylphenyl)phosphine, min. 97%** *(565184-33-0)* *See* page 104	
26-1310	**(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl] ethyldicyclohexylphosphine, min. 97%** *(565184-29-4)* *See* page 104	
26-1315	**(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldi-phenylphosphine, min. 97%** *(565184-32-9)* *See* page 104	
26-1320	**(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldi(3,5-xylyl) phosphine, min. 97%** *(894771-25-6)* *See* page 105	
15-1821	**(R)-(+)-2-[2-(Diphenylphosphino) phenyl]-4-(1-methylethyl)-4,5-dihydrooxazole, 98% (R)-iPr-PHOX** *(164858-78-0)* $C_{24}H_{24}NOP$; FW: 373.44; white pwdr.; m.p. 77-80° *air sensitive* **For detailed technical note visit strem.com.**	50mg 250mg 1g
15-1822	**(S)-(-)-2-[(2-(Diphenylphosphino)phenyl]-4-(1-methylethyl)-4,5-dihydrooxazole, 98% (S)-iPr-PHOX** *(148461-14-7)* $C_{24}H_{24}NOP$; FW: 373.44; white pwdr.; m.p. 77-80° *air sensitive* **For detailed technical note visit strem.com.**	50mg 250mg 1g
15-3152 amp HAZ	**4-Diphenylphosphinophenyl{2-methyl-3-[polyisobutyl(21)]propyl}ether (50% in heptane/polyisobutylene)** $H[CH_2C(Me)_2]_{21}CH_2C(Me)$ $HCH_2OC_6H_4P(Ph)_2$; FW: 1513; colorless liq.	1g 5g
15-7159	**(1R,2R)-1-(Diphenylphosphino)-1-phenylpro-pan-2-ammonium tetrafluoroborate, min. 97%** $C_{21}H_{23}BF_4NP$; FW: 407.19; white solid *air sensitive* Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.	100mg 500mg
15-1767	**3-(Diphenylphosphino)propylamine, min. 97%** *(16605-03-1)* $(C_6H_5)_2P(CH_2)_3NH_2$; FW: 243.28; colorless to pale yellow liq. *air sensitive*	500mg 2g

PHOSPHORUS (Compounds)

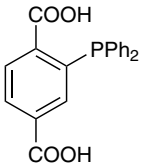
15-1769 **3-(Diphenylphosphino)propylammonium tetrafluoroborate** 500mg 2g
$(C_6H_5)_2PCH_2CH_2CH_2NH_3^+(BF_4)$; FW: 331.10; white solid
air sensitive, hygroscopic
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.



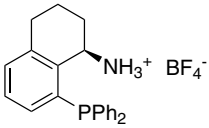
15-1780 NEW **2-Diphenylphosphinopyridine, min. 97%** *(37943-90-1)* 5g 25g
$C_{17}H_{14}NP$; FW: 263.27; white to off-white solid
For detailed technical note visit strem.com.



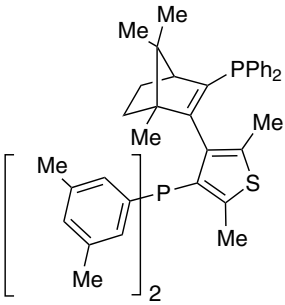
15-7170 **2-(Diphenylphosphino)terephthalic acid, 98%** *(1537175-69-1)* 50mg 250mg
$C_{20}H_{18}O_4P$; FW: 350.30; white pwdr.
Note: Ligand for MOF synthesis. Developed at the Paul Scherrer Institute, Switzerland PCT/EP2013/051405.
For detailed technical note visit strem.com.



15-7189 **(R)-8-(Diphenylphosphino)-1,2,3,4-tetrahydronaphthalenamime tetrafluoroborate, min. 97%** 100mg 500mg
$C_{22}H_{23}BF_4NP$; FW: 419.20; white solid
air sensitive
Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.



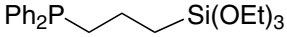
15-0164 **(+)-{4-[(1R,4S)-3-(Diphenylphosphino)-1,7,7-trimethylbicyclo[2.2.1]hept-2-en-2-yl]-2,5-dimethyl-3-thien-3-yl}bis(3,5-dimethylphenyl)phosphine, min. 95% [catASium® T3]** *(868851-50-7)* 100mg
$C_{44}H_{48}P_2S$; FW: 670.87; white pwdr.
air sensitive, light sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent WO2005/108407.



15-1827 **Diphenyl(m-sulfonatophenyl)phosphine dihydrate sodium salt, min. 90%** 250mg 1g 5g
(63995-75-5)
$(C_6H_5)_2P(C_6H_4SO_3Na)\cdot 2H_2O$; FW: 364.33 (400.36); white pwdr.
For detailed technical note visit strem.com.

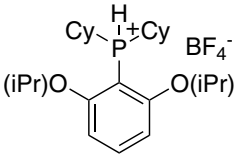
15-1825 **Diphenyl(p-sulfonatophenyl)phosphine monohydrate dimethylsulfoxide adduct, potassium salt** 1g 5g
$(C_6H_5)_2P(C_6H_4SO_3K)\cdot H_2O\cdot CH_3SOCH_3$; FW: 380.44 (476.59); white pwdr.
Note: Water soluble phosphine.

15-1823 **Diphenyl[3-(triethoxysilyl)propyl]phosphine, 98%** 250mg 1g
(52090-23-0)
$(C_6H_5)_2P(CH_2)_3Si(OCH_2CH_3)_3$; FW: 390.53; colorless, oily liq.
air sensitive, moisture sensitive



Technical Note:
1. Useful ligand for the preparation of silica-immobilized metal catalysts.

15-6525 NEW **[2,6-Di-i-propoxyphenyl]dicyclohexylphosphonium tetrafluoroborate, 98% GorlosPhosHBF$_4$** *(1268824-70-9)* 500mg 2g
$C_{24}H_{40}BF_4O_2P$; FW: 478.35; white solid; m.p. 221.6-223.2°
Note: Sold under license from ZJU for research purposes only. Patents ZL200910154029.4, PCT/CN2009/001527.
For detailed technical note visit strem.com.



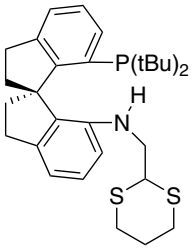
PHOSPHORUS (Compounds)

15-1800 amp HAZ	**Di-i-propylchlorophosphine, min. 97%** *(40244-90-4)* $(C_3H_7)_2PCl$; FW: 152.60; colorless liq.; f.p. 39°F; d. 0.959 *air sensitive, moisture sensitive*	1g 5g
15-1795 HAZ	**Di-i-propylphosphine, 98%** *(20491-53-6)* $(C_3H_7)_2PH$; FW: 118.16; colorless liq. *air sensitive, pyrophoric*	1g 5g
15-1796 HAZ	**Di-i-propylphosphine, 98% (10 wt% in hexanes)** *(20491-53-6)* $(C_3H_7)_2PH$; FW: 118.16; colorless liq *air sensitive*	10g 50g
15-1802	**1-Di-i-propylphosphino-2-(N,N-dimethylamino)-1H-indene, 99%** *(540492-51-1)* $C_{17}H_{26}NP$; FW: 275.37; off-white xtl. *air sensitive* Note: Sold under license from Dalhousie for research purposes only. Provisional US patents 60/778,368 and 60/778,358. **For detailed technical note visit strem.com.**	250mg 1g
15-1812 HAZ	**2-(Di-i-propylphosphino)ethylamine, min. 97% (10 wt% in THF)** *(1053657-14-9)* $(C_3H_7)_2PCH_2CH_2NH_2$; FW: 161.23; pale yellow to colorless liq. *air sensitive, moisture sensitive*	5g 25g
15-0493	**9-[2-(Di-i-propylphosphino)phenyl]- 9H-carbazole, min. 97% i-Pr PhenCar-Phos** *(1308652-65-4)* $C_{24}H_{26}NP$; FW: 359.44; white pwdr.; m.p. 145-149° *air sensitive* Note: PhenCar-Phos Ligand Kit component.	250mg 1g
15-1831 HAZ	**3-(Di-i-propylphosphino)propylamine, min. 97% (10 wt% in THF)** *(1196147-69-9)* $(C_3H_7)_2PCH_2CH_2CH_2NH_2$; FW: 175.25; colorless to pale yellow liq. *air sensitive*	5g 25g
93-1527	**Di-i-propylphosphite, min. 98%** *(1809-20-7)* $(C_3H_7O)_2P(O)H$; FW: 166.16; colorless liq.; b.p. 70-71°/9 mm; f.p. 156°F; d. 0.997 *moisture sensitive*	50g 250g
15-1813	**2-(Di-i-propylphosphonium)ethylammonium bis(tetrafluoroborate), min. 97%** *(1222630-50-3)* $(C_3H_7)_2PH^+CH_2CH_2NH_3^+(BF_4)_2$; FW: 336.85; white to beige solid *air sensitive, hygroscopic* Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.	500mg 2g
15-1832	**3-(Di-i-propylphosphonium)propylammonium bis(tetrafluoroborate)** $(C_3H_7)_2PH^+CH_2CH_2CH_2NH_3^+(BF_4)_2$; FW: 350.88; white solid *air sensitive, hygroscopic* Note: Sold under license from Kanata for research purposes only. PCT/CA2009/001412.	500mg 2g

PHOSPHORUS (Compounds)

15-1638
NEW

(R)-(+)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP] *(1809609-53-7)*
$C_{50}H_{66}NPS_2$; FW: 776.17; white to off-white solid; m.p. 95-97°
air sensitive
For detailed technical note visit strem.com.



25mg
100mg

15-1639
NEW

(S)-(-)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(S)-DTB-SpiroSAP]
$C_{50}H_{66}NPS_2$; FW: 776.17; white to off-white solid; m.p. 95-97°
air sensitive

25mg
100mg

Technical Note:
1. See 15-1638 (page 311)

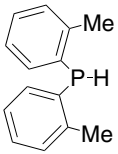
15-1815
HAZ

Di-o-tolylchlorophosphine, min. 98% *(36042-94-1)*
$(CH_3C_6H_4)_2PCl$; FW: 248.69; white to yellow hazy viscous liq.
air sensitive, moisture sensitive

1g
5g

15-0435

Di-o-tolylphosphine, min. 97% *(29949-64-2)*
$(CH_3C_6H_4)_2PH$; FW: 214.24; colorless solid; m.p. 42-46°
air sensitive



1g
5g

15-1820
amp
HAZ

Di-p-tolylphosphine, 99% *(1017-60-3)*
$(CH_3C_6H_4)_2PH$; FW: 214.25; colorless liq.
pyrophoric

2g
10g

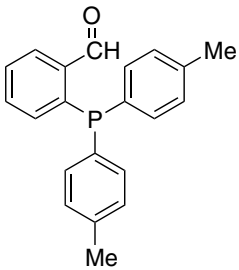
15-1819
HAZ

Di-p-tolylphosphine, 99% (10 wt% in hexanes) *(1017-60-3)*
$(CH_3C_6H_4)_2PH$; FW: 214.25; colorless liq.
air sensitive

20g
100g

15-7344

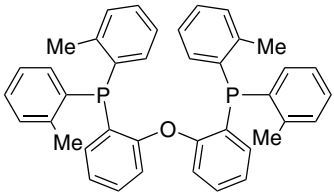
2-(Di-p-tolylphosphino)benzaldehyde, min. 97%
(1202865-03-9)
$C_{21}H_{19}OP$; FW: 318.12; yellow solid



500mg
2g

15-7365

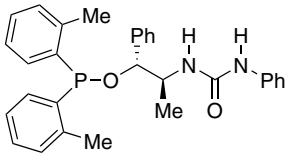
2,2'-(Di-o-tolylphosphino)dipheny-lether, min. 97% DTP-DPEphos
(205497-64-9)
$C_{40}H_{36}OP_2$; FW: 594.66; white pwdr.



250mg
1g

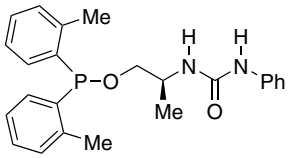
PHOSPHORUS (Compounds)

15-2214 **1-[(1R,2S)-1-(Di-o-tolylphosphinooxy)-1-phenylpropan-2-yl]-3-phenylurea, min. 97%** *(1391410-56-2)*
$C_{30}H_{31}N_2O_2P$; FW: 482.55; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

15-2212 **1-[(2S)-1-(Di-o-tolylphosphinooxy)propan-2-yl]-3-phenylurea, min. 97%**
$C_{24}H_{27}N_{22}P$; FW: 406.46; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

26-1560 **(S)-(-)-[(S)-2-Di(3,5-xylyl)phosphinoferrocenyl][2-di(4-trifluoromethyl-phenyl)phosphinophenyl]methanol, min. 97%** *(851308-48-0)*
See page 105

26-1565 **(S)-(-)-[(S)-2-Di(3,5-xylyl)phosphinoferrocenyl][2-di(3,5-xylyl)phosphino-phenyl]methanol, min. 97%** *(851308-45-7)*
See page 105

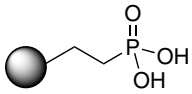
26-1555 **(R)-(+)-1-[(R)-2-(2'-Di-3,5-xylylphosphinophenyl)ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%** *(894771-28-9)*
See page 105

15-1835 **n-Dodecylphosphonic acid, min. 97% DDPA** *(5137-70-2)*
$CH_3(CH_2)_{11}P(O)(OH)_2$; FW: 250.31; white to off-white pwdr.; m.p. 96-98°
Note: Long-Chain n-Alkylphosphonic Acid Kit component.

1g
5g

96-5650 **DSM MonoPhos™ Ligand Kit**
See page 509

15-0011 **Ethyl/butyl phosphonic acid Silica (PhosphonicS POH1)**
white solid; SA: 380 m^2/g
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only.



10g
50g

Technical Note:

1. Applications include esterification, trans-esterification, hydrolysis, rearrangements, dehydration, protection and de-protection, cyclizations, etherifications. At the end of the reaction the solid silica catalyst can simply be filtered from the reaction mixture and reused.

Particle size range: 60-200 microns
Average pore size: 60Å
Functional group loading : 0.8 to 1.0 mmol/g
References:

1. *Org. Process Res. Dev.*, **2007**, *11*, 406.

15-2100 amp HAZ
Ethyldichlorophosphine, 98% *(1498-40-4)*
$C_2H_5PCl_2$; FW: 130.94; colorless liq.; b.p. 113-116°; f.p. 91°F; d. 1.26
air sensitive, moisture sensitive, pyrophoric

5g
25g

15-2150 HAZ
Ethyldiphenylphosphine, 99% *(607-01-2)*
$(C_2H_5)(C_6H_5)_2P$; FW: 214.25; colorless liq.; b.p. 130-132°/1 mm; f.p. >230°F; d. 1.04
air sensitive

5g
25g

15-2301 **Ethyltriphenylphosphonium bromide, 99%** *(1530-32-1)*
$C_2H_5(C_6H_5)_3PBr$; FW: 371.26; white to off-white pwdr.; m.p. 206-208°

25g
100g

PHOSPHORUS (Compounds)

26-1266 **1-{[(R)-Ferrocenyl-2-(S)-ethyl-1-dimethylamino)phenyl]-(R)-phosphino}-1'- dicyclohexylphosphinoferrocene, min. 97% Chenphos** *(952586-19-5)*
See page 106

26-1265 **1-{[(S)-Ferrocenyl-2-(R)-ethyl-1-dimethylamino)phenyl]-(S)-phosphino}-1'-dicyclohexylphosphinoferrocene, min. 97% Chenphos** *(1036373-39-3)*
See page 106

93-1529 HAZ
Fluorophosphoric acid, 60-70% *(13537-32-1)* — 50g, 250g
$(HO)_2P(O)F$; FW: 100.00; yellow liq.
moisture sensitive

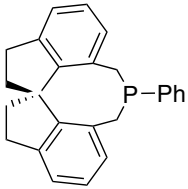
96-4100 **Garphos™ Ligand Kit**
See page 510

15-2400 **n-Hexadecylphosphonic acid, min. 97% HDPA** *(4721-17-9)* — 1g, 5g
$CH_3(CH_2)_{15}P(O)(OH)_2$; FW: 306.42; white to off-white pwdr.; m.p. 96-99°
Note: Long-Chain n-Alkylphosphonic Acid Kit component.

93-1581 **Hexadecyltri-n-butylphosphonium bromide, 98+%** *(14937-45-2)* — 10g, 50g
$(C_{16}H_{33})(C_4H_9)_3PBr$; FW: 507.65; white xtl.; m.p. 54-56°

93-1531 HAZ
Hexafluorophosphoric acid, 60-70% in water *(16940-81-1)* — 250g, 1kg
HPF_6; FW: 145.97; colorless to pale yellow liq.

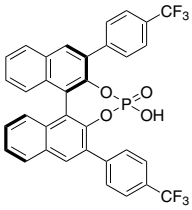
15-5184 **(11aR)-(+)-5,6,10,11,12,13-Hexahydro-5-phenyl-4H-diindeno[7,1-cd:1',7'-ef]phosphocin, min. 97% (R)-SITCP** *(856407-37-9)* — 25mg, 100mg
$C_{25}H_{23}P$; FW: 354.42; white solid; m.p. 148-149°
air sensitive
For detailed technical note visit strem.com.



15-5185 **(11aS)-(+)-5,6,10,11,12,13-Hexahydro-5-phenyl-4H-diindeno[7,1-cd:1',7'-ef] phosphocin, min. 97% (S)-SITCP** *(885701-78-0)* — 25mg, 100mg
$C_{25}H_{23}P$; FW: 354.42; white solid; m.p. 148-149°
air sensitive
For detailed technical note visit strem.com.

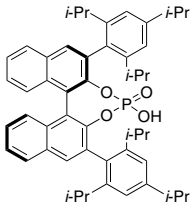
15-2410 **n-Hexylphosphonic acid, min. 97% HPA** *(4721-24-8)* — 1g, 5g
$CH_3(CH_2)_5P(O)(OH)_2$; FW: 166.16; white to off-white pwdr.; m.p. 105-106°
Note: Long-Chain n-Alkylphosphonic Acid Kit component.

15-1392 **(11bR)-4-Hydroxy-2,6-bis[4-(trifluoromethyl)phenyl]-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 95%, (99% ee)** *(791616-59-6)* — 100mg
$C_{34}H_{19}F_6O_4P$; FW: 636.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



15-1393 **(11bS)-4-Hydroxy-2,6-bis[4-(trifluoromethyl)phenyl]-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 95%, (99% ee)** *(1264573-23-0)* — 100mg
$C_{34}H_{19}F_6O_4P$; FW: 636.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

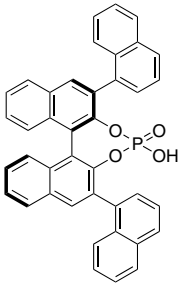
15-1381 **(11bR)-4-Hydroxy-2,6-bis[2,4,6-tris(1-methylethyl) phenyl]-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin, 98%, (99% ee)** *(791616-63-2)* — 100mg
$C_{50}H_{57}O_4P$; FW: 753; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



PHOSPHORUS (Compounds)

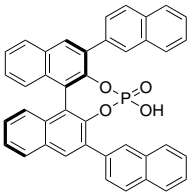
15-1382 **(11bS)-4-Hydroxy-2,6-bis[2,4,6-tris(1-methylethyl)phenyl]-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(874948-63-7)* — 100mg
$C_{50}H_{57}O_4P$; FW: 753; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

15-1388 **(11bR)-4-Hydroxy-2,6-di-1-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(864943-23-7)* — 100mg
$C_{40}H_{25}O_4P$; FW: 600.6; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



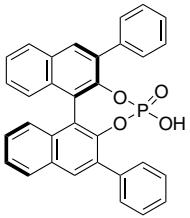
15-1389 **(11bS)-4-Hydroxy-2,6-di-1-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin, 98%, (99% ee)** *(929097-93-8)* — 100mg
$C_{40}H_{25}O_4P$; FW: 600.6; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

15-1390 **(11bR)-4-Hydroxy-2,6-di-2-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(791616-56-3)* — 100mg
$C_{40}H_{25}O_4P$; FW: 600.6; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



15-1391 **(11bS)-4-Hydroxy-2,6-di-2-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin, 98%, (99% ee)** *(874948-60-4)* — 100mg
$C_{40}H_{25}O_4P$; FW: 600.6; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

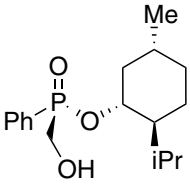
15-1386 **(11bR)-4-Hydroxy-2,6-diphenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(695162-86-8)* — 100mg
$C_{32}H_{21}O_4P$; FW: 500.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



15-1387 **(11bS)-4-Hydroxy-2,6-diphenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin, 98%, (99% ee)** *(874948-59-1)* — 100mg
$C_{32}H_{21}O_4P$; FW: 500.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

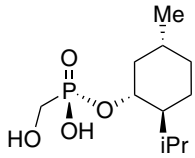
15-2900 **1-Hydroxyethylidene-1,1-diphosphonic acid, min. 95% HEDP** *(2809-21-4)* — 5g, 25g
$C(OH)(CH_3)(PO_3H_2)_2$; FW: 206.03; white pwdr.

15-2928 **(Sp)-Hydroxymethylphenylphosphinic acid [(-)-(1R,2S,2R)-2-i-propyl-5-methylcyclohexanol] ester, 99%** *(1508260-88-5)* — 100mg, 500mg
$C_{17}H_{27}O_3P$; FW: 310.37; white pwdr.
hygroscopic
Note: Patent pending 13/912,392



PHOSPHORUS (Compounds)

15-2915 **(Rp)-Hydroxymethylphosphonic acid [(-)-(1R,2S,2R)-2-i-propyl-5-methylcyclohexanol] ester, 99%** *(1823532-14-4)*
$C_{11}H_{23}O_3P$; FW: 234.27; white solid
hygroscopic, (store cold)
Note: Patent pending.

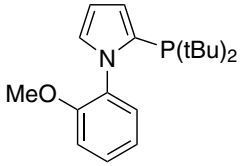


100mg
500mg

96-1525 **Long-Chain n-Alkylphosphonic Acid Kit**
See page 540

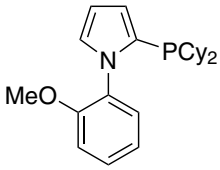
96-3750 **Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit**
See page 487

15-2975 **N-(2-Methoxyphenyl)-2-(di-t-butylphosphino) pyrrole, min. 95% [cataCXium® POMetB]**
(1053658-91-5)
$C_{19}H_{28}NOP$; FW: 317.41; white to yellowish pwdr.
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



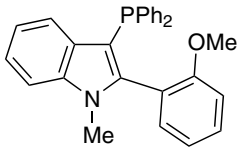
500mg
2g

15-2980 **1-(2-Methoxyphenyl)-2-(dicyclohexylphosphino)pyrrole, min. 95% [cataCXium® POMeCy]**
(672937-63-2)
$C_{23}H_{32}NOP$; FW: 369.48; white to yellow pwdr.; m.p. 96-97°
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



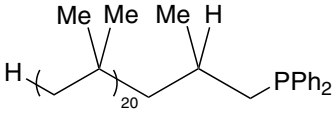
500mg
2g

15-1091 **2-(2-Methoxyphenyl)-1-methyl-3-diphenylphosphino)-1H-indole, min. 98% PPh_2-Andole-Phos** *(1242759-01-8)*
$C_{28}H_{24}NOP$; FW: 421.47; white to off-white pwdr.
For detailed technical note visit strem.com.



500mg
2g

15-3155 amp HAZ **{2-Methyl-3-[polyisobutyl(20)]propyl} diphenylphosphine (50% in heptane/polyisobutylene)**
$H[CH_2C(Me)_2]_{20}CH_2C(Me)HCH_2P(Ph)_2$;
FW: 1364; colorless liq.



1g
5g

15-3220 amp HAZ **Methyldichlorophosphine, 97%** *(676-83-5)*
CH_3PCl_2; FW: 116.92; colorless to pale yellow liq.; b.p. 81°; d. 1.31
air sensitive, moisture sensitive
Note: May be slightly turbid. For sale in USA. For other countries contact Strem.

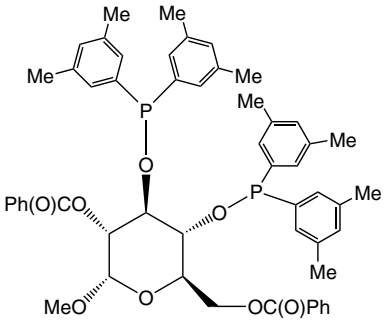
5g
25g

15-3250 **Methyldiphenylphosphine, 99%** *(1486-28-8)*
$CH_3(C_6H_5)_2P$; FW: 200.22; colorless liq.; b.p. 118-120°/2.2 mm; f.p. >230°F; d. 1.065
air sensitive

5g
25g
100g

PHOSPHORUS (Compounds)

15-3300 **Methyl α-D-glucopyranoside-2,6-dibenzoate-3,4-di(bis(3,5-dimethylphenyl)phosphinite), min. 95% CARBOPHO** *(158214-06-3)*
$C_{53}H_{56}O_8P_2$; FW: 882.98; white pwdr.; m.p. 162-164°
air sensitive
For detailed technical note visit strem.com.



00mg
500mg

15-3400 **Methyltriphenylphosphonium bromide, 98+%** *(1779-49-3)*
$CH_3(C_6H_5)_3PBr$; FW: 357.23; white xtl.; m.p. 234-235°
50g
250g

93-4249 **12-Molybdophosphoric acid hydrate (ACS)** *(51429-74-4)*
See page 138

15-1530 **(S)-2-(1-Naphthyl)-8-diphenylphosphino-1-[(R)-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl]-1,2-dihydroquinoline toluene adduct, min. 97% (Ra,Sc)-(1-Nph)-Quinaphos** *(1242168-77-9)*
$C_{51}H_{35}NO_2P_2 \cdot 1/2C_7H_8$; FW: 755.78 (801.85); white pwdr.
moisture sensitive
Note: **Limited quantities available**
For detailed technical note visit strem.com.
50mg
250mg

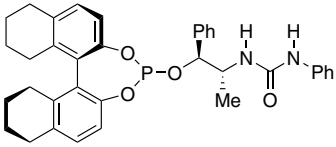
15-3490 **(S)-(+)-Neomenthyldiphenylphosphine, 98% (S)-NMDPP** *(43077-29-8)*
$C_{10}H_{19}P(C_6H_5)_2$; FW: 324.25; white xtl.; m.p. 90-92°
air sensitive
500mg
2g

93-0739 **Nitronium hexafluorophosphate, min. 97%** *(19200-21-6)*
See page 204

93-0736 **Nitrosonium hexafluorophosphate, min. 97%** *(16921-91-8)*
See page 204

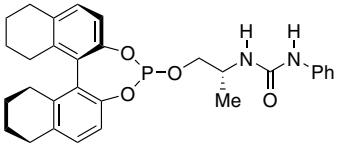
15-3510 **n-Octadecylphosphonic acid, min. 97% ODPA** *(4724-47-4)*
$CH_3(CH_2)_{17}P(O)(OH)_2$; FW: 334.47; white to off-white pwdr.; m.p. 100-101°
Note: Long-Chain n-Alkylphosphonic Acid Kit component.
1g
5g
25g

15-2224 **1-{(1S,2R)-1-[(11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97%** *(1858224-21-1)*
$C_{36}H_{37}N_2O_4P$; FW: 592.86; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg
250mg

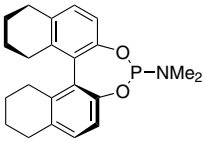
15-2222 **1-{(2R)-1-[(11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%** *(1858223-90-1)*
$C_{30}H_{33}N_2O_4P$; FW: 516.57; white pwdr.
moisture sensitive, (store cold)
Note: Sold under license from InCatT for research purposes only. WO2004/103559. UREAPhos and METAMORPhos Ligand Kit component.
For detailed technical note visit strem.com.



50mg

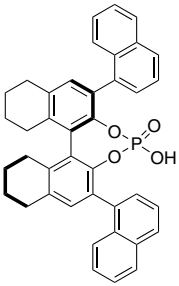
PHOSPHORUS (Compounds)

15-3495 **(S)-(+)-(8,9,10,11,12,13,14,15-Octahydro-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a'] dinaphthalen-4-yl)dimethylamine, 99%** *(389130-06-7)*
$C_{22}H_{26}NO_2P$; FW: 367.42; white pwdr.; m.p. 112-113°
moisture sensitive, (store cold)
Note: Sold in collaboration with DSM for research purposes only. Patent WO 0204466. DSM's MonoPhos™ Ligand Kit component.
For detailed technical note visit strem.com.



100mg
500mg

15-1383 **(11bR)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-1-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(1242066-20-1)*
$C_{40}H_{33}O_4P$; FW: 608.7; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

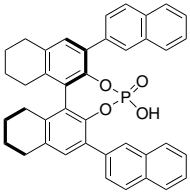


100mg

15-1384 **(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-1-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)**
$C_{40}H_{33}O_4P$; FW: 608.7; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

100mg

15-1378 **(11bR)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-2-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(922711-75-9)*
$C_{40}H_{33}O_4P$; FW: 608.7; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

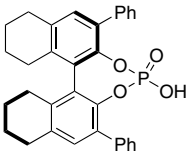


100mg

15-1379 **(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-2-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)**
$C_{40}H_{33}O_4P$; FW: 608.7; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

100mg

15-1396 **(11bR)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-diphenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin, 98%, (99% ee)** *(791616-65-4)*
$C_{32}H_{29}O_4P$; FW: 508.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

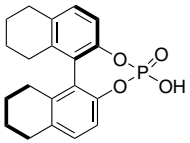


100mg

15-1397 **(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-diphenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(945852-48-2)*
$C_{32}H_{29}O_4P$; FW: 508.5; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

100mg

15-1370 **(11bR)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(297752-25-1)*
$C_{20}H_{21}O_4P$; FW: 356.4; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.



100mg

15-1371 **(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)** *(1193697-61-8)*
$C_{20}H_{21}O_4P$; FW: 356.4; White to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.

100mg

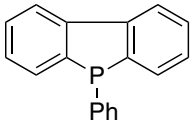
PHOSPHORUS (Compounds)

15-3520 **n-Octylphosphonic acid, min. 97% OPA** *(4724-48-5)* — 1g, 5g
$CH_3(CH_2)_7P(O)(OH)_2$; FW: 194.21; white to off-white pwdr.; m.p. 102-103°
Note: Long-Chain n-Alkylphosphonic Acid Kit component.

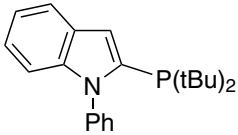
26-3575 **1,2,3,4,5-Pentaphenyl-1'-(di-t-butylphosphino)ferrocene, 95% CTC-Q-PHOS** *(312959-24-3)*
See page 110

96-3780 **PhenCar-Phos Ligand Kit**
See page 515

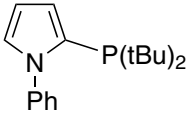
15-3525 **5-Phenyl-5H-benzo[b]phosphindole, 99%** *(1088-00-2)* — 100mg, 500mg
$C_{18}H_{13}P$; FW: 260.27; off-white to beige solid



15-3550 **N-Phenyl-2-(di-t-butylphosphino)indol, min. 98% [cataCXium® PIntB]** *(740815-37-6)* — 500mg, 2g
$C_{22}H_{28}NP$; FW: 337.44; white to yellow pwdr.
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



15-3600 **N-Phenyl-2-(di-t-butylphosphino)pyrrole, 95+% [cataCXium® PtB]** *(672937-61-0)* — 500mg, 2g
$C_{18}H_{26}NP$; FW: 287.38; white to yellow pwdr.; m.p. 51°
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.

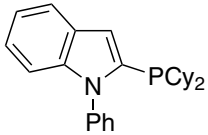


15-4150 HAZ — **Phenyldichlorophosphine, 97%** *(644-97-3)* — 50g, 250g, 1kg
$C_6H_5PCl_2$; FW: 178.99; yellow liq.; m.p. -51°; b.p. 225°; f.p. >230°F; d. 1.319 (20°)
air sensitive, moisture sensitive

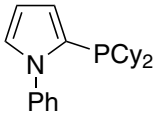
15-4155 HAZ — **Phenyldichlorophosphine, 99%** *(644-97-3)* — 50g, 250g
$C_6H_5PCl_2$; FW: 178.99; colorless to light yellow liq.; m.p. -51°; b.p. 225°; f.p. >230°F; d. 1.319 (20°)
air sensitive, moisture sensitive

15-4158 HAZ — **Phenyldichlorophosphine oxide, min. 94%** *(824-72-6)* — 50g, 250g
$C_6H_5P(O)Cl_2$; FW: 194.99; colorless to light yellow liq.; m.p. 3°; b.p. 258°; f.p. 400°F; d. 1.394 (25°)
air sensitive, moisture sensitive

15-3605 **N-Phenyl-2-(dicyclohexylphosphino)indol, min. 95% [cataCXium® PInCy]** *(740815-36-5)* — 500mg, 2g
$C_{26}H_{32}NP$; FW: 389.51; white to yellow pwdr.
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



15-3610 **N-Phenyl-2-(dicyclohexylphosphino)pyrrole, 90% [cataCXium® PCy]** *(672937-60-9)* — 500mg, 2g
$C_{22}H_{30}NP$; FW: 339.45; white to yellow pwdr.; m.p. 92°
air sensitive
Note: Contains ca. 10% of the regioisomer, N-(2-(dicyclohexylphosphino-phenyl)pyrrole. Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



15-4250 **Phenyldimethoxyphosphine, 98%** *(2946-61-4)* — 1g, 5g
$(C_6H_5)(CH_3O)_2P$; FW: 170.15; colorless liq.; b.p. 77-79°/7 mm; f.p. >230°F; d. 1.072
air sensitive, moisture sensitive

PHOSPHORUS (Compounds)

15-4400
amp
HAZ

Phenylphosphine, 99% *(638-21-1)*
$C_6H_5PH_2$; FW: 110.10; colorless liq.; b.p. 160°; f.p. 165°F; d. 1.001
pyrophoric, STENCH

2g
10g

15-4402
HAZ

Phenylphosphine, 99% (Sure/Seal™ bottle) *(638-21-1)*
$C_6H_5PH_2$; FW: 110.10; colorless liq.; b.p. 160°; f.p. 165°F; d. 1.001
pyrophoric, STENCH

25g

15-4403
HAZ

Phenylphosphine, 99% (10 wt% in hexanes) *(638-21-1)*
$C_6H_5PH_2$; FW: 110.10; colorless liq.
air sensitive, STENCH

20g
100g

93-1536
HAZ

Phenylphosphinic acid, 99% *(1779-48-2)*
$C_6H_5P(O)(OH)H$; FW: 142.09; white xtl.; m.p. 83-85°

100g
500g

26-1269

(S, R(p), S(SPO)-1-Phenylphosphinoyl)-2-[1-(t-butylphosphino)ethyl] , min. 97% JoSPOphos *(1221746-56-0)*
See page 110

26-1268

(R,S(p), R(SPO)-1-Phenylphosphinoyl)-2-[1-(di-t-butylphosphino)ethyl] ferrocene, min. 97% JoSPOphos *(1221746-66-2)*
See page 110

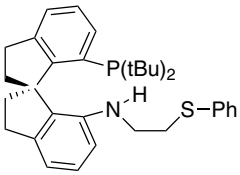
93-1537
HAZ

Phenylphosphonic acid, 98% *(1571-33-1)*
$(C_6H_5)P(O)(OH)_2$; FW: 158.09; white xtl.; m.p. 163-166°

50g
250g
1kg

15-1605
NEW

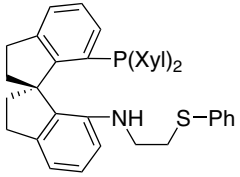
(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP-Ph] *(1809609-38-8)*
$C_{53}H_{66}NPS$; FW: 780.14; off-white solid; m.p. 58-60°
air sensitive
For detailed technical note visit strem.com.



25mg
100mg

15-1645
NEW

(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[bis(3,5-dimethylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-Xyl-SpiroSAP-Ph] *(1809609-39-9)*
$C_{41}H_{42}NPS$; FW: 611.82; off-white solid; m.p. 58-60°
air sensitive

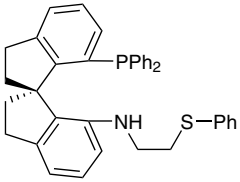


25mg
100mg

Technical Note:
1. See 15-1605 (page 319)

15-1643
NEW

(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[diphenylphosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-Ph-SpiroSAP-Ph] *(1809609-40-2)*
$C_{37}H_{34}NPS$; FW: 555.71; off-white solid; m.p. 55-58°
air sensitive

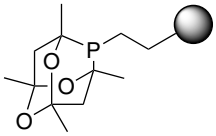


25mg
100mg

Technical Note:
1. See 15-1605 (page 319)

15-4510

Phosphaadamantane ethyl Silica (free phosphine ligand) (PhosphonicS PAr)
white solid
Note: Sold in collaboration with PhosphonicS Ltd.
for research purposes only.



500mg
2g

Technical Note:
1. Supported, free phosphine used in the preparation of immobilized phosphine metal complexes.
Particle size range: 60-200 microns
Functional group loading : 0.4 to 0.8 mmol/g

PHOSPHORUS (Compounds)

96-1650	**Phosphine Ligand Kit for Palladium-Catalyzed Carbon-Carbon and Carbon-Heteroatom Bond Formation** *See* page 515	
26-3620	**Phosphinoferrocene, 98%** *(83528-85-2)* *See* page 110	
15-4530 HAZ	**Phosphonitrilic chloride trimer, 98.5%** *(940-71-6)* $(PNCl_2)_3$; FW: 347.66; white xtl.; m.p. 128.8°; b.p. 127°/12 mm; d. 1.98 *moisture sensitive*	10g 50g
93-1541 HAZ	**Phosphoric acid (ACS), 85%** *(7664-38-2)* H_3PO_4; FW: 98.00; colorless liq.; d. 1.685	1kg
93-1550 HAZ	**Phosphorus(III) bromide, 97+%** *(7789-60-8)* PBr_3; FW: 270.70; colorless to pale yellow liq.; m.p. -40°; b.p. 172.9°; d. 2.852 (15°) *air sensitive, moisture sensitive*	100g 500g
93-1587 HAZ	**Phosphorus(III) chloride, 98+%** *(7719-12-2)* PCl_3; FW: 137.33; colorless liq.; m.p. -111.8°; b.p. 76°; d. 1.574 *moisture sensitive*	250g
93-1588 amp HAZ	**Phosphorus(III) chloride (99.998%-P) PURATREM** *(7719-12-2)* PCl_3; FW: 137.33; m.p. -111.8°; b.p. 76°; d. 1.574 *moisture sensitive*	10g 50g
93-1545 HAZ	**Phosphorus(V) chloride, 98%** *(10026-13-8)* PCl_5; FW: 208.24; white to pale yellow xtl.; m.p. 166.8° subl. *moisture sensitive*	250g 1kg
93-1548 HAZ	**Phosphorus(V) oxide, 98+% (ACS)** *(1314-56-3)* P_2O_5; FW: 141.95; white pwdr.; m.p. 580-585°; b.p. 300° subl.; d. 2.39 *hygroscopic*	500g 4 x 500g
93-1592 HAZ	**Phosphorus(V) oxide (99.99%-P) PURATREM** *(1314-56-3)* P_2O_5; FW: 141.95; white pwdr.; m.p. 580-585°; b.p. 300° subl.; d. 2.39 *hygroscopic*	50g 250g
93-1586 amp HAZ	**Phosphorus oxybromide, 99%** *(7789-59-5)* $POBr_3$; FW: 286.73; colorless to light yellow xtl.; m.p. 56°; b.p. 193°; d. 2.822 *moisture sensitive*	5g 25g 100g
93-1543 HAZ	**Phosphorus oxychloride, 98+%** *(10025-87-3)* $POCl_3$; FW: 153.35; colorless liq.; m.p. 2°; b.p. 105.3°; d. 1.675 *moisture sensitive*	250g 1kg
97-8875 amp HAZ	**Phosphorus oxychloride, elec. gr. (99.999%-P) PURATREM** *(10025-87-3)* $POCl_3$; FW: 153.35; colorless liq.; m.p. 2°; b.p. 105.3°; d. 1.675 *moisture sensitive*	25g 100g
96-7050	**PINAP Ligand Kit** *See* page 516	
93-1552 HAZ	**Polyphosphoric acid (83% P_2O_5)** *(8017-16-1)* $H_3PO_4 \cdot P_2O_5$; FW: 239.95; viscous liq. *hygroscopic*	250g 1kg
19-2610	**Potassium di-t-butylphosphate, min. 91% (contains <5% water)** *(33494-80-3)* *See* page 341	
15-4581 amp HAZ	**n-Propyldichlorophosphine, min. 98%** *(15573-31-6)* $n\text{-}C_3H_7PCl_2$; FW: 144.97; colorless liq.; b.p. 133°; d. 1.118 *air sensitive, moisture sensitive*	2g 10g
26-4011	**(R,R)-[2-(4'-i-Propyloxazolin-2'-yl)ferrocenyl]diphenylphosphine, min. 97%** *(541540-70-9)* *See* page 110	

PHOSPHORUS (Compounds)

26-4010 **(S,S)-[2-(4'-i-Propyloxazolin-2'-yl)ferrocenyldiphenylphosphine, min. 97%**
(163169-29-7)
See page 110

96-2310 **SKP Ligand Kit for asymmetric-allylic amination and cyclopropanation**
See page 517

96-6651 **Solvias cataCXium® Ligand Kit for C-X coupling reactions**
See page 518

96-3655 **Solvias (R)-MeO-BIPHEP Ligand Kit**
See page 523

96-3656 **Solvias (S)-MeO-BIPHEP Ligand Kit**
See page 524

96-0060 **Spiro Bisphosphine Ligand Kit**
See page 525

96-0065 **Spiro Monophosphite and Monophosphoramidite Ligand Kit**
See page 526

96-6950 **Takasago BINAP Ligand Kit**
See page 527

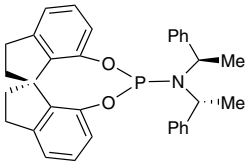
96-6900 **Takasago SEGPHOS® Ligand Kit**
See page 528

93-1579 **Tetra-n-butylphosphonium bromide, 98%** *(3115-68-2)* — 25g
HAZ — $(C_4H_9)_4P^+Br^-$; FW: 339.35; white xtl.; m.p. 100-103° — 100g
hygroscopic

15-1318 **Tetrabutylphosphonium chloride (80-82 wt% solution in water)** *(2304-30-5)* — 5g
HAZ — $C_{16}H_{36}ClP$; FW: 294.88; colorless to pale-yellow liq. — 25g

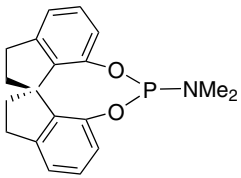
15-5145 **n-Tetradecylphosphonic acid, min. 97% TDPA** *(4671-75-4)* — 1g
$CH_3(CH_2)_{13}P(O)(OH)_2$; FW: 278.37; white to off-white pwdr.; m.p. 96-98° — 5g
Note: Long-Chain n-Alkylphosphonic Acid Kit component. — 25g

15-5162 **(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (R)-SIPHOS-PE** — 100mg, 500mg
(500997-69-3)
$C_{33}H_{32}NO_2P$; FW: 505.59; white solid; m.p. 98-100°
moisture sensitive
Note: Spiro Monophosphite and Monophosphoramidite Ligand kit component.
For detailed technical note visit strem.com.



15-5163 **(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2] dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (S)-SIPHOS-PE** — 100mg, 500mg
(500997-70-6)
$C_{33}H_{32}NO_2P$; FW: 505.59; white solid; m.p. 99-101°
moisture sensitive
Note: Spiro Monophosphite and Monophosphoramidite Ligand Kit component.
For detailed technical note visit strem.com.

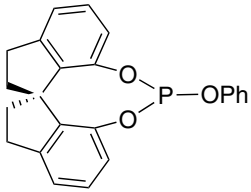
15-5150 **(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% (R)-SIPHOS** — 100mg, 500mg
(443965-14-8)
$C_{19}H_{20}NO_2P$; FW: 325.34; white solid; m.p. 95-96°
moisture sensitive
Note: Spiro Monophosphite and Monophosphoramidite Ligand Kit component.
For detailed technical note visit strem.com.



15-5151 **(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2] dioxaphosphocin-5-dimethylamine, min. 98% (S)-SIPHOS** *(443965-10-4)* — 100mg, 500mg
$C_{19}H_{20}NO_2P$; FW: 325.34; white solid; m.p. 95-96°
moisture sensitive
Note: Spiro Monophosphite and Monophosphoramidite Ligand Kit component.
For detailed technical note visit strem.com.

PHOSPHORUS (Compounds)

15-5156 **(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (R)-ShiP** *(656233-53-3)*
$C_{23}H_{19}O_3P$; FW: 374.37; white solid; m.p. 104-106°
moisture sensitive
Note: Spiro Monophosphite and Monophosphoramidite Ligand Kit component.
For detailed technical note visit strem.com.

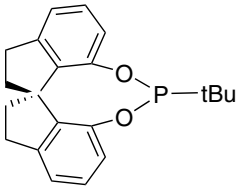


100mg
500mg

15-5157 **(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2] dioxaphosphocin-5-phenoxy, min. 98% (S)-ShiP** *(885701-71-3)*
$C_{23}H_{19}O_3P$; FW: 374.37; white solid; m.p. 102-103°
moisture sensitive
Note: Spiro Monophosphite and Monophosphoramidite Ligand Kit component.
For detailed technical note visit strem.com.

100mg
500mg

15-5130 **(11aR)-(+)-10,11,12,13-Tetrahydro-5-(1,1-dimethylethyl)diindeno[7,1-de,1',7'-fg)[1.3.2] dioxaphosphocin, 97% (R)-FuP-tBu**
$C_{21}H_{23}O_2P$; FW: 338.38; white solid
moisture sensitive
For detailed technical note visit strem.com.

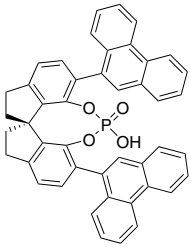


25mg
100mg

15-5131 **(11aS)-(-)-10,11,12,13-Tetrahydro-5-(1,1-dimethylethyl)diindeno[7,1-de,1',7'-fg) [1.3.2] dioxaphosphocin, 97% (S)-FuP-tBu** *(912457-08-0)*
$C_{21}H_{23}O_2P$; FW: 338.38; white solid
moisture sensitive
For detailed technical note visit strem.com.

25mg
100mg

15-1363 NEW **(11aR)-10,11,12,13-Tetrahydro-5-hydroxy-3,7-di-9-phenanthrenyl-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2] dioxaphosphocin, min. 98%** *(1372719-93-1)*
$C_{45}H_{31}O_4P$; FW: 666.70; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.

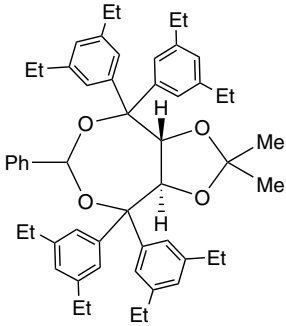


25mg
100mg

15-1364 NEW **(11aS)-10,11,12,13-Tetrahydro-5-hydroxy-3,7-di-9-phenanthrenyl-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%** *(1585988-92-6)*
$C_{45}H_{31}O_4P$; FW: 666.70; white to light-yellow pwdr.
Note: Sold in collaboration with Daicel for research purposes only.
For detailed technical note visit strem.com.

25mg
100mg

15-1517 **(3aR,8aR)-(-)-4,4,8,8-Tetrakis(3,5-diethylphenyl) tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo [4,5-e]dioxaphosphepin** *(1187446-93-0)*
$C_{53}H_{65}O_4P$; FW: 797.06; off-white pwdr.
For detailed technical note visit strem.com.

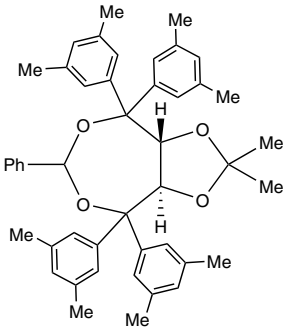


100mg
500mg

PHOSPHORUS (Compounds)

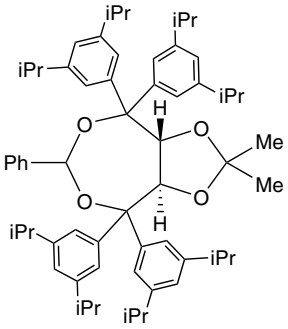
15-1518 **(3aS,8aS)-(+)-4,4,8,8-Tetrakis(3,5-diethylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin** — 100mg, 500mg
$C_{53}H_{65}O_4P$; FW: 797.06; off-white pwdr.
For detailed technical note visit strem.com.

15-1511 **(3aR,8aR)-(-)-4,4,8,8-Tetrakis (3,5-dimethylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin** *(1019840-96-0)* — 100mg, 500mg
$C_{45}H_{49}O_4P$; FW: 684.84; off-white solid
For detailed technical note visit strem.com.



15-1512 **(3aS,8aS)-(+)-4,4,8,8-Tetrakis(3,5-dimethylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin** *(1169835-86-2)* — 100mg, 500mg
$C_{45}H_{49}O_4P$; FW: 684.84; off-white solid
For detailed technical note visit strem.com.

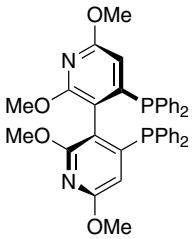
15-1513 **(3aR,8aR)-(-)-4,4,8,8-Tetrakis (3,5-di-i-propylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin** *(1361146-90-8)* — 100mg, 500mg
$C_{61}H_{81}O_4P$; FW: 909.27; off-white pwdr.
For detailed technical note visit strem.com.



15-1514 **(3aS,8aS)-(+)-4,4,8,8-Tetrakis(3,5-di-i-propylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin** *(1422371-27-4)* — 100mg, 500mg
$C_{61}H_{81}O_4P$; FW: 909.27; off-white pwdr.
For detailed technical note visit strem.com.

15-5201 **(S)-(-)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine, min. 95% CTH-(S)-P-Phos** *(362524-23-0)* — 100mg, 500mg
$C_{38}H_{34}N_2O_4P_2$; FW: 644.64; white to pale yellow pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.
For detailed technical note visit strem.com.

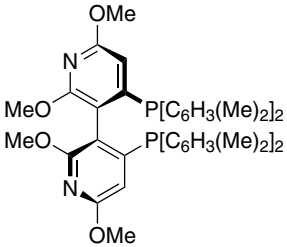
15-5200 **(R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine, min. 97% CTH-(R)-P-Phos** *(221012-82-4)* — 100mg, 500mg
$C_{38}H_{34}N_2O_4P_2$; FW: 644.64; white to pale yellow pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.
For detailed technical note visit strem.com.



PHOSPHORUS (Compounds)

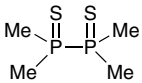
15-5211 **(S)-(-)-2,2',6,6'-Tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine, min. 95% CTH-(S)-Xylyl-P-Phos** *(443347-10-2)*
$C_{46}H_{50}N_2O_4P_2$; FW: 756.85; white to pale yellow pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.
For detailed technical note visit strem.com.
100mg
500mg

15-5210 **(R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(di(3,5-xylyl) phosphino)-3,3'-bipyridine, min. 97% CTH-(R)-Xylyl-P-PHOS** *(442905-33-1)*
$C_{46}H_{50}N_2O_4P_2$; FW: 756.85; white to pale yellow pwdr.
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.
For detailed technical note visit strem.com.



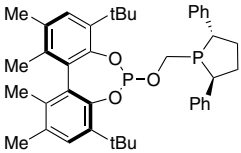
100mg
500mg

15-5350 **Tetramethylbiphosphine disulfide, 99%** *(3676-97-9)*
$(CH_3)_2P(S)P(S)(CH_3)_2$; FW: 186.21; white xtl.; m.p. 224-228°



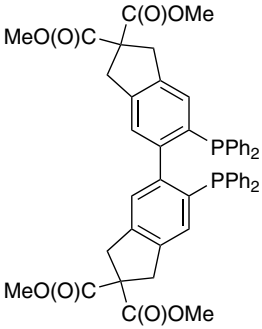
5g
25g

15-0557 NEW **(11aS)-1,2,10,11-Tetramethyl-4,8-bis(t-butyl)-6-[[(2S,5S)-(2,5-diphenyl-1-phospholanyl) methoxy]-dibenzo[d,f][1,3,2]dioxaphosphepin] S_{ax}S,S-BOBPHOS** *(1373349-83-7)*
$C_{41}H_{50}O_3P_2$; FW: 652.78; white microxtl. pwdr.
moisture sensitive
For detailed technical note visit strem.com.



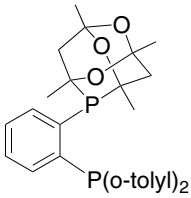
100mg
500mg

15-0506 **Tetramethyl 6,6'-bis(diphenylphosphino)-1,1',3,3'-tetrahydro[5,5']biindenyl-2,2',2,2'-tetracarboxylate, 99%** *(959864-39-2)*
$C_{48}H_{44}O_8P_2$; FW: 810.81; white to pale yellow pwdr.
Note: Sold under license from NCL for research purposes only. Patent Pending GB 0719134.9 and its international derivatives.
For detailed technical note visit strem.com.



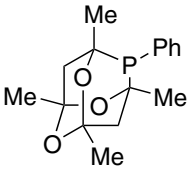
100mg
500mg

15-1099 NEW **1,3,5,7-Tetramethyl-8-(2-di-o-tolylphosphino-phenyl)-2,4,6-trioxa-8-phosphaadamantane PAd-Dal-Phos** *(1902911-38-9)*
$C_{30}H_{34}O_3P_2$; FW: 504.54; white pwdr.
air sensitive, moisture sensitive



250mg
1g

15-5355 **1,3,5,7-Tetramethyl-8-phenyl-2,4,6-trioxa-8-phosphaadamantane, 99% MeCgPPh** *(97739-46-3)*
$C_{16}H_{21}O_3P$; FW: 292.31; white pwdr.; m.p. 107-109°
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



500mg
2g

PHOSPHORUS (Compounds)

15-5360 **Tetramethylphosphonium bromide, 98%** *(4519-28-2)* — 1g, 5g
$(CH_3)_4P^+Br^-$; FW: 171.02; colorless xtl.
hygroscopic

15-1322 **Tetraoctylphosphonium bromide, min. 95%** *(23906-97-0)*
See page 83

15-5450 **Tetraphenylphosphonium bromide, 99%** *(2751-90-8)* — 5g, 25g, 100g
$(C_6H_5)_4P^+Br^-$; FW: 419.30; white xtl.; m.p. 294-296°
hygroscopic

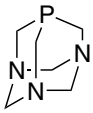
93-1591 HAZ **Thiophosphoryl chloride, 98%** *(3982-91-0)* — 100g, 500g
$PSCl_3$; FW: 169.40; colorless liq.; m.p. -35°; b.p. 125°; d. 1.668
moisture sensitive

15-5600 **p-Tolyldiphenylphosphine, min. 96%** *(1031-93-2)* — 25g, 100g
$(p\text{-}CH_3C_6H_4)(C_6H_5)_2P$; FW: 276.32; white xtl.; m.p. 64-66°

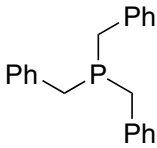
15-5700 amp HAZ **Triallylphosphine, min. 97%** *(16523-89-0)* — 1g, 5g
$(CH_2{=}CHCH_2)_3P$; FW: 154.19; colorless to pale yellow liq.; b.p. 69°/13 mm; d. 0.861
air sensitive

93-1556 **Tri-n-amylphosphate, min. 97%** *(2528-38-3)* — 25g, 100g
$(C_5H_{11}O)_3P(O)$; FW: 308.40; colorless liq.

15-5710 **1,3,5-Triaza-7-phosphaadamantane, min. 97% PTA** — 1g, 5g
(53597-69-6)
$C_6H_{12}N_3P$; FW: 157.15; white xtl.
For detailed technical note visit strem.com.



15-5730 **Tribenzylphosphine, 98%** *(7650-89-7)* — 1g, 5g
$(C_6H_5CH_2)_3P$; FW: 304.37; white pwdr.; m.p. 96-101°
air sensitive



15-1330 **Tributyl(ethyl)phosphonium diethylphosphate, 95%** *(20445-94-7)*
See page 83

15-1327 **Tributyl(methyl)phosphonium methylsulfate, min. 95%** *(69056-62-8)*
See page 83

15-1324 **Tri-i-butyl(methyl)phosphonium tosylate, min. 95%** *(374683-35-9)*
See page 83

15-5750 HAZ **Tri-i-butylphosphine, min. 93%** *(4125-25-1)* — 25g, 100g
$(i\text{-}C_4H_9)_3P$; FW: 202.32; colorless to light yellow liq.; b.p. 85°/7mm
air sensitive

15-5801 HAZ **Tri-n-butylphosphine, min. 93%** *(998-40-3)* — 100g, 500g
$(n\text{-}C_4H_9)_3P$; FW: 202.32; colorless to light yellow liq.; b.p. 110-115°/10-12 mm;
f.p. 99°F; d. 0.817
pyrophoric

15-5813 HAZ **Tri-t-butylphosphine, min. 98%** *(13716-12-6)* — 1g, 5g
$(t\text{-}C_4H_9)_3P$; FW: 202.32; colorless liq. to white solid; m.p. 30°; b.p. 102-103°/13 mm;
f.p. 1°F; d. 0.812
pyrophoric

15-5818 **Tri-t-butylphosphine, min. 98% (50wt% in toluene)** *(13716-12-6)* — 2g, 10g
$C_{12}H_{27}P$; FW: 202.32; colorless liq.
air sensitive

15-5800 HAZ **Tri-n-butylphosphine, 99%** *(998-40-3)* — 25g, 100g, 500g
$(n\text{-}C_4H_9)_3P$; FW: 202.32; colorless liq.; b.p. 110-115°/10-12 mm; f.p. 99°F; d. 0.817
pyrophoric

15-5802 HAZ **Tri-n-butylphosphine, 99% (10 wt% in hexanes)** *(998-40-3)* — 250g, 1kg
$(n\text{-}C_4H_9)_3P$; FW: 202.32; colorless liq.
air sensitive

PHOSPHORUS (Compounds)

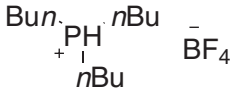
15-5810 amp HAZ
Tri-t-butylphosphine, 99% *(13716-12-6)*
$(t\text{-}C_4H_9)_3P$; FW: 202.32; colorless liq. to white solid; m.p. 30°; b.p. 102-103°/13 mm; f.p. 1°F; d. 0.812
pyrophoric
For detailed technical note visit strem.com.
1g 5g 25g

15-5811 HAZ
Tri-t-butylphosphine, 99% (10 wt% in hexanes) *(13716-12-6)*
$(t\text{-}C_4H_9)_3P$; FW: 202.32; colorless liq.; d. 0.680
air sensitive
For detailed technical note visit strem.com.
10g 50g

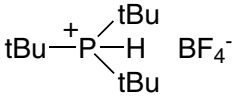
15-5812 HAZ
Tri-t-butylphosphine, 99% (10 wt% in hexanes) (Sure/Seal™ bottle)
(13716-12-6)
$(t\text{-}C_4H_9)_3P$; FW: 202.32; colorless liq.; d. 0.680
air sensitive
For detailed technical note visit strem.com.
50g

15-5950
Tri-n-butylphosphite, min. 94% *(102-85-2)*
$(n\text{-}C_4H_9O)_3P$; FW: 250.32; colorless liq.; b.p. 121-125°/6 mm; f.p. 197°F; d. 0.925
air sensitive
250g 1kg

15-5990
Tri-n-butylphosphonium tetrafluoroborate, 99%
(113978-91-9)
$[(C_4H_9)_3PH]^+BF_4^-$; FW: 290.13; white pwdr.; m.p. 51-52°
For detailed technical note visit strem.com.
1g 5g

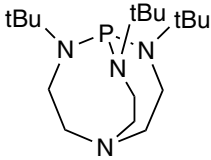


15-6000
Tri-t-butylphosphonium tetrafluoroborate, 99%
(131274-22-1)
$[(C_4H_9)_3PH]^+BF_4^-$; FW: 290.13; white pwdr.; m.p. 261° dec.
Note: Phosphine Ligand Kit component.
For detailed technical note visit strem.com.
1g 5g 25g



15-6010
Tri-t-butylphosphonium trifluoromethanesulfonate, 99% Stabiphos T
(1106696-25-6)
$[(C_4H_9)_3PH]^+CF_3SO_3^-$; FW: 352.40; white solid; m.p. 175°
1g 5g

15-6020
2,8,9-Tri-i-butyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3] undecane, 97% *(331465-71-5)*
$C_{18}H_{39}N_4P$; FW: 342.50; cloudy yellow liq.; d. 0.964
air sensitive, moisture sensitive
For detailed technical note visit strem.com.
250mg 1g 5g



15-5960
Tributyl(tetradecyl)phosphonium dodecylbenzenesulfonate, min. 98% CYPHOS® IL 201
See page 83

15-5970
Tributyl(tetradecyl)phosphonium methanesulfonate, min. 98% CYPHOS® IL 203
See page 83

15-6030
Tri(m-chlorophenyl)phosphine, min. 97% *(29949-85-7)*
$(m\text{-}ClC_6H_4)_3P$; FW: 365.63; white xtl.; m.p. 64-66°
air sensitive, (store cold)
1g 5g

15-6050
Tri(p-chlorophenyl)phosphine, 99% *(1159-54-2)*
$(p\text{-}ClC_6H_4)_3P$; FW: 365.63; white xtl.; m.p. 90-93°
1g 5g

15-6151 HAZ
Tricyclohexylphosphine (20% in toluene), min. 88% *(2622-14-2)*
$(C_6H_{11})_3P$; FW: 280.44; colorless to light yellow liq.; f.p. 40°F (toluene); d. 0.9
air sensitive
100g 500g

15-6150
Tricyclohexylphosphine, 97% *(2622-14-2)*
$(C_6H_{11})_3P$; FW: 280.44; white xtl.; m.p. 76-78°
air sensitive
5g 25g 250g

15-6160
Tricyclohexylphosphonium tetrafluoroborate, 99% *(58656-04-5)*
$[(C_6H_{11})_3PH]^+BF_4^-$; FW: 368.24; white pwdr.
1g 5g 25g

Technical Note:
1. Non-pyrophoric, air-stable derivative suitable as a replacement for the neat phosphine in a variety of stoichiometric and catalytic processes.

PHOSPHORUS (Compounds)

15-6130 **Tricyclohexylphosphonium trifluoromethanesulfonate, 99% Stabiphos** *(952649-12-6)* — 1g, 5g
$[(C_6H_{11})_3PH]^+CF_3SO_3^-$; FW: 430.51; white solid

15-6180 amp HAZ **Tricyclopentylphosphine, min. 95%** *(7650-88-6)* — 1g, 5g
$(C_5H_9)_3P$; FW: 238.35; colorless liq.
pyrophoric

15-6181 HAZ **Tricyclopentylphosphine, min. 95% (10wt% in hexanes)** *(7650-88-6)* — 10g, 50g
$(C_5H_9)_3P$; FW: 238.35; colorless liq.
air sensitive

93-1559 **Triethylphosphate, 99%** *(78-40-0)* — 500g, 4 x 500g
$(C_2H_5O)_3PO$; FW: 182.16; colorless liq.; m.p. -56.4°; b.p. 215°; f.p. 240°F; d. 1.072

15-6300 amp HAZ **Triethylphosphine, 99%** *(554-70-1)* — 5g, 25g
$(C_2H_5)_3P$; FW: 118.16; colorless liq.; b.p. 126-128°; f.p. 1°F; d. 0.81
pyrophoric

15-6302 HAZ **Triethylphosphine, 99% (Sure/Seal™ bottle)** *(554-70-1)* — 25g
$(C_2H_5)_3P$; FW: 118.16; colorless liq.; b.p. 126-128°; f.p. 1°F; d. 0.81
pyrophoric

15-6304 HAZ **Triethylphosphine, 99% (20 wt% in ethanol)** *(554-70-1)* — 25g, 125g
$(C_2H_5)_3P$; FW: 118.16; colorless liq.
air sensitive

15-6305 HAZ **Triethylphosphine, 99% (10 wt% in hexanes)** *(554-70-1)* — 50g, 250g
$(C_2H_5)_3P$; FW: 118.16; colorless liq.
air sensitive

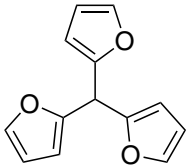
15-6310 **Triethylphosphine oxide, 98%** *(597-50-2)* — 1g, 5g
$(C_2H_5)_3PO$; FW: 134.16; white xtl.; m.p. 52-53°; b.p. 84-85°/3 mm
hygroscopic

15-6350 HAZ **Triethylphosphite, 98%** *(122-52-1)* — 250g, 1kg
$(C_2H_5O)_3P$; FW: 166.16; colorless liq.; b.p. 156°; f.p. 130°F; d. 0.969
air sensitive

15-6355 **Triethylphosphonium tetrafluoroborate, 99%** — 1g, 5g
$[(C_2H_5)_3PH]^+BF_4^-$; FW: 205.97; white pwdr.
hygroscopic

Technical Note:
1. Non-pyrophoric, air-stable derivative suitable as a replacement for the neat phosphine in a variety of stoichiometric and catalytic processes.

15-6372 **Tri-2-furylphosphine, 98+%** *(5518-52-5)* — 500mg, 2g, 5g
$(C_4H_3O)_3P$; FW: 232.17; white pwdr.; m.p. 63-65°;
b.p. 136°/4mm
air sensitive
Note: Phosphine Ligand Kit component.
For detailed technical note visit strem.com.



15-1312 **Tri-n-hexylphosphine, min. 96%** *(4168-73-4)* — 5g, 25g
$C_{18}H_{39}P$; FW: 286.48; colorless liq.; b.p. 227° (50mm); d. 0.818
air sensitive

15-1337 HAZ **Tri-n-hexylphosphine oxide/tri-n-octylphosphine oxide, min. 92% [mixture R3P(O), R2R'P(O), RR'2P(O), R'3P(O)]** *(100786-00-3)* — 5g, 25g
colorless, viscous liq.; b.p. 310° (50mm); f.p. 182° C; d. 0.88

15-6370 **Trihexyl(tetradecyl)phosphonium bis(trifluoromethanesulfonyl)amide, min. 97% CYPHOS® IL 109** *(460092-03-9)*
See page 83

PHOSPHORUS (Compounds)

15-6374 **Trihexyl(tetradecyl)phosphonium bis(2,4,4-trimethylpentyl)phosphinate, min. 95% CYPHOS® IL 104** *(465527-59-7)*
See page 83

15-6378 **Trihexyl(tetradecyl)phosphonium bromide, min. 95% CYPHOS® IL 102** *(654057-97-3)*
See page 84

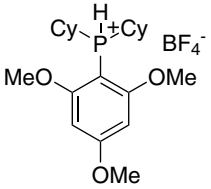
15-6382 **Trihexyl(tetradecyl)phosphonium chloride, min. 93% CYPHOS® IL 101** *(258864-54-9)*
See page 84

15-6386 **Trihexyl(tetradecyl)phosphonium decanoate, min. 95% CYPHOS® IL 103** *(465527-65-5)*
See page 84

15-6390 **Trihexyl(tetradecyl)phosphonium dicyanamide, min. 95% CYPHOS® IL 105**
See page 84

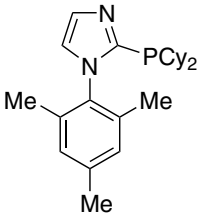
15-6394 **Trihexyl(tetradecyl)phosphonium hexafluorophosphate, min. 98% CYPHOS® IL 110** *(374683-44-0)*
See page 84

15-6520 NEW
[2,4,6-Trimethoxyphenyl]dicyclohexylphosphonium tetrafluoroborate, 98% LB-PhosHBF$_4$ *(1217887-12-1)* — 500mg, 2g
$C_{21}H_{34}BF_4O_3P$; FW: 452.27; white solid; m.p. 142.6-143.4°
Note: Sold under license from ZJU for research purposes only. Patents ZL200910154029.4, PCT/CN2009/001527
For detailed technical note visit strem.com.



15-6360 amp HAZ — 5g, 25g
2,4,4-Trimethylpentylphosphine, 99% (8% isomers) *(82164-75-8)*
$CH_3C(CH_3)_2CH_2CH(CH_3)CH_2PH_2$; FW: 146.21; colorless liq.; f.p. 1°F
air sensitive, pyrophoric

15-6362 — 500mg, 2g
1-(2,4,6-Trimethylphenyl)-2-(dicyclohexylphosphino)imidazole, min. 95% [cataCXium® PICy] *(794527-14-3)*
$C_{24}H_{35}N_2P$; FW: 382.52; white pwdr.; m.p. 109°
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent Application pending. Solvias cataCXium® Ligand Kit component.
For detailed technical note visit strem.com.



15-6365 — 5g, 25g
Trimethylphenylphosphonium iodide, min. 97% *(1006-01-5)*
$(CH_3)_3C_6H_5PI$; FW: 280.09; white xtl.; m.p. 218°
hygroscopic

93-1561 — 50g, 250g
Trimethylphosphate, min. 97% *(512-56-1)*
$(CH_3O)_3P(O)$; FW: 140.08; colorless liq.; m.p. -46°; b.p. 197°; d. 1.197

15-6500 amp HAZ — 5g, 25g
Trimethylphosphine, min. 98% *(594-09-2)*
$(CH_3)_3P$; FW: 76.08; colorless liq.; m.p. -85°; b.p. 38-40°; f.p. -22°F; d. 0.748
air sensitive, STENCH

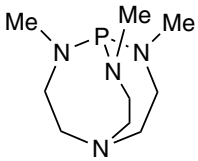
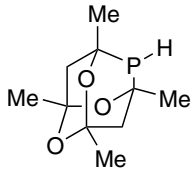
15-6502 HAZ — 25g
Trimethylphosphine, min. 98% (Sure/Seal™ bottle) *(594-09-2)*
$(CH_3)_3P$; FW: 76.08; colorless liq.; m.p. -85°; b.p. 38-40°; f.p. -22°F; d. 0.748
air sensitive, STENCH

15-6550 HAZ — 250g, 1kg
Trimethylphosphite, 97% *(121-45-9)*
$(CH_3O)_3P$; FW: 124.08; colorless liq.; b.p. 110-112°; f.p. 82°F; d. 1.052
air sensitive, moisture sensitive

15-6558 NEW HAZ — 50g, 250g
Trimethylphosphite, 99% *(121-45-9)*
$(CH_3O)_3P$; FW: 124.08; colorless liq.; b.p. 110-112°; f.p. 82°F; d. 1.052
air sensitive

15-6560 — 1g, 5g
Trimethylphosphonium tetrafluoroborate, 99% *(154358-50-6)*
$(CH_3)_3PH^+BF_4^-$; FW: 163.89; white pwdr.
hygroscopic
For detailed technical note visit strem.com.

PHOSPHORUS (Compounds)

15-6400	**2,8,9-Trimethyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3] undecane VERKADE SUPERBASE** *(120666-13-9)* $C_9H_{21}N_4P$; FW: 216.26; white waxy solid; m.p. 110-115° *moisture sensitive, (store cold)* **For detailed technical note visit strem.com.** 	250mg 1g
15-6610	**Tri(1-naphthyl)phosphine, min. 98%** *(3411-48-1)* $(1\text{-}C_{10}H_7)_3P$; FW: 412.47; white pwdr.; m.p. 265-268°	1g 5g
15-6620	**Tri-neo-pentylphosphite, min. 90%** *(14540-52-4)* $[(CH_3)_3CCH_2O]_3P$; FW: 292.40; white xtl.; m.p. 55-57°; b.p. 80°/0.15 mm *air sensitive*	1g 5g
15-6655 HAZ	**Tri-n-octylphosphine, min. 97% TOP** *(4731-53-7)* $(C_8H_{17})_3P$; FW: 370.60; colorless to pale yellow liq.; m.p. 30°; b.p. 175°/0.3mm; f.p. 280°F; d. 0.83 *air sensitive* Note: Surfactant for nanomaterial synthesis.	25g 100g 500g
15-6660 HAZ	**Trioctylphosphine oxide, min. 90% TOPO** *(78-50-2)* $(n\text{-}C_8H_{17})_3PO$; FW: 386.65; off-white xtl.; m.p. 51-52°; f.p. >230°F; d. 0.88 *hygroscopic* Note: Surfactant for nanomaterial synthesis.	100g 500g
15-6661 HAZ	**Trioctylphosphine oxide, 99% TOPO** *(78-50-2)* $(n\text{-}C_8H_{17})_3PO$; FW: 386.65; white to off-white solid; m.p. 51-52°; f.p. >230°F; d. 0.88 *hygroscopic* Note: Surfactant for nanomaterial synthesis.	25g 100g
15-1310 HAZ	**2,4,6-Trioxa-1,3,5,7-tetramethyl-8-phosphaadamantane (~32% in xylene)** *(26088-25-5)* $C_{10}H_{17}O_3P$; FW: 216.21; colorless liq. *air sensitive* 	5g 25g
93-1562 HAZ	**Triphenylphosphate, 98%** *(115-86-6)* $(C_6H_5O)_3P(O)$; FW: 326.28; white xtl.; m.p. 49-51°; b.p. 244°/10 mm; f.p. 428°F	500g
15-6700	**Triphenylphosphine, 99%** *(603-35-0)* $(C_6H_5)_3P$; FW: 262.28; white xtl.; m.p. 79°; b.p. 360°; f.p. 359°F	100g 500g 2kg
15-6750	**Triphenylphosphine oxide, 98%** *(791-28-6)* $(C_6H_5)_3PO$; FW: 278.28; white xtl.; m.p. 151-154°; f.p. 356°F; d. 1.212	25g 100g
15-6730	**Triphenylphosphine, polymer-bound, on styrene-divinylbenzene copolymer (20% cross-linked)** $(C_6H_5)_3P$; off-white beads, 20-60 mesh *air sensitive*	1g 5g 25g
15-6850	**Triphenylphosphite, 97%** *(101-02-0)* $(C_6H_5O)_3P$; FW: 310.28; colorless to yellow, low melting solid; m.p. 22-24°; b.p. 360°; f.p. 425°F; d. 1.180-1.186	500g 2kg
15-6949 amp HAZ	**Tri-i-propylphosphine, tech. gr., min. 90%** *(6476-36-4)* $(i\text{-}C_3H_7)_3P$; FW: 160.24; colorless liq.; b.p. 176-178°; d. 0.82 *pyrophoric*	1g 5g 25g
15-6950 amp HAZ	**Tri-i-propylphosphine, 98%** *(6476-36-4)* $(i\text{-}C_3H_7)_3P$; FW: 160.24; colorless liq.; b.p. 176-178°; d. 0.82 *pyrophoric*	1g 5g 25g

PHOSPHORUS (Compounds)

15-6952
HAZ

Tri-i-propylphosphine, 98% (Sure/Seal™ bottle) *(6476-36-4)*
$(i\text{-}C_3H_7)_3P$; FW: 160.24; colorless liq.; b.p. 176-178°; d. 0.82
pyrophoric

25g

15-6954
HAZ

Tri-i-propylphosphine, 98% (10 wt% in hexanes) *(6476-36-4)*
$(i\text{-}C_3H_7)_3P$; FW: 160.24; colorless liq.
air sensitive

10g
50g
250g

15-7050
amp
HAZ

Tri-n-propylphosphine, min. 95% *(2234-97-1)*
$(n\text{-}C_3H_7)_3P$; FW: 160.24; colorless liq.; b.p. 185-188°; f.p. 144°F; d. 0.807
air sensitive

10g
50g

15-7070

Tri-n-propylphosphine oxide, min. 98% *(1496-94-2)*
$(n\text{-}C_3H_7)_3PO$; FW: 176.24; white xtl.; m.p. 39°; b.p. 280-282°
moisture sensitive

1g
5g

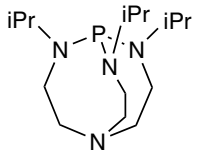
15-7000
HAZ

Tri-i-propylphosphite, min. 94% *(116-17-6)*
$[(CH_3)_2CHO]_3P$; FW: 208.24; colorless liq.; b.p. 63-64°/11 mm; f.p. 154°F; d. 0.844
air sensitive

50g
250g

15-7200

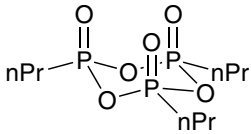
2,8,9-Tri-i-propyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3]undecane *(175845-21-3)*
$C_{15}H_{33}N_4P$; FW: 300.42; yellow liq.; f.p. 185°F; d. 0.922
moisture sensitive
For detailed technical note visit strem.com.



250mg
1g

15-9159
HAZ

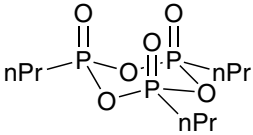
2,4,6-Tri-n-propyl-2,4,6-trioxo-1,3,5,2,4,6-tri-oxatriphosphorinane (Propylphosphonic acid anhydride 50% solution in N,N-dimethylforma-mide) T3P *(68957-94-8)*
$(C_3H_7O_2P)_3$; FW: 318.20; slightly yellow to brown liq.
moisture sensitive
For detailed technical note visit strem.com.



10g
50g

15-9160
HAZ

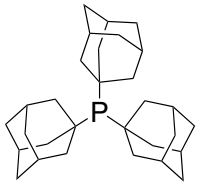
2,4,6-Tripropyl-2,4,6-trioxo-1,3,5,2,4,6-trioxatriphosphorinane T3P (Propylphosphonic acid anhydride 50% solution in ethyl acetate) *(68957-94-8)*
$(C_3H_7O_2P)_3$; FW: 318.20; slightly yellow to brown liq.
moisture sensitive



10g
50g

15-0935
NEW

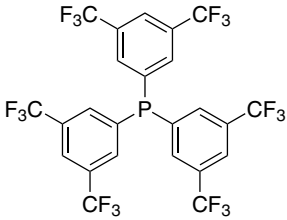
Tris(1-adamantyl)phosphine, 97% *(897665-73-5)*
$C_{30}CH_{45}P$; FW: 436.65; white to off-white pwdr.
air sensitive
Note: Sold in collaboration with GreenCentre for research purposes only. Patents: 62248056.
For detailed technical note visit strem.com.



250mg
1g
5g

15-9165

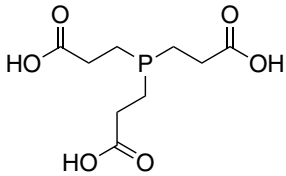
Tris[3,5-bis(trifluoromethyl)phenyl]phosphine, 97% *(175136-62-6)*
$C_{24}H_9F_{18}P$; FW: 670.37; brown solid



250mg
1g
5g

PHOSPHORUS (Compounds)

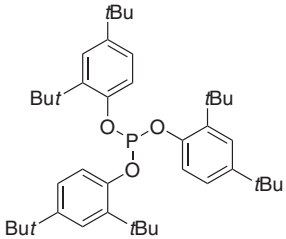
15-7400 **Tris(2-carboxyethyl)phosphine, hydrochloride, 99% TCEP** *(51805-45-9)*
$(HOOCCH_2CH_2)_3PH^+Cl^-$; FW: 286.65; white xtl.
1g, 5g



93-1564 **Tris(2-chloroethyl)phosphate, 97%** *(115-96-8)*
$(ClCH_2CH_2O)_3P(O)$; FW: 285.52; colorless liq.; m.p. -51°; b.p. 330°; f.p. 450°F; d. 1.39
500g, 2kg

15-7680 **Tris(2-cyanoethyl)phosphine, min. 99%** *(4023-53-4)*
$P(CH_2CH_2CN)_3$; FW: 193.19; white xtl.; m.p. 97-98°; b.p. 235°/0.9 mm
5g, 25g

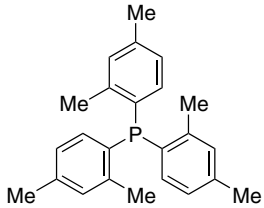
15-7720 **Tris(2,4-di-t-butylphenyl)phosphite, 98%**
(31570-04-4)
$[[(CH_3)_3C]_2C_6H_3O]_3P$; FW: 646.93; white pwdr.; m.p. 181-184°
moisture sensitive
Note: Phosphine Ligand Kit component.
For detailed technical note visit strem.com.
10g, 250g, 1kg



15-7725 NEW **Tris(2,6-dimethoxyphenyl)phosphine, min. 97%** *(85417-41-0)*
$C_{24}H_{27}O_6P$; white to off-white pwdr.; m.p. 145-147°
air sensitive
5g

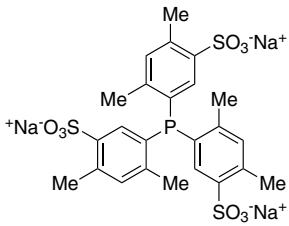
15-7800 amp HAZ **Tris(dimethylamino)phosphine, min. 98% HMPT** *(1608-26-0)*
$[(CH_3)_2N]_3P$; FW: 163.21; yellow liq.; b.p. 49-51°/12 mm; f.p. 98°F; d. 0.898
air sensitive, moisture sensitive
1g, 5g

15-7830 **Tris(2,4-dimethylphenyl)phosphine, 98%**
(49676-42-8)
$[(CH_3)_2C_6H_3]_3P$; FW: 346.45; white pwdr.; m.p. 157-158°
500mg, 2g



15-7820 **Tris(3,5-dimethylphenyl)phosphine, 98%** *(69227-47-0)*
$[(CH_3)_2C_6H_3]_3P$; FW: 346.45; white xtl.; m.p. 160-163°
500mg, 2g

15-7860 **Tris(4,6-dimethyl-3-sulfonatophenyl) phosphine trisodium salt hydrate, min. 97% TXPTS** *(443150-11-6)*
$[(CH_3)_2(C_6H_2)SO_3Na]_3P{\cdot}XH_2O$; FW: 652.58; white pwdr.
For detailed technical note visit strem.com.
250mg, 1g



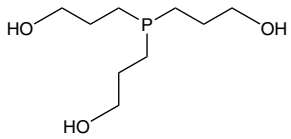
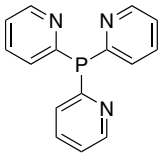
15-7888 **Tris[2-(diphenylphosphino)ethyl]phosphine, 98% PP_3** *(23582-03-8)*
$C_{42}H_{42}P_4$; FW: 670.68; white pwdr.
For detailed technical note visit strem.com.
250mg, 1g

15-7880 **1,1,1-Tris(diphenylphosphino)methane, 97%** *(28926-65-0)*
$HC[P(C_6H_5)_2]_3$; FW: 568.58; white xtl.; m.p. 168-172°
1g, 5g

15-7870 **1,1,1-Tris(diphenylphosphinomethyl)ethane, min. 97% TRIPHOS** *(22031-12-5)*
$CH_3C[CH_2P(C_6H_5)_2]_3$; FW: 624.68; white pwdr.; m.p. 98-101°
1g, 5g

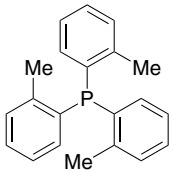
15-7890 **Tris(p-fluorophenyl)phosphine, 99%** *(18437-78-0)*
$(p\text{-}FC_6H_4)_3P$; FW: 316.27; off-white xtl.; m.p. 80-81°
1g, 5g

PHOSPHORUS (Compounds)

15-7900 HAZ	**Tris(hydroxymethyl)phosphine, min. 85%** *(2767-80-8)* $P(CH_2OH)_3$; FW: 124.08; colorless solid to viscous liq. *air sensitive*	1g 5g
15-7901 HAZ	**Tris(hydroxymethyl)phosphine, min. 95%** *(2767-80-8)* $P(CH_2OH)_3$; FW: 124.08; colorless to pale yellow solid *air sensitive*	250mg 1g
15-6375 amp HAZ	**Tris(3-hydroxypropyl)phosphine, min. 80%** *(4706-17-6)* $(HOC_3H_6)_3P$; FW: 208.24; viscous liq. *air sensitive* 	2g 10g 50g
15-7940	**Tris(4-methoxy-3,5-dimethylphenyl)phosphine, min. 98%** *(121898-64-4)* $[(CH_3)_2(OCH_3)C_6H_2]_3P$; FW: 436.52; white xtl.; m.p. 175-177°	1g 5g
15-7975	**Tris(m-methoxyphenyl)phosphine, 97+%** *(29949-84-6)* $(m\text{-}CH_3OC_6H_4)_3P$; FW: 352.37; white xtl.; m.p. 115°	1g 5g
15-7950	**Tris(o-methoxyphenyl)phosphine, min. 98%** *(4731-65-1)* $(o\text{-}CH_3OC_6H_4)_3P$; FW: 352.37; white xtl.; m.p. 203-205°	1g 5g
15-8000	**Tris(p-methoxyphenyl)phosphine, 98%** *(855-38-9)* $(p\text{-}CH_3OC_6H_4)_3P$; FW: 352.37; white to pale yellow xtl.; m.p. 132-135°	1g 5g
15-8005	**Tris(pentafluorophenyl)phosphine, 98%** *(1259-35-4)* $(C_6F_5)_3P$; FW: 532.15; white pwdr.; m.p. 117-119°	1g 5g
15-7945 NEW	**Tris(2-pyridyl)phosphine, min. 97%** *(26437-48-9)* $(C_5H_4N)_3P$; FW: 265.25; white to off-white pwdr.; m.p. 112-114° *air sensitive* 	250mg 1g
15-8013	**Tris(3-sulfonatophenyl)phosphine hydrate, sodium salt (<5% oxide)** *(63995-70-0)* $Na_3P(C_6H_4SO_3)_3 \cdot XH_2O$; FW: 568.40; white to off-white pwdr.	250mg 1g
15-8007	**Tris(3-sulfonatophenyl)phosphine hydrate, sodium salt (<10% oxide)** *(63995-70-0)* $Na_3P(C_6H_4SO_3)_3 \cdot XH_2O$; FW: 568.40; white to off-white pwdr.	250mg 1g 5g
15-8010	**Tris(p-trifluoromethylphenyl)phosphine, min. 97%** *(13406-29-6)* $(p\text{-}CF_3C_6H_4)_3P$; FW: 466.28; pale yellow pwdr.; m.p. 73-75°	1g 5g
15-8015	**Tris(2,4,6-trimethoxyphenyl)phosphine, min. 97%** *(91608-15-0)* $[(CH_3O)_3C_6H_2]_3P$; FW: 532.54; light yellow pwdr.; m.p. 155-160° *air sensitive*	2g 10g
15-8017	**Tris(2,4,6-trimethylphenyl)phosphine, 98%** *(23897-15-6)* $[(CH_3)_3C_6H_2]_3P$; FW: 388.53; white pwdr.; m.p. 185°	1g 5g
15-8020 amp HAZ	**Tris(trimethylsilyl)phosphine, min. 98%** *(15573-38-3)* $[(CH_3)_3Si]_3P$; FW: 250.54; colorless to pale yellow, low melting solid; m.p. 24°; b.p. 102-105°/16 mm; f.p. -1°F; d. 0.863 *pyrophoric*	250mg 1g 5g
15-8021 HAZ	**Tris(trimethylsilyl)phosphine, min. 98% (10 wt% in hexanes)** *(15573-38-3)* $[(CH_3)_3Si]_3P$; FW: 250.54; colorless liq. *air sensitive*	10g 50g
15-8100	**Tri-m-tolylphosphine, 98%** *(6224-63-1)* $(m\text{-}CH_3C_6H_4)_3P$; FW: 304.37; white xtl.; m.p. 100° *air sensitive*	5g 25g
15-8120	**Tri-p-tolylphosphine, 98%** *(1038-95-5)* $(p\text{-}CH_3C_6H_4)_3P$; FW: 304.37; white xtl.; m.p. 145-148° *air sensitive*	5g 25g

PHOSPHORUS (Compounds)

15-8050 **Tri-o-tolylphosphine, 99%** *(6163-58-2)* — 5g, 25g
$(o\text{-}CH_3C_6H_4)_3P$; FW: 304.37; white xtl.; m.p. 125-128°
air sensitive
Note: Phosphine Ligand Kit component.



96-3740 **UREAphos and METAMORPhos Ligand Kit for Asymmetric Hydrogenation**
See page 529

15-9150 amp **Vinyldiphenylphosphine, min. 97%** *(2155-96-6)* — 1g, 5g, 25g
$(CH_2{=}CH)(C_6H_5)_2P$; FW: 212.23; colorless to yellow liq.; b.p. 135°/3.5 mm; f.p. >230°F; d. 1.067
air sensitive, (store cold)

15-9155 HAZ **Vinylphosphonic acid, min. 90%** *(1746-03-8)* — 50g, 250g
$CH_2{=}CHP(O)(OH)_2$; FW: 108.00; colorless to pale-yellow liq.; m.p. 36°

15-9158 HAZ **Vinylphosphonic acid dimethyl ester, min. 90%** *(4645-32-3)* — 50g, 250g
$CH_2{=}CHP(O)(OCH_3)_2$; FW: 136.10; colorless liq.
(store cold)

PLATINUM (Elemental Forms)

96-6717 **BASF Heterogeneous Catalyst Kit**
See page 467

96-6721 **BASF Platinum Catalyst Kit**
See page 468

78-1685 HAZ **Dealloyed Pt-Co core-shell fuel cell catalyst on carbon** — 100mg
PtCo; black solid

78-1688 HAZ **Dealloyed Pt-Cu core-shell fuel cell catalyst on carbon** — 100mg
PtCu; black solid

96-6674 **Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation**
See page 484

78-0007 **Platinum, 97% (2-5 nanometers)** *(7440-06-4)*
See page 163

78-1630 **Platinum, 0.8% on activated carbon, 50% water-wet paste (NanoSelect Pt-100)** *(7440-06-4)* — 5g, 25g
Pt; black solid (d50=25µm)
Note: Sold in collaboration with BASF for research purposes only.

78-1540 **Platinum, 3% on activated carbon, sulfided (50-70% wetted powder) Evonik Noblyst® P2065** *(7440-06-4)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation component.

78-1600 HAZ **Platinum, 5% on activated carbon** *(7440-06-4)* — 10g, 50g
Pt; pwdr.; SA: ~1023 m^2/g; b.p. 3827° (Pt); P.Vol. 0.79 cc/g; d. 21.45

78-1530 **Platinum, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P2058** *(7440-06-4)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation component.

78-1534 **Platinum, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P2060** *(7440-06-4)* — 10g, 50g
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation component.

PLATINUM (Elemental Forms)

78-1613 **Platinum, 5% on activated carbon, unreduced, 50% water wet paste** 5g
(Escat™ 2441) *(7440-06-4)* 25g
black pwdr. (d50=18 µm); SA: 900m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Platinum Catalyst Kit component.

Technical Note:
1. Escat™ 2441 catalyst is recommended for a broad range of reactions common to platinum on carbon catalysts, such as nitro group reductions, reductive alkylations as well as other coupling reactions. Active over a wide range of conditions.

78-1610 **Platinum, 10% on activated carbon** *(7440-06-4)* 1g
HAZ Pt; pwdr.; SA: ~1000 m²/g; b.p. 3827° (Pt); P.Vol. 0.79 cc/g; d. 21.45 5g
25g

78-1615 **Platinum, 5% on activated peat carbon, reduced, 50% water wet paste** 5g
(Escat™ 2621) *(7440-06-4)* 25g
black pwdr. (d50=15 µm); SA: 850m²/g
Note: Sold in collaboration with BASF for research purposes only.

Technical Note:
1. Escat™ 2621 catalyst is recommended for a broad range of reactions common to platinum on carbon catalysts, such as nitro group reductions, reductive alkylations as well as other coupling reactions. Active over a wide range of conditions.

78-1614 **Platinum, 3% on activated wood carbon, reduced, 70% water wet paste** 5g
(Escat™ 2931) *(7440-06-4)* 25g
black pwdr. (d50=22 µm); SA: 1500m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Platinum Catalyst Kit component.

Technical Note:
1. Escat™ 2931 catalyst is recommended for a broad range of reactions common to platinum on carbon catalysts, such as nitro group reductions, reductive alkylations as well as other coupling reactions. Specifically recommended for the reduction of halonitroa romatics to haloanilines.

78-1612 **Platinum, 5% on activated wood carbon, reduced, 50% water wet paste** 5g
(Escat™ 2421) *(7440-06-4)* 25g
black pwdr. (d50=18 µm); SA: 900m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Platinum Catalyst Kit component.

Technical Note:
1. Escat™ 2421 catalyst is recommended for a broad range of reactions common to platinum on carbon catalysts, such as nitro group reductions, reductive alkylations as well as other coupling reactions. Active over a wide range of conditions.

78-1611 **Platinum, 5% on activated wood carbon, reduced, dry (Escat™ 2431)** 5g
HAZ *(7440-06-4)* 25g
black pwdr. (d50=18 µm); SA: 900m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component. BASF Platinum Catalyst Kit component.

Technical Note:
1. Escat™ 2431 catalyst is recommended for a broad range of reactions common to platinum on carbon catalysts, where water is detrimental to the selectivity of the reaction. Active over a wide range of conditions.

78-1640 **Platinum, 0.5% on alumina** *(7440-06-4)* 25g
Pt; 1/8'' x 1/8'' pellets; SA: ~100 m²/g; m.p. 1769° (Pt); b.p. 3827° (Pt); P.Vol. 0.40 cc/g; d. 21.45 100g

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78-1660 **Platinum, 5% on alumina** *(7440-06-4)* 10g
Pt; pwdr.; SA: 80-100 m²/g; m.p. 1769° (Pt); b.p. 3827° (Pt); P.Vol. 0.41 cc/g; d. 21.45 50g

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78-1661 **Platinum, 5% on alumina powder, reduced, dry (Escat™ 2941)** *(7440-06-4)* 5g
gray pwdr. (d50=70 µm); SA: 110m²/g 25g
Note: Sold in collaboration with BASF for research purposes only. BASF Platinum Catalyst Kit component.

Technical Note:
1. Escat™ 2941 catalyst is recommended for selective hydrogenation reactions. The particle size of the catalyst is ideal for allowing fast separation from the reaction mixture.

78-1420 **Platinum black, min. 97%** *(7440-06-4)* 250mg
HAZ Pt; FW: 195.09; black pwdr.; SA: ~24 m²/g; m.p. 1769°; b.p. 3827°; d. 21.45 1g
5g

PLATINUM (Elemental Forms)

78-1665	**Platinum, 5% on calcium carbonate, unreduced, dry (Escat™ 2371)** *(7440-06-4)* black pwdr. (d50=3 µm); SA: 7m²/g Note: Sold in collaboration with BASF for research purposes only.	5g 25g

Technical Note:

1. Escat™ 2371 catalyst is recommended for selective hydrogenation reactions in which other platinum catalysts can lead to over-hydrogenation. Additional dopants can be added for improved performance.

78-0050	**Platinum foil (99.95%)** *(7440-06-4)* Pt; FW: 195.09; 0.004mm thick (~0.05g/25x 25mm); m.p. 1769°; b.p. 3827°; d. 21.45	25 x 25mm 50 x 50mm
78-0005	**Platinum foil (99.99%)** *(7440-06-4)* Pt; FW: 195.09; 0.025mm thick (~0.34g/25x 25mm); m.p. 1769°; b.p. 3827°; d. 21.45	25 x 25mm 50 x 50mm
78-1635	**Platinum 0.8% and molybdenum 0.3wt% on activated carbon, 50% water-wet paste (Nanoselect Pt-200)** *(7440-06-4)* Pt; black solid (d50=25µm) Note: Sold in collaboration with BASF for research purposes only.	5g 25g
78-3015 NEW	**Platinum nanoparticles, 1% on carbon black (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
78-3020 NEW	**Platinum nanoparticles, 5% on carbon black (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
78-3030 NEW	**Platinum nanoparticles, 10% on carbon black (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g
78-3032 NEW	**Platinum nanoparticles, 20% on carbon black (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g
78-3035 NEW	**Platinum nanoparticles, 30% on carbon black (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; black solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g
78-0405	**Platinum Nanoparticles [PtNP: 2-3 nm (gum Arabic)]** *(7440-06-4)* *See* page 163	
	Platinum nanoparticles - surfactant and reactant-free (pure) manufactured via laser ablation *(7440-06-4)* *See* page 163	
78-3012 NEW	**Platinum nanoparticles, 1% on Titania (anatase) (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; gray solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g

PLATINUM (Elemental Forms)

78-3005 NEW	**Platinum nanoparticles, 1% on Titania (rutile) (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; light gray solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	5g 25g
78-3026 NEW	**Platinum nanoparticles, 10% on Titania (anatase) (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; dark gray solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g
78-3023 NEW	**Platinum nanoparticles, 10% on Titania (rutile) (surfactant and reactant-free)** *(7440-06-4)* Pt; FW: 195.10; dark gray solid *(store cold)* Note: Manufactured by laser ablation. Sold in collaboration with Particular® for research purposes only.	1g 5g
93-7830 HAZ	**Platinum powder (99.9%)** *(7440-06-4)* Pt; FW: 195.09; -60 mesh; m.p. 1769°; b.p. 3827°; d. 21.45	1g 5g
93-7832 HAZ	**Platinum powder (99.9%)** *(7440-06-4)* Pt; FW: 195.09; avg. particle size 0.8-2.5 micron; m.p. 1769°; b.p. 3827°; d. 21.45	1g 5g
93-7833 HAZ	**Platinum powder (99.9%)** *(7440-06-4)* Pt; FW: 195.09; avg. particle size 0.27-0.47 micron; m.p. 1769°; b.p. 3827°; d. 21.45	1g 5g
78-1800 HAZ	**Platinum powder (99.999%)** *(7440-06-4)* Pt; FW: 195.09; -22 mesh; m.p. 1769°; b.p. 3827°; d. 21.45	500mg 2g
78-1675	**Platinum, 5% on silica powder, reduced, dry (Escat™ 2351)** *(7440-06-4)* gray pwdr. (d50=40 µm); SA: 400m²/g Note: Sold in collaboration with BASF for research purposes only.	5g 25g

Technical Note:

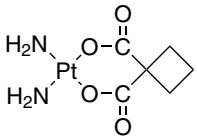
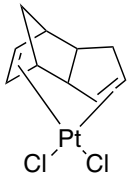
1. Escat™ 2351 catalyst is recommended for selective hydrogenation reactions common to platinum catalysts. The silica support enables totally different catalytic reactivity compared to carbon-based catalysts.

78-1900	**Platinum sponge (99.8%)** *(7440-06-4)* Pt; FW: 195.09; -20 mesh gran.; m.p. 1769°; b.p. 3827°; d. 21.45	500mg 2g
78-1920 HAZ	**Platinum sponge (99.95%)** *(7440-06-4)* Pt; FW: 195.09; bluish-gray pwdr.; m.p. 1769°; b.p. 3827°; d. 21.45	1g 5g
78-1536	**Platinum 1% and vanadium 2%, on activated carbon (50-70% wetted powder)** **Evonik Noblyst® P8078** *(7440-06-4)* wetted, black pwdr. Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation component.	10g 50g
78-0082	**Platinum wire (99.95%)** *(7440-06-4)* Pt; FW: 195.09; 1.0 mm dia. (~0.17g/cm); m.p. 1769°; b.p. 3827°; d. 21.45	5cm 25cm
78-0085	**Platinum wire (99.95%)** *(7440-06-4)* Pt; FW: 195.09; 0.5mm dia. (~1.05g/25cm); m.p. 1769°; b.p. 3827°; d. 21.45	5cm 25cm 100cm
78-0075	**Platinum wire (99.99+%)** *(7440-06-4)* Pt; FW: 195.09; 0.254mm dia. (~0.277g/25cm); m.p. 1769°; b.p. 3827°; d. 21.45	25cm 100cm
78-0080	**Platinum wire (99.99+%)** *(7440-06-4)* Pt; FW: 195.09; 0.127mm dia. (~0.27g/m); m.p. 1769°; b.p. 3827°; d. 21.45	1m 5m
78-0055	**Platinum/tetra-n-octylammonium chloride colloid, purified (70-85% Pt)** *(7440-06-4)* *See* page 162	
78-0062	**Platinum-ruthenium/tetra-n-octylammonium chloride colloid (~7 wt% Pt, ~3.5 wt% Ru)** *(7440-06-4)* *See* page 162	

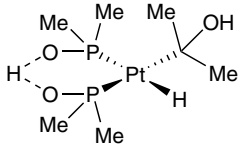
PLATINUM (Compounds)

93-7801	**Ammonium hexachloroplatinate(IV), 99%** *(16919-58-7)* *See* page 5	

PLATINUM (Compounds)

93-7802	**Ammonium tetrachloroplatinate(II), 99%** *(13820-41-2)* *See* page 7	
78-0100	**Bis(ethylenediamine)platinum(II) chloride, 99%** *(21430-85-3)* $[(NH_2CH_2CH_2NH_2)_2Pt]Cl_2$; FW: 386.19; white xtl.; m.p. 300° dec.	1g 5g
78-0140	**Bis(tri-t-butylphosphine)platinum (0), 98%** *(60648-70-6)* $Pt[P(C_4H_9)_3]_2$; FW: 599.71; yellow pwdr. *air sensitive*	250mg 1g
78-0200 HAZ	**Chloroplatinic acid hexahydrate (38-40% Pt) (99.9%-Pt)** *(18497-13-7)* $H_2PtCl_6 \cdot 6H_2O$; FW: 409.82 (517.92); orange pwdr.; m.p. 60° *light sensitive, hygroscopic, (store cold)*	1g 5g 25g
78-0255	**1,1-Cyclobutanedicarboxylatodiammineplatinum(II), 99% CARBOPLATIN** *(41575-94-4)* $C_6H_{12}N_2O_4Pt$; FW: 371.26; white xtl. 	250mg 1g 5g
78-0295	**Diammineplatinum(II) nitrite, solution in ammonium hydroxide (5.0wt% Pt)** *(14286-02-3)* $(NH_3)_2Pt(NO_2)_2$; FW: 321.19; colorless to light yellow liq.	10g 50g
93-7816	**Dibromo(1,5-cyclooctadiene)platinum(II), 98%** *(12145-48-1)* $Pt(1,5\text{-}C_8H_{12})Br_2$; FW: 463.09; white to pale yellow pwdr.	1g 5g
78-0360	**Dichlorobis(benzonitrile)platinum(II), 99%** *(14873-63-3)* $PtCl_2(C_6H_5CN)_2$; FW: 472.24; yellow to orange xtl.	250mg 1g 5g
78-0317	**cis-Dichlorobis(diethylsulfide)platinum(II), 99%** *(15442-57-6)* $Pt[(C_2H_5)_2S]_2Cl_2$; FW: 446.37; yellow pwdr.	250mg 1g 5g
93-7805	**cis-Dichlorobis(pyridine)platinum(II), 99%** *(15227-42-6)* $PtCl_2(C_5H_5N)_2$; FW: 424.20; yellow pwdr.	1g
93-7820	**cis-Dichlorobis(triethylphosphine)platinum(II), 99%** *(15692-07-6)* $PtCl_2[(C_2H_5)_3P]_2$; FW: 502.32; white to off-white pwdr.	500mg 2g
78-0410	**cis-Dichlorobis(triphenylphosphine)platinum(II), 98%** *(15604-36-1)* $PtCl_2[(C_6H_5)_3P]_2$; FW: 790.58; off-white xtl.	1g 5g
78-0430	**Dichloro(1,5-cyclooctadiene)platinum(II), 99%** *(12080-32-9)* $PtCl_2(1,5\text{-}C_8H_{12})$; FW: 374.18; pale yellow xtl.; m.p. 250° dec.	250mg 1g 5g
78-0450 HAZ	**cis-Dichlorodiammine platinum(II), 99% CISPLATIN** *(15663-27-1)* cis-$Pt(NH_3)_2Cl_2$; FW: 300.06; yellow to orange xtl.; m.p. 230° dec.; b.p. dec.	250mg 1g 5g
78-0451	**trans-Dichlorodiammine platinum(II), 99%** *(14913-33-8)* trans-$Pt(NH_3)_2Cl_2$; FW: 300.06; light yellow xtl.	1g 5g
78-0460	**Di-µ-chloro-dichlorobis(ethylene)diplatinum(II), min. 97% Zeise's dimer** *(12073-36-8)* $[PtCl_2(C_2H_4)]_2$; FW: 588.10; orange xtl. *air sensitive, moisture sensitive, (store cold)*	250mg 1g 5g
78-0475	**Dichloro(dicyclopentadienyl)platinum(II), 99%** *(12083-92-0)* $C_{10}H_{12}PtCl_2$; FW: 398.19; off-white pwdr. 	250mg 1g
93-7806	**Dihydrogen hexahydroxyplatinate(IV), 99%** *(51850-20-5)* $H_2Pt(OH)_6$; FW: 299.15; yellow pwdr.	1g 5g
78-0600 HAZ	**Di-µ-iodobis(ethylenediamine)diplatinum(II) nitrate, 99% PIP** *(109998-76-7)* $[Pt_2I_2(H_2NCH_2CH_2NH_2)_2](NO_3)_2$; FW: 888.20; yellow xtl.	250mg 1g
93-7819	**Diiodo(1,5-cyclooctadiene)platinum(II), 99%** *(12266-72-7)* $PtI_2(1,5\text{-}C_8H_{12})$; FW: 557.08; yellow pwdr.	1g 5g

PLATINUM (Compounds)

78-0700	**Dimethyl(1,5-cyclooctadiene)platinum(II), 99%** *(12266-92-1)* $(CH_3)_2Pt(C_8H_{12})$; FW: 333.34; white pwdr.	250mg 1g 5g
78-0725	**Hydrido(dimethylphosphinous acid-kP)[hydrogen bis(dimethylphosphinito-kP)]platinum(II) Ghaffar-Parkins catalyst** *(173416-05-2)* $C_6H_{21}O_3P_3Pt$; FW: 429.23; white to off-white pwdr. **For detailed technical note visit strem.com.** 	100mg 500mg 2g
78-1200	**Iodotrimethylplatinum(IV), 99%** *(14364-93-3)* $(CH_3)_3PtI$; FW: 367.09; light orange xtl.	1g 5g
78-1400	**Platinum(II) acetylacetonate, 98%** *(15170-57-7)* $Pt(CH_3COCHCOCH_3)_2$; FW: 393.31; pale yellow xtl.	1g 5g
78-1429	**Platinum(II) bromide, 98%** *(13455-12-4)* $PtBr_2$; FW: 354.91; brown pwdr.; m.p. 250° dec.; d. 6.65	1g 5g
78-1480 HAZ	**Platinum(II) chloride (99.9%-Pt)** *(10025-65-7)* $PtCl_2$; FW: 266.00; olive-brown pwdr.; m.p. 581° dec.; d. 6.05	250mg 1g 5g
78-1490 HAZ	**Platinum(IV) chloride (99.9%-Pt)** *(13454-96-1)* $PtCl_4$; FW: 336.90; reddish-brown xtl.; m.p. 370° dec.; d. 4.303 *moisture sensitive*	1g 5g
93-7825 HAZ	**Platinum(II) cyanide, min. 98%** *(592-06-3)* $Pt(CN)_2$; FW: 247.13; yellow to green xtl. Note: **Limited quantities available**	500mg 2g
78-1550	**Platinum(II) hexafluoroacetylacetonate, 98% (99.9%-Pt)** *(65353-51-7)* $Pt(CF_3COCHCOCF_3)_2$; FW: 609.22; orange xtl.; m.p. 143-145°; b.p. subl. 65°/0.1mm	500mg 2g
93-7808	**Platinum(II) iodide, min. 98%** *(7790-39-8)* PtI_2; FW: 448.90; black pwdr.; m.p. 360° dec.	1g 5g
78-1892 HAZ	**Platinum(IV) oxide hydrate (~80-82% Pt) (99.95+%-Pt) ADAMS' CATALYST [BASF C7018]** *(52785-06-5)* $PtO_2 \cdot XH_2O$; FW: 227.09; brown pwdr. Note: Sold in collaboration with BASF for research purposes only. BASF Platinum Catalyst Kit component.	250mg 1g 5g
78-1890 HAZ	**Platinum(IV) oxide hydrate (~80-81% Pt) ADAMS' CATALYST** *(52785-06-5)* $PtO_2 \cdot XH_2O$; FW: 227.09; brown pwdr.; SA: high	250mg 1g 5g
78-1925 HAZ	**Platinum sulfite acid solution (15.3% Pt)** *(61420-92-6)* $H_3Pt(SO_3)_2OH$; FW: 375.25; pale yellow liq.	5g 25g
78-1935	**Potassium bis(oxalato)platinate(II) dihydrate, 99%** *(38685-12-0)* *See* page 340	
78-1950	**Potassium hexabromoplatinate(IV), 99%** *(16920-93-7)* *See* page 341	
78-1960	**Potassium hexachloroplatinate(IV), 99%** *(16921-30-5)* *See* page 342	
78-1963	**Potassium hexacyanoplatinate(IV), 99%** *(16920-94-8)* *See* page 342	
78-1967	**Potassium tetrabromoplatinate(II), 99%** *(13826-94-3)* *See* page 344	
78-1970	**Potassium tetrachloroplatinate(II) (99.9%-Pt)** *(10025-99-7)* *See* page 344	
78-1980	**Potassium tetracyanoplatinate(II) hydrate** *(562-76-5)* *See* page 344	
78-1985	**Potassium tetranitroplatinate(II), min. 98%** *(13815-39-9)* *See* page 344	
78-1975	**Potassium trichloroammineplatinate(II)** *(13820-91-2)* *See* page 344	
78-1995	**Sodium hexachloroplatinate(IV) hexahydrate, 98+%** *(19583-77-8)* *See* page 418	

PLATINUM (Compounds)

93-7810 **Sodium tetrachloroplatinate(II) hydrate** *(207683-21-4)*
See page 421

78-2000 **Tetraammineplatinum(II) chloride monohydrate, 99% (99.95%-Pt)** *(13933-32-9)* — 1g, 5g
$[Pt(NH_3)_4]Cl_2 \cdot H_2O$; FW: 334.09 (352.12); white xtl.

78-2005 **Tetraammineplatinum(II) hydroxide hydrate (59% Pt)** *(15651-37-3)* — 1g, 5g
$Pt(NH_3)_4(OH)_2 \cdot XH_2O$; FW: 297.23; white to off-white solid
(store cold)

78-2010 HAZ **Tetraammineplatinum(II) nitrate, 99%** *(20634-12-2)* — 250mg, 1g, 5g
$[Pt(NH_3)_4](NO_3)_2$; FW: 387.22; white to off-white pwdr.
hygroscopic

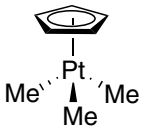
78-2015 **Tetraammineplatinum(II) tetrachloroplatinate(II), 99%** *(13820-46-7)* — 1g, 5g
$[Pt(NH_3)_4][PtCl_4]$; FW: 600.12; green pwdr.

78-2025 HAZ **trans-Tetrachlorodiammine platinum(IV), 98%** *(16893-06-4)* — 250mg, 1g
$Pt(NH_3)_2Cl_4$; FW: 370.96; yellow xtl.

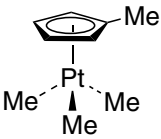
78-2024 HAZ **cis-Tetrachlorodiammine platinum(IV), 99%** *(16893-05-3)* — 250mg, 1g, 5g
$Pt(NH_3)_2Cl_4$; FW: 370.96; yellow pwdr.

78-2030 **Tetrakis(triphenylphosphine)platinum(0), 98%** *(14221-02-4)* — 250mg, 1g, 5g
$Pt[(C_6H_5)_3P]_4$; FW: 1244.21; yellow xtl.
air sensitive, light sensitive, (store cold)

78-1300 **(Trimethyl)cyclopentadienylplatinum(IV), 99%** *(1271-07-4)* — 500mg, 2g
$(CH_3)_3(C_5H_5)Pt$; FW: 305.28; white to off-white pwdr.; m.p. 104-106°
air sensitive
For detailed technical note visit strem.com.



78-1350 HAZ **(Trimethyl)methylcyclopentadienylplatinum(IV), 99%** *(94442-22-5)* — 500mg, 2g, 10g
$(CH_3)_3(CH_3C_5H_4)Pt$; FW: 319.32; off-white pwdr.; m.p. 30-31°; b.p. (subl. 23°/0.053mm); d. 1.88
air sensitive, (store cold)
Note: Available prepacked in ALD cylinder- see 98-4024, 98-4026.
For detailed technical note visit strem.com.

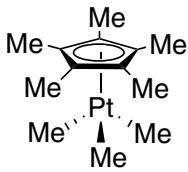


98-1350 NEW **(Trimethyl)methylcyclopentadienylplatinum(IV), 99% (99.999%-Pt) PURATREM** *(94442-22-5)* — 500mg, 2g, 10g
$(CH_3)_3(CH_3C_5H_4)Pt$; FW: 319.32; off-white pwdr.; m.p. 30-31°; b.p. (subl. 23°C/0.053mm); d. 1.88
air sensitive, (store cold)

98-4024 HAZ **(Trimethyl)methylcyclopentadienylplatinum(IV), 99%, 78-1350, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(94442-22-5)* — 10g, 25g
$(CH_3)_3(CH_3C_5H_4)Pt$; FW: 319.32; off-white pwdr.; m.p. 30-31°; b.p. subl. 23°/0.053mm; d. 1.88
air sensitive, (store cold)
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4026.

98-4026 HAZ **(Trimethyl)methylcyclopentadienylplatinum(IV), 99%, 78-1350, contained in 50 ml Swagelok® cylinder high temperature valve (96-1071) for CVD/ALD** *(94442-22-5)* — 20g
$(CH_3)_3(CH_3C_5H_4)Pt$; FW: 319.32; off-white pwdr.; m.p. 30-31°; b.p. subl. 23°/0.053mm; d. 1.88
air sensitive, (store cold)

78-1358 **(Trimethyl)pentamethylcyclopentadienylplatinum(IV), 99%** *(97262-98-1)* — 250mg, 1g, 5g
$C_{13}H_{24}Pt$; FW: 375.41; off-white pwdr.
air sensitive



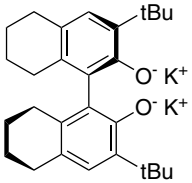
PLATINUM (Compounds)

78-1365	**Tris(dibenzylideneacetone)diplatinum(0), min. 98%** *(63782-74-1)* $(C_6H_5CH{=}CHCOCH{=}CHC_6H_5)_3Pt_2$; FW: 1093.03; purple-black solid *air sensitive* **For detailed technical note visit strem.com.**	250mg 1g
78-1360	**Tris(dibenzylideneacetone)platinum(0), min. 98%** *(11072-92-7)* $(C_6H_5CH{=}CHCOCH{=}CHC_6H_5)_3Pt$; FW: 897.96; brown solid *air sensitive* **For detailed technical note visit strem.com.**	250mg 1g

POTASSIUM (Elemental Forms)

19-1990 amp HAZ	**Potassium (99.95%) (breakseal ampoule)** *(7440-09-7)* K; FW: 39.09; under argon; m.p. 63.7°; b.p. 760°; d. 0.86 *air sensitive, moisture sensitive*	1g 5g
93-1990 amp HAZ	**Potassium (99.95%) (prescored ampoule)** *(7440-09-7)* K; FW: 39.09; under argon; m.p. 63.7°; b.p. 760°; d. 0.86 *air sensitive, moisture sensitive*	1g 5g 25g
19-1910 amp HAZ	**Potassium sodium alloy 78:22 (99.95%)** *(11135-81-2)* NaK; liq.; 78% K, 22% Na (under argon); m.p. -12.6°; b.p. 785°; d. 0.855 *air sensitive, moisture sensitive*	1g 5g 25g 50g

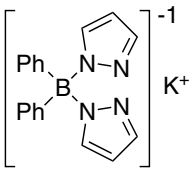
POTASSIUM (Compounds)

19-1600	**(R)-(-)-5,5',6,6',7,7',8,8'-Octahydro-3,3'-di-t-butyl-1,1'-bi-2-naphthol, dipotassium salt** *(350683-75-9)* $C_{28}H_{36}K_2O_2$; FW: 482.80; cream-colored pwdr. *moisture sensitive* **For detailed technical note visit strem.com.** 	100mg 500mg
19-1601	**(S)-(+)-5,5',6,6',7,7',8,8'-Octahydro-3,3'-di-t-butyl-1,1'-bi-2-naphthol, dipotassium salt** $C_{28}H_{36}K_2O_2$; FW: 482.80; cream-colored pwdr. *moisture sensitive*	100mg 500mg

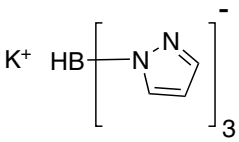
Technical Note:
1. See 19-1600 (page 340)

93-1901	**Potassium acetate, 99+% (ACS)** *(127-08-2)* $KOOCCH_3$; FW: 98.15; white xtl.	500g 2kg
19-1500	**Potassium allyltrifluoroborate, 99%** *(233664-53-4)* $K[C_3H_5BF_3]$; FW: 147.98; white pwdr. **For detailed technical note visit strem.com.**	250mg 1g
19-1930	**Potassium bis(fluorosulfonyl)imide, 98%** *(14984-76-0)* $K[N(SO_2F)_2]$; FW: 219.23; white pwdr. *moisture sensitive*	1g 5g 25g
78-1935	**Potassium bis(oxalato)platinate(II) dihydrate, 99%** *(38685-12-0)* $K_2Pt(C_2O_4)_2{\cdot}2H_2O$; FW: 449.34 (485.37); yellow xtl.	1g 5g
93-1907 HAZ	**Potassium borohydride, 98%** *(13762-51-1)* KBH_4; FW: 53.94; white pwdr.; m.p. > 400° dec.; d. 1.178 *moisture sensitive*	50g 250g
93-1909	**Potassium bromide, 99+% (ACS)** *(7758-02-3)* KBr; FW: 119.01; white xtl.; m.p. 730°; b.p. 1435°; d. 2.75 *hygroscopic*	100g 500g
93-1962	**Potassium bromide (99.999%-K) PURATREM** *(7758-02-3)* KBr; FW: 119.01; white xtl.; m.p. 730°; b.p. 1435°; d. 2.75 *hygroscopic*	10g 50g
93-1910 HAZ	**Potassium t-butoxide, min. 98%** *(865-47-4)* $KOC(CH_3)_3$; FW: 112.21; white to off-white pwdr.; m.p. 256° dec. *moisture sensitive*	50g 250g

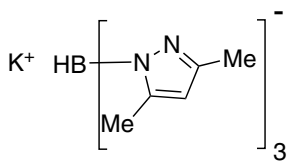
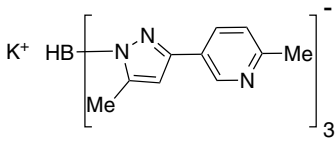
POTASSIUM (Compounds)

93-1912	**Potassium carbonate, 99+% (ACS)** *(584-08-7)* K_2CO_3; FW: 138.21; white pwdr.; m.p. 891°; b.p. dec.; d. 2.428 *hygroscopic*	500g 2kg
19-2600	**Potassium carbonate (99.997%-K) PURATREM** *(584-08-7)* K_2CO_3; FW: 138.21; white pwdr.; m.p. 891°; b.p. dec.; d. 2.428 *hygroscopic*	10g 50g
93-1913 HAZ	**Potassium chlorate, 99% (ACS)** *(3811-04-9)* $KClO_3$; FW: 122.56; white pwdr.; m.p. 356°; b.p. 400° dec.; d. 2.32	100g 500g
93-1914	**Potassium chloride, 99+% (ACS)** *(7447-40-7)* KCl; FW: 74.56; white gran.; m.p. 776°; b.p. 1500° subl.; d. 1.984	500g 2kg
93-1977	**Potassium chloride, 99+% (99.99+%-K) optical grade PURATREM** *(7447-40-7)* KCl; FW: 74.56; white xtl.; m.p. 776°; b.p. 1500° subl.; d. 1.984	10g 50g
93-1978	**Potassium chloride (99.999%-K) PURATREM** *(7447-40-7)* KCl; FW: 74.56; white xtl.; m.p. 776°; b.p. 1500° subl.; d. 1.984	25g 100g
93-1916 HAZ	**Potassium cyanide, 96% (ACS)** *(151-50-8)* KCN; FW: 65.12; white pwdr.; m.p. 634.5°; d. 1.52	250g 1kg
19-2610	**Potassium di-t-butylphosphate, min. 91% (contains <5% water)** *(33494-80-3)* $K[OP(O)(OC_4H_9)_2]$; FW: 248.30; white pwdr.	500mg 2g
93-1918 HAZ	**Potassium dichromate, 99+% (ACS)** *(7778-50-9)* $K_2Cr_2O_7$; FW: 294.19; orange xtl.; m.p. 390°; b.p. 500° dec.; d. 2.676	100g 500g
79-3000 HAZ	**Potassium dicyanoaurate(I), 99%** *(13967-50-5)* $KAu(CN)_2$; FW: 288.10; white pwdr.	250mg 1g 5g
19-3025 HAZ	**Potassium dicyanocuprate** *(13682-73-0)* $KCu(CN)_2$; FW: 154.68; white pwdr.	10g 50g
93-1939	**Potassium dihydrogen phosphate, 99+% (ACS)** *(7778-77-0)* KH_2PO_4; FW: 136.09; white pwdr.	250g 1kg 5kg
19-1700	**Potassium diphenylbis(pyrazol-1-yl)borate, min. 98%** *(109088-11-1)* $[C_{18}H_{16}BN_4]K$; FW: 338.26; white pwdr.; m.p. 283-285°  	250mg 1g
19-1800 HAZ	**Potassium dodecahydrododecaborate hydrate, min. 98%** *(874881-81-9)* $K_2B_{12}H_{12}\cdot XH_2O$; FW: 220.02; white pwdr. *hygroscopic*	1g 5g 25g
19-1919 HAZ	**Potassium ethoxide, 95+%** *(917-58-8)* KOC_2H_5; FW: 84.16; white to off-white pwdr. *moisture sensitive*	100g 500g
19-1920	**Potassium 2-ethylhexanoate hydrate, 95%** *(3164-85-0)* $K[OOCCH(C_2H_5)C_4H_9]\cdot XH_2O$; FW: 182.30; slightly yellow, glassy solid	5g 25g
93-1922 HAZ	**Potassium fluoride, anhydrous, 98%** *(7789-23-3)* KF; FW: 58.10; white pwdr.; m.p. 846°; b.p. 1505°; d. 2.48 *hygroscopic*	25g 100g 500g
93-1982 HAZ	**Potassium fluoride, anhydrous (99.97%-K)** *(7789-23-3)* KF; FW: 58.10; white pwdr.; m.p. 846°; b.p. 1505°; d. 2.48 *hygroscopic*	5g 25g
93-1981 HAZ	**Potassium fluoride dihydrate, 98%** *(13455-21-5)* $KF\cdot 2H_2O$; FW: 58.10 (94.13); white xtl.; m.p. 41°; b.p. 1505°; d. 2.454 *hygroscopic*	50g 250g
19-1935 amp HAZ	**Potassium graphite KC_8** *(12081-88-8)* C_8K; FW: 135.18; bronze solid *air sensitive, moisture sensitive*	1g 5g 25g
78-1950	**Potassium hexabromoplatinate(IV), 99%** *(16920-93-7)* K_2PtBr_6; FW: 752.72; red to brown pwdr.; m.p. 400° dec.; d. 4.66 *hygroscopic*	1g 5g

POTASSIUM (Compounds)

77-6500	**Potassium hexachloroiridate(IV), 99%** *(16920-56-2)* K_2IrCl_6; FW: 483.12; black pwdr.; m.p. dec.; d. 3.546 *hygroscopic*	1g 5g
93-7611	**Potassium hexachloroosmate(IV), 99%** *(16871-60-6)* K_2OsCl_6; FW: 481.12; red to purple xtl.; m.p. dec. *hygroscopic*	250mg 1g 5g
76-3510	**Potassium hexachloroosmate (IV), 99% (99.98+%-Os)** *(16871-60-6)* K_2OsCl_6; FW: 481.12; red to purple xtl. *hygroscopic*	250mg 1g 5g
93-4610	**Potassium hexachloropalladate(IV), 99%** *(16919-73-6)* K_2PdCl_6; FW: 397.32; red pwdr.; m.p. dec.; d. 2.738 *hygroscopic*	1g 5g
78-1960 HAZ	**Potassium hexachloroplatinate(IV), 99%** *(16921-30-5)* K_2PtCl_6; FW: 486.01; yellow xtl.; m.p. 250° dec.; d. 3.499 *hygroscopic*	1g 5g
93-7502	**Potassium hexachlororhenate(IV) (99.9%-Re)** *(16940-97-9)* K_2ReCl_6; FW: 477.12; green pwdr.; d. 3.34 *hygroscopic*	1g 5g
93-1924	**Potassium hexacyanocobaltate(III)** *(13963-58-1)* $K_3Co(CN)_6$; FW: 332.32; yellow xtl.; m.p. dec.; d. 1.906	25g 100g
93-1921	**Potassium hexacyanoferrate(II) trihydrate, 98.5+% (ACS)** *(14459-95-1)* $K_4Fe(CN)_6 \cdot 3H_2O$; FW: 368.35 (422.41); yellow xtl.; m.p. 70° dec.; d. 1.85	100g 500g
93-1920	**Potassium hexacyanoferrate(III), 99+% (ACS)** *(13746-66-2)* $K_3Fe(CN)_6$; FW: 329.26; red xtl.; m.p. dec.; d. 1.85	250g 1kg
78-1963 HAZ	**Potassium hexacyanoplatinate(IV), 99%** *(16920-94-8)* $K_2Pt(CN)_6$; FW: 429.40; white pwdr.	250mg 1g 5g
44-1700	**Potassium hexacyanoruthenate(II) hydrate** *(15002-31-0)* $K_4Ru(CN)_6 \cdot XH_2O$; FW: 413.59; white pwdr.	250mg 1g 5g
19-2000 HAZ	**Potassium hexafluoronickelate(IV), 99%** *(17218-47-2)* K_2NiF_6; FW: 250.91; pink-purple pwdr. Note: A source of F2; decomposes on heating, evolving F2 (400√∞C) **For detailed technical note visit strem.com.**	10g 50g
93-1926 HAZ	**Potassium hexafluorophosphate, 99.5%** *(17084-13-8)* KPF_6; FW: 184.07; white xtl.; m.p. ~575°; b.p. dec.; d. 2.55	100g 500g
93-1959 HAZ	**Potassium hexafluorosilicate, 99%** *(16871-90-2)* K_2SiF_6; FW: 220.28; white pwdr.; m.p. dec.	500g 2kg
45-1715	**Potassium hexanitritorhodate(III), min. 97%** *(17712-66-2)* $K_3Rh(NO_2)_6$; FW: 496.24; yellow pwdr.	1g
93-1985 HAZ	**Potassium hydride, 30-35% in oil** *(7693-26-7)* KH; FW: 40.11; slurry; gray pwdr. *air sensitive, moisture sensitive*	300g
93-1905 HAZ	**Potassium hydrogen fluoride, 99+%** *(7789-29-9)* KHF_2; FW: 78.11; white pwdr.; m.p. 239°	500g 2kg
93-1940	**Potassium hydrogen phosphate, 98+% (ACS)** *(7758-11-4)* K_2HPO_4; FW: 174.18; white pwdr.	250g 1kg
19-3300 HAZ	**Potassium hydrogen sulfide, anhydrous, min. 95%** *(1310-61-8)* KHS; FW: 72.2; white to off-white pwdr. *air sensitive, hygroscopic*	1g 5g
19-3600	**Potassium hydrotris (pyrazol-1-yl)borate hydrate, 98%** *(18583-60-3)* $[C_9H_{10}BN_6]K \cdot XH_2O$; FW: 252.13; white pwdr.; m.p. 185-189° 	1g 5g

POTASSIUM (Compounds)

19-2900	**Potassium hydrotris(3,5-dimethylpyrazol-1-yl) borate, 97%** *(17567-17-8)* $[C_{15}H_{22}BN_6]K$; FW: 336.29; white pwdr.; m.p. 298-300° 	1g 5g
19-3400	**Potassium hydrotris (3-(6-methyl-3-pyridyl)-5-methylpyrazol-1-yl)borate, 97%** *(184032-07-3)* $[C_{30}H_{31}BN_9]K$; FW: 567.54; white pwdr.; m.p. 198° 	250mg 1g
19-3150 HAZ	**Potassium hydroxide, pellets, 85+% (ACS)** *(1310-58-3)* KOH; FW: 56.11; white pellets; m.p. 360°; b.p. 1324°; d. 2.044 *hygroscopic*	500g 2kg
19-3200	**Potassium iodide, 99+% (ACS)** *(7681-11-0)* KI; FW: 166.01; white pwdr.; m.p. 686°; b.p. 1330°; d. 3.13 *hygroscopic*	100g 500g
93-1930	**Potassium iodide (99.99%-K) PURATREM** *(7681-11-0)* KI; FW: 166.01; white pwdr.; m.p. 686°; b.p. 1330°; d. 3.13 *hygroscopic*	10g 50g
93-1941	**Potassium metaphosphate, 98%** *(7790-53-6)* KPO_3; FW: 118.07; white pwdr.; m.p. 807°; d. 2.393	500g 2kg
19-5380 HAZ	**Potassium methylcyclopentadienide, 98%** *(41066-45-9)* $CH_3C_5H_4K$; FW: 118.22; white to off-white solid *air sensitive, moisture sensitive*	250mg 1g 5g
19-5395 NEW HAZ	**Potassium monoperoxysulfate OXONE®** *(70693-62-8)* $2KHSO_5 \cdot KHSO_4 \cdot K_2SO_4$; FW: 307.37; white solid **For detailed technical note visit strem.com.**	25g 100g
93-4117	**Potassium niobate (99.999%-Nb) PURATREM** *(12030-85-2)* $KNbO_3$; FW: 180.01; white pwdr.	10g 50g
93-1956 HAZ	**Potassium nitrate, 99+% (ACS)** *(7757-79-1)* KNO_3; FW: 101.11; white xtl.; m.p. 334°; b.p. 400° dec.; d. 2.109	500g 2kg
19-5400 HAZ	**Potassium nitrate (99.999%-K) PURATREM** *(7757-79-1)* KNO_3; FW: 101.11; white xtl.; m.p. 334°; b.p. 400° dec.; d. 2.109	25g 100g
93-7613 HAZ	**Potassium osmate(VI) dihydrate, 99%** *(10022-66-9)* $K_2OsO_4 \cdot 2H_2O$; FW: 332.40 (368.43); purple pwdr. *hygroscopic*	250mg 1g 5g
76-4050 HAZ	**Potassium osmate(VI) dihydrate, 99% (99.98+%-Os)** *(10022-66-9)* $K_2OsO_4 \cdot 2H_2O$; FW: 332.40 (368.43); purple pwdr. *hygroscopic*	250mg 1g 5g
93-1933	**Potassium pentaborate octahydrate, 97%** *(12229-13-9)* $K_2B_{10}O_{16} \cdot 8H_2O$; FW: 442.30 (586.43); white pwdr.; m.p. 780°	500g 2kg
77-6590	**Potassium pentachloronitrosyl iridium(III), 99%** *(22594-86-1)* $KIr(NO)Cl_5$; FW: 438.57; brown xtl.	1g 5g
93-1987	**Potassium pentachlororuthenate(III) hydrate** *(14404-33-2)* $K_2RuCl_5 \cdot XH_2O$; FW: 356.53; brown pwdr.	1g 5g
93-1935 HAZ	**Potassium perchlorate, 99%** *(7778-74-7)* $KClO_4$; FW: 138.55; white pwdr.; m.p. 610°; d. 2.52 *hygroscopic*	100g 500g
75-0500 HAZ	**Potassium perrhenate (99%-Re)** *(10466-65-6)* $KReO_4$; FW: 289.30; white xtl.; m.p. 555°; b.p. ~1365°; d. 4.887	2g 10g
44-1750 HAZ	**Potassium perruthenate, 98%** *(10378-50-4)* $KRuO_4$; FW: 204.17; black xtl.	1g 5g

POTASSIUM (Compounds)

19-3800	**Potassium phosphate, anhydrous, min. 97%** *(7778-53-2)* K_3PO_4; FW: 212.28; coarse white solid; m.p. 1340°	250g 1kg
93-1971 HAZ	**Potassium selenite** *(10431-47-7)* K_2SeO_3; FW: 205.16; white pwdr.; m.p. 875° dec. *hygroscopic*	25g 100g
93-4739 HAZ	**Potassium silver cyanide (99.9%-Ag)** *(506-61-6)* $KAg(CN)_2$; FW: 199.01; white pwdr.	10g 50g
93-1972	**Potassium sodium tartrate tetrahydrate, 99%** *(6381-59-5)* $KNaC_4H_4O_6 \cdot 4H_2O$; FW: 210.29 (282.23); white xtl.	100g 500g
93-1946	**Potassium sulfate, 99+% (ACS)** *(7778-80-5)* K_2SO_4; FW: 174.27; white pwdr.	250g 1kg
19-4000	**Potassium sulfate (99.999%-K) PURATREM** *(7778-80-5)* K_2SO_4; FW: 174.27; white xtl.	2g 10g 50g
19-3900 HAZ	**Potassium sulfide, anhydrous, min. 95%** *(1312-73-8)* K_2S; FW: 110.26; white to yellow pwdr. *air sensitive, hygroscopic*	1g 5g
93-1970 HAZ	**Potassium superoxide, min. 96%** *(12030-88-5)* KO_2; FW: 71.10; yellow pwdr.; m.p. ~400°; d. 2.14 *moisture sensitive*	25g 100g 450g
93-1949	**Potassium tellurite(IV) hydrate, 97%** *(123333-66-4)* $K_2TeO_3 \cdot XH_2O$; FW: 253.80; white pwdr.; m.p. 465° dec.	5g 25g 100g
93-1950	**Potassium tetraborate tetrahydrate, 99+%** *(12045-78-2)* $K_2B_4O_7 \cdot 4H_2O$; FW: 233.44 (305.51); white pwdr.; m.p. dec.; d. 1.74	500g 2kg
79-3250	**Potassium tetrabromoaurate(III) dihydrate, 99%** *(14323-32-1)* $KAuBr_4 \cdot 2H_2O$; FW: 555.71 (591.74); reddish-brown xtl.	1g 5g
93-4611	**Potassium tetrabromopalladate(II), 98%** *(13826-93-2)* K_2PdBr_4; FW: 504.21; reddish-brown pwdr. *hygroscopic*	1g 5g
78-1967	**Potassium tetrabromoplatinate(II), 99%** *(13826-94-3)* K_2PtBr_4; FW: 592.93; red pwdr.	1g 5g
93-7906	**Potassium tetrachloroaurate(III) hydrate (99.99%-Au) (51%-Au) PURATREM** *(13682-61-6)* $KAuCl_4 \cdot XH_2O$; FW: 377.88; yellow to orange xtl.	1g 5g
46-2126	**Potassium tetrachloropalladate(II), 99%** *(10025-98-6)* K_2PdCl_4; FW: 326.41; brown pwdr.; m.p. dec.; d. 2.67 *hygroscopic*	1g 5g
78-1970 HAZ	**Potassium tetrachloroplatinate(II) (99.9%-Pt)** *(10025-99-7)* K_2PtCl_4; FW: 415.11; pink to red pwdr.; d. 3.38 *hygroscopic*	1g 5g 25g
93-2836 HAZ	**Potassium tetracyanonickelate(II) hydrate** *(339527-86-5)* $K_2[Ni(CN)_4] \cdot H_2O$; FW: 240.99 (259.01); yellow xtl.	10g 50g
78-1980 HAZ	**Potassium tetracyanoplatinate(II) hydrate** *(562-76-5)* $K_2Pt(CN)_4 \cdot XH_2O$; FW: 377.36; white to off-white pwdr. *hygroscopic*	250mg 1g 5g
93-1951 HAZ	**Potassium tetrafluoroborate** *(14075-53-7)* KBF_4; FW: 125.91; white pwdr.; m.p. 529.5°; d. 2.50 *hygroscopic*	500g 2kg
78-1985	**Potassium tetranitroplatinate(II), min. 98%** *(13815-39-9)* $K_2Pt(NO_2)_4$; FW: 457.32; white pwdr.	1g 5g
93-1952	**Potassium thiocyanate, 99+% (ACS)** *(333-20-0)* KSCN; FW: 97.18; white xtl.	50g 250g
78-1975	**Potassium trichloroammineplatinate(II)** *(13820-91-2)* $K[PtCl_3NH_3]$; FW: 357.56; yellow to orange xtl.	100mg 500mg
78-1990	**Potassium trichloro(ethylene)platinate(II) monohydrate** *(12012-50-9)* $K[PtCl_3(C_2H_4)] \cdot H_2O$; FW: 368.60 (386.62); yellow xtl. *hygroscopic*	500mg 2g

POTASSIUM (Compounds)

06-1700 HAZ	**Potassium tricyanomethanide, min. 98%** *(34171-69-2)* $KC(CN)_3$; FW: 129.16; off-white to beige pwdr.	1g 5g
19-1970 HAZ	**Potassium triethylborohydride, 1.0M in THF, in Sure/Seal™ bottle** *(22560-21-0)* $KB(CH_2CH_3)_3H$; FW: 138.10; liq. *air sensitive, moisture sensitive*	0.1mole 0.5mole
19-1977	**Potassium trifluoromethanesulfonimide, min. 97%** *(90076-67-8)* $K[N(SO_2CF_3)_2]$; FW: 319.25; white pwdr. *hygroscopic*	250mg 1g 5g
93-1955	**Potassium triphosphate, 94+%** *(13845-36-8)* $K_5P_3O_{10}$; FW: 448.42; white pwdr.; m.p. 620°; d. 2.54	250g 1kg
19-1965 HAZ	**Potassium tri-sec-butylborohydride, 1.0M in THF, in Sure/Seal™ bottle** *(54575-49-4)* $KB[CH(CH_3)C_2H_5]_3H$; FW: 222.27; colorless liq.; f.p. 1°F (THF) *moisture sensitive*	0.1mole 0.5mole
19-5000	**Potassium tris(oxalato)ferrate(III) trihydrate** *(5936-11-8)* $K_3Fe(C_2O_4)_3 \cdot 3H_2O$; FW: 437.20 (491.25); green xtl. *light sensitive*	10g 50g
93-1957	**Potassium tungstate (99.5%-W)** *(7790-60-5)* K_2WO_4; FW: 326.04; white pwdr.	10g 50g
19-6000	**2,2,6,6-Tetramethyl-3,5-heptanedionato potassium, min. 95% [K(TMHD)]** *(22441-14-1)* $KC_{11}H_{19}O_2$; FW: 222.40; light brown pwdr.; b.p. dec. 150° *hygroscopic*	1g 5g 25g

PRASEODYMIUM (Elemental Forms)

93-5941 HAZ	**Praseodymium chips (99.9% REO)** *(7440-10-0)* Pr; FW: 140.90; (packed in mineral oil); m.p. 935°; b.p. 3127°; d. 6.782 *air sensitive, moisture sensitive*	5g 25g
93-5942 HAZ	**Praseodymium ingot (99.9% REO)** *(7440-10-0)* Pr; FW: 140.90; (packed in mineral oil); m.p. 935°; b.p. 3127°; d. 6.782 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	10g 50g
93-5940 HAZ	**Praseodymium powder (99.9% REO)** *(7440-10-0)* Pr; FW: 140.90; -40 mesh (under argon); m.p. 935°; b.p. 3127°; d. 6.782 *air sensitive, moisture sensitive*	5g 25g

PRASEODYMIUM (Compounds)

93-5901	**Praseodymium(III) acetate hydrate (99.9%-Pr) (REO)** *(6192-12-7)* $Pr(OOCCH_3)_3 \cdot XH_2O$; FW: 318.04; green xtl. *hygroscopic*	10g 50g 250g
59-2002	**Praseodymium(III) acetylacetonate hydrate (99.9%-Pr) (REO)** *(14553-09-4)* $Pr(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 438.23; pale green pwdr.	5g 25g 100g
93-5905	**Praseodymium(III) chloride, anhydrous (99.9%-Pr) (REO)** *(10361-79-2)* $PrCl_3$; FW: 247.24; green to blue pwdr.; m.p. 786°; b.p. 1700°; d. 4.02 *hygroscopic*	5g 25g
93-5926	**Praseodymium(III) chloride heptahydrate (99.9%-Pr) (REO)** *(10025-90-8)* $PrCl_3 \cdot 7H_2O$; FW: 247.27 (373.38); green xtl.; m.p. 115°; d. 2.250 *hygroscopic*	25g 100g
93-5906	**Praseodymium(III) fluoride (99.9%-Pr) (REO)** *(13709-46-1)* PrF_3; FW: 197.90; light green to blue pwdr. *hygroscopic*	10g 50g
93-5907	**Praseodymium(III) hexafluoroacetylacetonate (99.9%-Pr) (REO)** *(47814-20-0)* $Pr(CF_3COCHCOCF_3)_3$; FW: 762.06; light green pwdr.	1g 5g
93-5909 HAZ	**Praseodymium(III) nitrate hexahydrate (99.9%-Pr) (REO)** *(15878-77-0)* $Pr(NO_3)_3 \cdot 6H_2O$; FW: 326.92 (435.02); light green xtl.	50g 250g
93-5911	**Praseodymium(III,IV) oxide (99.9%-Pr) (REO)** *(12037-29-5)* Pr_6O_{11}; FW: 1021.43; black pwdr.	10g 50g 250g

PRASEODYMIUM (Compounds)

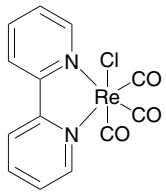
93-5910	**Praseodymium(III,IV) oxide (99.99%-Pr) (REO) PURATREM** *(12037-29-5)* Pr_6O_{11}; FW: 1021.43; black pwdr.	1g 5g 25g
93-5912 HAZ	**Praseodymium(III) perchlorate, 50% aqueous solution (99.9%-Pr) (REO)** *(51411-03-1)* $Pr(ClO_4)_3$; FW: 439.26; colorless liq.	10g 50g
93-5913	**Praseodymium(III) phosphate** *(14298-31-8)* $PrPO_4$; FW: 235.88; green pwdr.	5g 25g
59-5000 amp HAZ	**Praseodymium(III) i-propoxide (99.9%-Pr) (REO)** *(19236-14-7)* $Pr(OC_3H_7)_3$; FW: 318.12; green pwdr.; b.p. subl. 175°/0.04mm *moisture sensitive*	1g 5g
93-5914	**Praseodymium(III) sulfate hydrate (99.9%-Pr) (REO)** *(10277-44-8)* $Pr_2(SO_4)_3{\cdot}XH_2O$; FW: 570.00; light green xtl.	10g 50g
59-7000	**Praseodymium(III) trifluoromethanesulfonate, min. 98% (Praseodymium triflate)** *(52093-27-3)* $Pr(CF_3SO_3)_3$; FW: 588.12; green pwdr. *heat sensitive, hygroscopic*	5g 25g
59-7500 amp	**Tris(cyclopentadienyl)praseodymium (99.9%-Pr) (REO)** *(11077-59-1)* $(C_5H_5)_3Pr$; FW: 336.20; yellow pwdr.; m.p. 427° dec.; b.p. subl. 220°/0.01mm *air sensitive, moisture sensitive*	1g 5g
93-5920	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate) praseodymium(III), 99% (99.9%-Pr) (REO) [Pr(FOD)$_3$]** *(17978-77-7)* $Pr(C_{10}H_{10}F_7O_2)_3$; FW: 1026.45; light green pwdr.; m.p. 215-219°; b.p. subl. 130°/0.01mm	1g 5g
59-8000 amp	**Tris(i-propylcyclopentadienyl)praseodymium (99.9%-Pr) (REO)** *(69021-86-9)* $(C_3H_7C_5H_4)_3Pr$; FW: 462.44; light green xtl. *air sensitive, moisture sensitive*	1g 5g
93-5937	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) praseodymium(III), 99% (99.9%-Pr) (REO) [Pr(TMHD)$_3$]** *(15492-48-5)* $Pr(C_{11}H_{19}O_2)_3$; FW: 690.72; light green pwdr.; m.p. 212-214°; b.p. dec. 300° (subl. 150°/0.1mm)	1g 5g

RHENIUM (Elemental Forms)

75-0050	**Rhenium foil (99.9+%)** *(7440-15-5)* Re; FW: 186.20; 0.025mm thick (~0.33g/25x 25mm); m.p. 3180°; b.p. 5900°; d. 21.04	25 x 25mm 50 x 50mm
75-0060	**Rhenium foil (99.99%)** *(7440-15-5)* Re; FW: 186.21; 0.1mm thick (~1.32g/25 x25mm)	25 x 25mm 50 x 50mm
75-0075	**Rhenium pellets (99.99%)** *(7440-15-5)* Re; FW: 186.20; 9mm dia. x 4mm thick (~3g/pellet); m.p. 3180°; b.p. 5900°; d. 21.04	2g 10g 50g
75-1890 HAZ	**Rhenium powder (99.99%), PURATREM** *(7440-15-5)* Re; FW: 186.20; -325 mesh pwdr.; SA: high; m.p. 3180°; b.p. 5900°; d. 21.04	1g 5g
75-0090	**Rhenium wire (99.97%)** *(7440-15-5)* Re; FW: 186.20; 0.25 mm dia. (~1.03g/m); m.p. 3180°; b.p. 5900°; d. 21.04	10cm 50cm

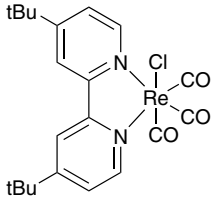
RHENIUM (Compounds)

93-0249	**Ammonium perrhenate, 99+%** *(13598-65-7)* *See* page 6	
02-0900	**Ammonium perrhenate (99.999%-Re) PURATREM** *(13598-65-7)* *See* page 6	
75-2360 NEW	**Chlorotricarbonyl(2,2'-bipyridine)rhenium(I), 99%** *(55658-96-3)* $C_{13}H_8ClN_2O_3Re$; yellow solid **For detailed technical note visit strem.com.**	250mg 1g



RHENIUM (Compounds)

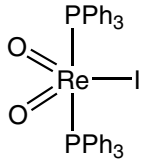
75-2365 NEW
Chlorotricarbonyl(4,4'-di-t-butyl-2,2'-bipyridine) rhenium(I), 99% *(165612-19-1)*
$C_{21}H_{24}ClN_2O_3Re$; FW: 574.09; yellow solid
For detailed technical note visit strem.com.



250mg
1g

75-2300 **Cyclopentadienylrhenium tricarbonyl, 99%** *(12079-73-1)*
$(C_5H_5)Re(CO)_3$; FW: 335.33; white xtl.
250mg
1g
5g

75-2345 **Iododioxobis(triphenylphosphine)rhenium(V), 98%** *(23032-93-1)*
$ReIO_2[P(C_6H_5)_3]_2$; FW: 869.68; violet xtl.
For detailed technical note visit strem.com.



1g
5g

75-2375 **Methyltrioxorhenium(VII), 98%** *(70197-13-6)*
CH_3ReO_3; FW: 249.23; colorless to pale-gray xtl.; m.p. 111°; b.p. subl. 65°/0.001mm
For detailed technical note visit strem.com.
250mg
1g
5g

75-2400 **Pentamethylcyclopentadienylrhenium tricarbonyl, min. 98%** *(12130-88-0)*
$[(CH_3)_5C_5]Re(CO)_3$; FW: 405.46; off-white pwdr.; m.p. 149-151°
100mg
500mg
2g

93-7501 HAZ
Perrhenic acid, aqueous solution (50-54% Re) (99.99%-Re) PURATREM *(13768-11-1)*
$HReO_4$; FW: 251.26; colorless liq.
2g
10g
50g

93-7502 **Potassium hexachlororhenate(IV) (99.9%-Re)** *(16940-97-9)*
See page 342

75-0500 **Potassium perrhenate (99%-Re)** *(10466-65-6)*
See page 343

75-2410 amp
i-Propylcyclopentadienylrhenium tricarbonyl, min. 97% *(126250-68-8)*
$(C_3H_7)C_5H_4Re(CO)_3$; FW: 377.41; light-yellow liq.
(store cold)
250mg
1g

75-1800 **Rhenium carbonyl, 98%** *(14285-68-8)*
$Re_2(CO)_{10}$; FW: 652.51; white to yellow xtl.; m.p. 170° dec.; d. 2.87
1g
5g
25g

93-7506 **Rhenium(V) chloride (99.9%-Re)** *(13596-35-5)*
$ReCl_5$; FW: 363.47; greenish-black xtl.; m.p. dec.; d. 4.9
moisture sensitive
1g
5g

75-2497 **Rhenium(IV) oxide dihydrate (99.9%-Re)** *(12036-09-8)*
$ReO_2 \cdot 2H_2O$; FW: 218.24 (254.27); black pwdr.; m.p. 1000° dec.; d. 11.4
1g
5g

75-2500 **Rhenium(VI) oxide (99.9%-Re)** *(1314-28-9)*
ReO_3; FW: 234.31; purple xtl.; SA: high; m.p. 400° dec.
250mg
1g
5g

93-7505 HAZ
Rhenium(VII) oxide (99.99%-Re) PURATREM *(1314-68-7)*
Re_2O_7; FW: 484.40; yellow to pale green pwdr.; m.p. ~297°; b.p. 250° subl.; d. 6.103
hygroscopic
1g
5g

75-0150 **Rhenium pentacarbonyl bromide, 98%** *(14220-21-4)*
$Re(CO)_5Br$; FW: 406.16; off-white xtl.; m.p. 90° subl.
250mg
1g
5g

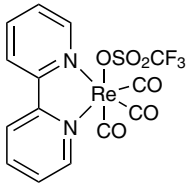
75-4000 **Rhenium pentacarbonyl chloride, 98%** *(14099-01-5)*
$Re(CO)_5Cl$; FW: 361.71; off-white xtl.
1g
5g

93-7508 **Sodium perrhenate (99.9%-Re)** *(13472-33-8)*
See page 420

75-1000 **Tetrabutylammonium tetrathiorhenate(VII), 99%** *(16829-47-3)*
See page 7

RHENIUM (Compounds)

75-2385 NEW
Trifluoromethylsulfonatotricarbonyl(2,2'-bipyridine) rhenium(I), 99% *(97170-94-0)*
$C_{14}H_8F_3N_2O_6ReS$; FW: 575.49; light yellow pwdr.
100mg
500mg



RHODIUM (Elemental Forms)

45-1500 HAZ
Rhodium black (99.9%) *(7440-16-6)*
Rh; FW: 102.91; black pwdr.; m.p. 1966°; b.p. 3727°; d. 12.41
500mg
2g

45-1550
Rhodium colloid (polyethyleneglycol-dodecylether hydrosol) (~9 wt% Rh) *(7440-16-6)*
See page 164

Rhodium nanoparticles - surfactant and reactant-free (pure) manufactured via laser ablation *(7440-16-6)*
See page 165

45-1863
Rhodium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P3053 *(7440-16-6)*
wetted, black pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation component.
10g
50g

45-1875
Rhodium, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 3401) *(7440-16-6)*
black pwdr. (d50=18 µm); SA: 900m²/g
Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component.
1g
5g

Technical Note:
1. Escat™ 3401 catalyst is recommended for a broad range of reactions common to rhodium on carbon catalysts. Specifically, it is well suited for hydrogenation of aromatic rings at mild pressure and temperature.

45-1810
Rhodium, 0.5% on alumina *(7440-16-6)*
Rh on Al_2O_3; 1/8'' x 1/8'' pellets; SA: ~100 m²/g; P.Vol. 0.40 cc/g
5g
25g

45-1830
Rhodium, 5% on alumina *(7440-16-6)*
Rh on Al_2O_3; pwdr.; SA: 80-100 m²/g
1g
5g
25g

45-1860 HAZ
Rhodium, 5% on carbon *(7440-16-6)*
Rh on carbon; pwdr.; SA: ~1050 m²/g
1g
5g
25g

45-1870 HAZ
Rhodium powder (99.8%) *(7440-16-6)*
Rh; FW: 102.91; m.p. 1966°; b.p. 3727°; d. 12.41
500mg
2g

45-1872 HAZ
Rhodium powder (99.95%) *(7440-16-6)*
Rh; FW: 102.91; m.p. 1966°; b.p. 3727°; d. 12.41
500mg
2g

45-1660
Rhodium/tetra-n-octylammonium chloride colloid, purified (70-75% Rh) *(7440-16-6)*
See page 164

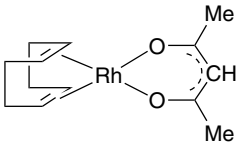
RHODIUM (Compounds)

45-0016
Acetylacetonatobis(cyclooctene)rhodium(I), min. 97% *(34767-55-0)*
$Rh(C_8H_{14})_2(C_5H_7O_2)$; FW: 422.41; yellow pwdr.
air sensitive, (store cold)
100mg
500mg
2g

45-0020
Acetylacetonatobis(ethylene)rhodium(I), 99% *(12082-47-2)*
$Rh(C_2H_4)_2(C_5H_7O_2)$; FW: 258.13; yellow to orange xtl.
air sensitive, (store cold)
100mg
500mg
2g

RHODIUM (Compounds)

45-0010 **Acetylacetonato(1,5-cyclooctadiene)rhodium(I), 98%** *(12245-39-5)*
$Rh(C_8H_{12})(C_5H_7O_2)$; FW: 310.19; orange xtl.
air sensitive, (store cold)

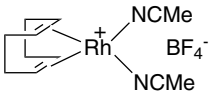


100mg
500mg

45-0035 **Ammonium hexachlororhodate(III) hydrate** *(15336-18-2)*
See page 5

02-0590 **Ammonium hexachlororhodate(III) monohydrate (99.995%-Rh) PURATREM**
(15336-18-2)
See page 5

45-0115 **Bis(acetonitrile)(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%** *(46360-78-5)*
$[Rh(C_8H_{12})(CH_3CN)_2]^+BF4^-$; FW: 380.00; yellow pwdr.

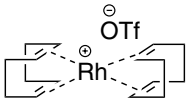


250mg
1g

45-0109 **Bis(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+%** *(35138-22-8)*
$Rh(C_8H_{12})_2^+BF_4^-$; FW: 406.07; red-brown solid
air sensitive
For detailed technical note visit strem.com.

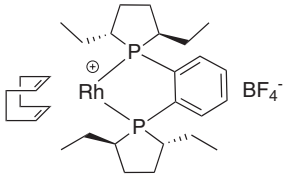
100mg
500mg
2g

45-0110 **Bis(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 99%** *(99326-34-8)*
$Rh(1,5\text{-}C_8H_{12})_2^+SO_3CF_3^-$; FW: 468.34; dark red xtl.; m.p. 159° (dec.)
air sensitive, (store cold)
For detailed technical note visit strem.com.



100mg
500mg
2g

45-0148 **(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano) benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Et-DUPHOS-Rh** *(228121-39-9)*
$Rh(C_8H_{12})(C_{22}H_{36}P_2)^+BF_4^-$; FW: 660.37; red-orange xtl.
air sensitive
Note: (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.



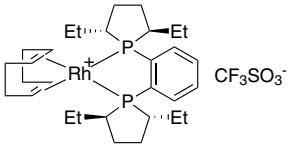
100mg
500mg
2g

45-0149 **(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, 98+% (S,S)-Et-DUPHOS-Rh** *(213343-64-7)*
$Rh(C_8H_{12})(C_{22}H_{36}P_2)^+BF_4^-$; FW: 660.37; red-orange xtl.
air sensitive
Note: (S,S)-Duphos and BPE Rhodium Catalysts Kit component.

100mg
500mg
2g

Technical Note:
1. See 45-0148 (page 349)

45-0150 **(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano) benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (R,R)-Et-DUPHOS-Rh** *(136705-77-6)*
$Rh(C_8H_{12})(C_{22}H_{36}P_2)^+CF_3SO_3^-$; FW: 722.63; orange xtl.
air sensitive, (store cold)
Note: (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.



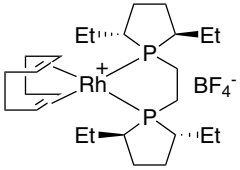
100mg
500mg
2g

45-0151 **(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene) rhodium(I) trifluoromethanesulfonate, 98+% (S,S)-Et-DUPHOS-Rh**
(142184-30-3)
$Rh(C_8H_{12})(C_{22}H_{36}P_2)^+CF_3SO_3^-$; FW: 722.63; orange xtl.
air sensitive, (store cold)
Note: (S,S)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g

RHODIUM (Compounds)

45-3010 **1,2-Bis((2R,5R)-2,5-diethylphospholano) ethane(cyclooctadiene)rhodium(I) tetrafluoroborate** *(136705-70-9)*
$C_{26}H_{48}BF_4P_2Rh$; FW: 612.32; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.



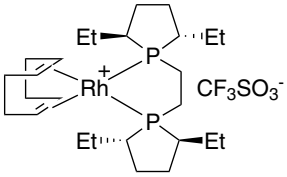
100mg
500mg

45-3011 **1,2-Bis((2S,5S)-2,5-diethylphospholano)ethane(cyclooctadiene)rhodium(I) tetrafluoroborate**
$C_{26}H_{48}BF_4P_2Rh$; FW: 612.32; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg

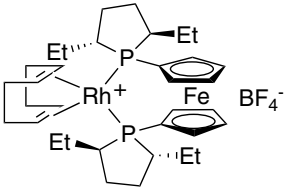
Technical Note:
1. See 45-3010 (page 350)

45-3016 **1,2-Bis((2S,5S)-2,5-diethylphospholano) ethane(cyclooctadiene)rhodium(I) trifluoromethanesulfonate**
$C_{27}H_{48}F_3O_3P_2RhS$; FW: 674.58; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.



100mg
500mg

45-3018 **1,1'-Bis((2R,5R)-2,5-diethylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate** *(162412-90-0)*
$C_{34}H_{52}BF_4FeP_2Rh$; FW: 768.28; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

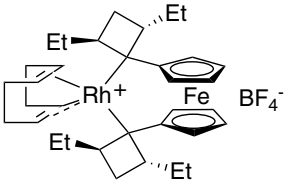


100mg
500mg

45-3019 **1,1'-Bis((2S,5S)-2,5-diethylphospholano)ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate** *(290347-88-5)*
$C_{34}H_{52}BF_4FeP_2Rh$; FW: 768.28; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

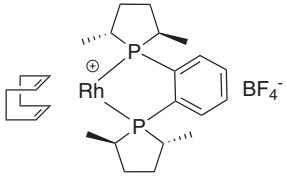
100mg
500mg

45-0155 **(-)-1,1'-Bis((2S,4S)-2,4-diethylphosphotano) ferrocene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98%**
$[[C_5H_4(C_7H_{14}P)]_2Fe](C_8H_{12})Rh^+BF_4^-$; FW: 740.24; orange pwdr.; m.p. 207°
air sensitive
Note: **Limited quantities available** Sold in collaboration with Chirotech for research purposes only. US Patent no. 5936109.
For detailed technical note visit strem.com.



100mg

45-0158 **(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano) benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Me-DUPHOS-Rh** *(210057-23-1)*
$Rh(C_8H_{12})(C_{18}H_{28}P_2)^+BF_4^-$; FW: 604.26; red-orange xtl.
air sensitive
Note: (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.



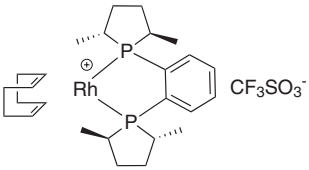
100mg
500mg
2g

45-0159 **(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, 98+% (S,S)-Me-DUPHOS-Rh** *(205064-10-4)*
$Rh(C_8H_{12})(C_{18}H_{28}P_2)^+BF_4^-$; FW: 604.26; red-orange xtl.
air sensitive
Note: (S,S)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g

RHODIUM (Compounds)

45-0160 **(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano) benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (R,R)-Me-DUPHOS-Rh** *(187682-63-9)*
$Rh(C_8H_{12})(C_{18}H_{28}P_2)^+CF_3SO_3^-$; FW: 666.53; orange xtl.
air sensitive, (store cold)
Note: (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

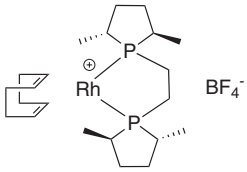


100mg
500mg
2g

45-0161 **(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene) rhodium(I)trifluoromethanesulfonate, 98+% (S,S)-Me-DUPHOS-Rh**
(136705-75-4)
$Rh(C_8H_{12})(C_{18}H_{28}P_2)^+CF_3SO_3^-$; FW: 666.53; orange xtl.
air sensitive, (store cold)
Note: (S,S)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g

45-0168 **(+)-1,2-Bis((2R,5R)-2,5-dimethylphospholano) ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Me-BPE-Rh**
(305818-67-1)
$Rh(C_8H_{12})(C_{14}H_{28}P_2)^+BF_4^-$; FW: 556.21; red-orange xtl.
air sensitive
Note: (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

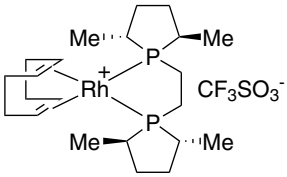


100mg
500mg
2g

45-0169 **(-)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)ethane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, 98+% (S,S)-Me-BPE-Rh** *(213343-65-8)*
$Rh(C_8H_{12})(C_{14}H_{28}P_2)^+BF_4^-$; FW: 556.21; red-orange xtl.
air sensitive
Note: (S,S)-Duphos and BPE Rhodium Catalyst Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g

45-3032 **1,2-Bis((2R,5R)-2,5-dimethylphospholano) ethane(cyclooctadiene)rhodium(I) trifluoromethanesulfonate** *(854275-87-9)*
$C_{23}H_{40}F_3O_3P_2RhS$; FW: 618.48; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

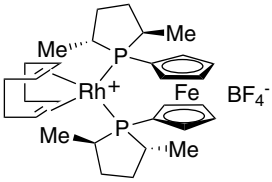


100mg
500mg

45-3033 **1,2-Bis((2S,5S)-2,5-dimethylphospholano)ethane(cyclooctadiene)rhodium(I) trifluoromethanesulfonate** *(854920-90-4)*
$C_{23}H_{40}F_3O_3P_2RhS$; FW: 618.48; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg

45-3036 **1,1'-Bis((2R,5R)-2,5-dimethylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate** *(854275-87-9)*
$C_{30}H_{44}BF_4FeP_2Rh$; FW: 712.17; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

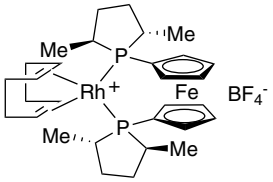


100mg
500mg

RHODIUM (Compounds)

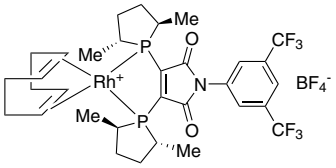
45-3037 **1,1'-Bis((2S,5S)-2,5-dimethylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate** *(854920-90-4)*
$C_{30}H_{44}BF_4FeP_2Rh$; FW: 712.17; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg



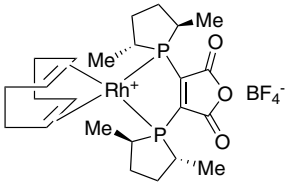
45-0766 **(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]-1-[3,5-bis(trifluoromethyl)phenyl]-1H-pyrrole-2,5-dione(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% [catASium® MNXylF(R)Rh]**
$Rh(C_8H_{12})(C_{24}H_{27}F_6NO_2P_2)^+BF_4^-$; FW: 835.31; red to dark red solid
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent WO 03084971.
For detailed technical note visit strem.com.

100mg



45-0750 **(-)-4,5-Bis[(2R,5R)-2,5-dimethylphospholanyl] (1,2-dimethyl-1,2-dihydropyridazine-3,6-dione)(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 95% [catASium® MNN(R) Rh]** *(908128-78-9)*
$Rh(C_8H_{12})(C_{18}H_{30}N_2O_2P_2)^+BF_4^-$; FW: 666.28; orange-brown pwdr.
air sensitive
Note: Sold in collaboration with Solvias for research purposes only. Patent WO 03084971.
For detailed technical note visit strem.com.

100mg



45-0754 **(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]maleic anhydride(1,5-cyclooctadiene)rhodium(I) hexafluoroantimonate, min. 97% [catASium® M(R) RhSbF$_6$]**
$Rh(C_8H_{12})(C_{16}H_{24}O_3P_2)^+SbF_6^-$; FW: 773.15; orange-brown pwdr.
air sensitive
Note: Sold in collaboration with Evonik for research purposes only. Patent WO 03084971.
For detailed technical note visit strem.com.

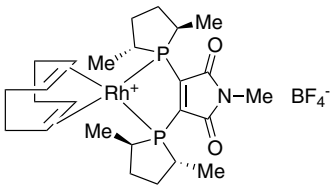
100mg
500mg

45-0758 **(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]maleic anhydride(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, min. 97% [catASium® M(R)RhOTf]**
$Rh(C_8H_{12})(C_{16}H_{24}O_3P_2)^+CF_3SO_3^-$; FW: 686.46; orange pwdr.
air sensitive
Note: Sold in collaboration with EVONIK for research purposes only. Patent WO 03084971.
For detailed technical note visit strem.com.

100mg

45-0176 **(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]-1-methyl-1H-pyrrole-2,5-dione(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% [catASium® MN(R)Rh]**
$Rh(C_8H_{12})(C_{17}H_{27}NO_2P_2)^+BF_4^-$; FW: 637.24; red-orange pwdr.
air sensitive
Note: Optical purity: 95% Sold in collaboration with Solvias for research purposes only. Patent WO 03084971.
For detailed technical note visit strem.com.

100mg



RHODIUM (Compounds)

45-0177 **(+)-2,3-Bis[(2S,5S)-2,5-dimethylphospholanyl]-1-methyl-1H-pyrrole-2,5-dione(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% [catASium® MN(S)Rh]** — 100mg

$Rh(C_8H_{12})(C_{17}H_{27}NO_2P_2)^+BF_4^-$; FW: 637.24; red orange pwdr.
air sensitive
Note: Optical purity: 95% Sold in collaboration with EVONIK for research purposes only. Patent WO 03084971.
For detailed technical note visit strem.com.

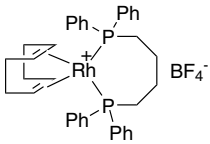
45-0184 **(2R,3R)-(-)-2,3-Bis(diphenylphosphino)bicyclo[2.2.1]hept-5-ene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% (R,R)-NORPHOS-Rh** *(521272-85-5)* — 100mg, 500mg

$[Rh(C_8H_{12})(C_{31}H_{28}P_2)]^+BF_4^-$; FW: 760.39; red-orange pwdr.
air sensitive
For detailed technical note visit strem.com.

45-0185 **(2S,3S)-(+)-2,3-Bis(diphenylphosphino)bicyclo[2.2.1]hept-5-ene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% (S,S)-NORPHOS-Rh** *(78355-59-6)* — 100mg, 500mg

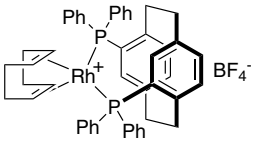
$[Rh(C_8H_{12})(C_{31}H_{28}P_2)]^+BF_4^-$; FW: 760.39; red-orange pwdr.
air sensitive
Note: Manufactured under license of Takasago patent application PCT/JP2011/064490.
For detailed technical note visit strem.com.

45-0190 **1,4-Bis(diphenylphosphino)butane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, dichloromethane adduct, min. 98%** *(79255-71-3)* — 100mg, 500mg



$[Rh(C_8H_{12})(C_{28}H_{28}P_2)]^+BF_4^- \cdot CH_2Cl_2$; FW: 724.36 (809.29); orange pwdr.
air sensitive
For detailed technical note visit strem.com.

45-0217 **(R)-(-)-4,12-Bis(diphenylphosphino)[2.2]paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%** *(849950-56-7)* — 100mg, 500mg

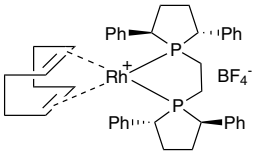


$C_{48}H_{46}BF_4P_2Rh$; FW: 874.54; yellow-orange solid
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

45-0218 **(S)-(+)-4,12-Bis(diphenylphosphino)[2.2]paracyclophane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97%** *(200808-73-7)* — 100mg, 500mg

$C_{48}H_{46}BF_4P_2Rh$; FW: 874.54
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

45-0201 **(-)-1,2-Bis((2R,5R)-2,5-diphenylphospholano) ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R)-Ph-BPE-Rh** *(528565-84-6)* — 100mg, 500mg, 2g



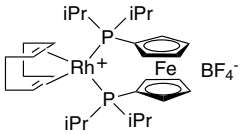
$[Rh(C_8H_{12})(C_{34}H_{36}P_2)]^+BF_4^-$; FW: 804.49; orange xtl.
air sensitive
Note: (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

45-0202 **(+)-1,2-Bis((2S,5S)-2,5-diphenylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (S,S)-Ph-BPE-Rh** *(849950-53-4)* — 100mg, 500mg, 2g

$[Rh(C_8H_{12})(C_{34}H_{36}P_2)]^+BF_4^-$; FW: 804.49; orange xtl.
air sensitive
Note: (S,S)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

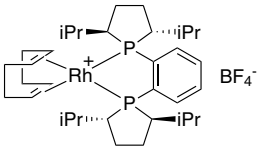
RHODIUM (Compounds)

45-0205 **1,1'-Bis(di-i-propylphosphino)ferrocene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98%** *(157772-65-1)*
$[[(C_3H_7)_2PC_5H_4]_2Fe](C_8H_{12})Rh^+BF_4^-$; FW: 716.22; orange-brown pwdr.
air sensitive
For detailed technical note visit strem.com.



250mg
1g

45-0210 **(+)-1,2-Bis((2R,5R)-2,5-di-i-propylphospholano) benzene)1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R)-i-Pr-DUPHOS-Rh** *(569650-64-2)*
$[Rh(C_8H_{12})(C_{26}H_{44}P_2)]^+BF_4^-$; FW: 716.47; red-orange xtl.
air sensitive
Note: Manufactured under US Patent 5,021,131 and US Patent 5,171,892. (R,R)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

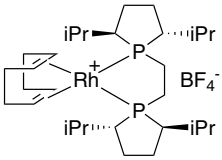


100mg
500mg
2g

45-0211 **(-)-1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)benzene(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 98% (S,S)-i-Pr-DUPHOS-Rh**
$[Rh(C_8H_{12})(C_{26}H_{44}P_2)]^+BF_4^-$; FW: 716.47; red-orange xtl.
air sensitive
Note: Manufactured under US Patent 5,021,131 and US Patent 5,171,892. (S,S)-Duphos and BPE Rhodium Catalysts Kit component.
For detailed technical note visit strem.com.

100mg
500mg
2g

45-3021 **1,2-Bis((2R,5R)-2,5-di-i-propylphospholano) ethane(cyclooctadiene)rhodium(I) tetrafluoroborate** *(136705-72-1)*
$C_{30}H_{56}BF_4P_2Rh$; FW: 668.42; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

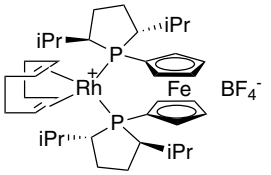


100mg
500mg

45-3022 **1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)ethane(cyclooctadiene)rhodium(I) tetrafluoroborate** *(213343-67-0)*
$C_{30}H_{56}BF_4P_2Rh$; FW: 668.42; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg

45-0328 **1,1'-Bis((2R,5R)-2,5-di-i-propylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate** *(849773-96-2)*
$C_{38}H_{60}BF_4FeP_2Rh$; FW: 824.39; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

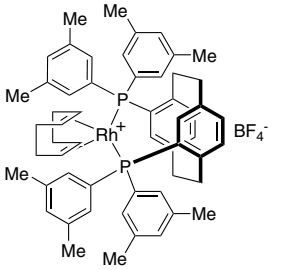


100mg
500mg

45-3029 **1,1'-Bis((2S,5S)-2,5-di-i-propylphospholano)ferrocene(cyclooctadiene) rhodium(I) tetrafluoroborate** *(854920-94-8)*
$C_{38}H_{60}BF_4FeP_2Rh$; FW: 824.39; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only.

100mg
500mg

45-0213 **(R)-(-)-4,12-Bis(di-3,5-xylylphosphino)[2.2] paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%** *(619334-93-9)*
$[C_{56}H_{62}P_2Rh]^+BF_4^-$; FW: 986.75; yellow-orange xtl.
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. Patent WO 2006/067412, US5874629.
For detailed technical note visit strem.com.



100mg

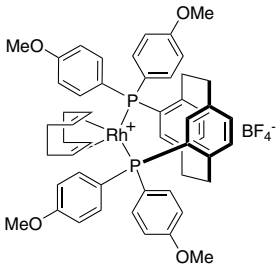
RHODIUM (Compounds)

45-0214 **(S)-(+)-4,12-Bis(di-3,5-xylylphosphino)[2.2]paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%** *(1174218-30-4)* — 100mg

$[C_{56}H_{62}P_2Rh]^+BF_4^-$; FW: 986.75; yellow-orange xtl.
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only.
Patent WO 2006/067412, US5874629.
For detailed technical note visit strem.com.

45-0255 **(R)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%** *(1038932-67-0)* — 100mg, 500mg

$C_{52}H_{54}BF_4O_4P_2Rh$; FW: 994.64
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

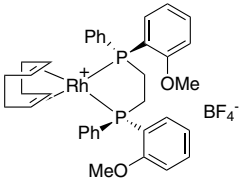


45-0256 **(S)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97%** — 100mg, 500mg

$C_{52}H_{54}BF_4O_4P_2Rh$; FW: 994.64
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

45-0225 **(R,R)-(-)-1,2-Bis[(o-methoxyphenyl)(phenyl) phosphino]ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 95%** *(56977-92-5)* — 100mg, 500mg

$[(C_{28}H_{28}O_2P_2)(C_8H_{12}Rh]^+BF_4^-$; FW: 756.38; orange pwdr.
air sensitive
For detailed technical note visit strem.com.

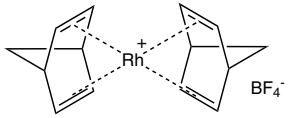


45-0226 **(S,S)-(+)-1,2-Bis[(o-methoxyphenyl)(phenyl)phosphino]ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 95%** *(71423-54-6)* — 100mg, 500mg

$[Rh(C_8H_{12})(C_{28}H_{28}O_2P_2)]^+BF_4^-$; FW: 756.38; orange pwdr.
air sensitive
For detailed technical note visit strem.com.

45-0230 **Bis(norbornadiene)rhodium(I) tetrafluoroborate, min. 96%** *(36620-11-8)* — 250mg, 1g, 5g

$Rh(C_7H_8)_2^+BF_4^-$; FW: 373.99; red solid
air sensitive, (store cold)
For detailed technical note visit strem.com.

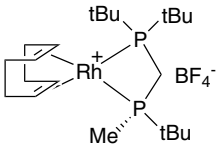


45-0655 NEW **Bromotris(triphenylphosphine)rhodium(I), 99% (99.9%-Rh)** *(14973-89-8)* — 250mg, 1g, 5g

$C_{54}H_{45}BrP_3Rh$; FW: 969.67
For detailed technical note visit strem.com.

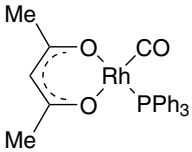
45-0667 **(R)-(-)-t-Butylmethyl(di-t-butylphosphinomethyl)phosphino(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% (R)-TCFP-Rh** *(705945-70-6)* — 100mg, 500mg

$Rh(C_8H_{12})(C_{14}H_{32}P_2)^+BF_4^-$; FW: 560.24; yellow to orange pwdr.
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. Patent WO 2005087370.
For detailed technical note visit strem.com.



RHODIUM (Compounds)

45-0355 NEW
Carbonyl(acetylacetonato)(triphenylphosphine) rhodium(I), 99% *(25470-96-6)*
$C_{24}H_{22}O_3PRh$; FW: 492.31; yellow solid
For detailed technical note visit strem.com.



250mg
1g
5g

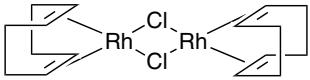
96-7650 **CATHy™ Catalyst Kit for Asymmetric Transfer Hydrogenation of Ketones and Imines**
See page 476

45-0265 **Chlorobis(cyclooctene)rhodium(I) dimer, min. 98%** *(12279-09-3)*
$[RhCl(C_8H_{14})_2]_2$; FW: 717.50; orange to red xtl.
air sensitive, (store cold)
250mg
1g

45-0270 **Chlorobis(ethylene)rhodium(I) dimer, 99%** *(12081-16-2)*
$[RhCl(C_2H_4)_2]_2$; FW: 388.93; rust-colored pwdr.
air sensitive, (store cold)
250mg
1g
5g

45-0350 **Chlorocarbonylbis(triphenylphosphine)rhodium(I), 99%** *(13938-94-8)*
$RhCl(CO)(P(C_6H_5)_3)_2$; FW: 690.93; yellow xtl.; m.p. 170° dec.
250mg
1g
5g

45-0380 **Chloro(1,5-cyclooctadiene)rhodium(I) dimer, 98%** *(12092-47-6)*
$[RhCl(1,5\text{-}C_8H_{12})]_2$; FW: 493.08; yellow to orange xtl.
hygroscopic
For detailed technical note visit strem.com.

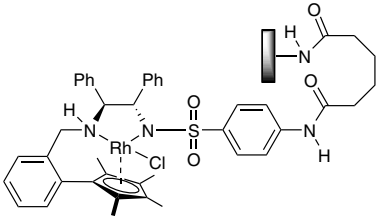


250mg
1g
5g

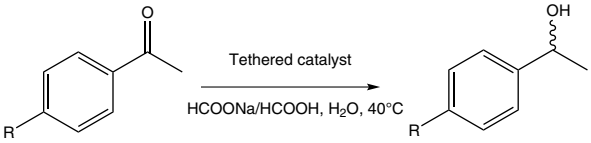
45-0450 **Chlorodicarbonylrhodium(I) dimer** *(14523-22-9)*
$[RhCl(CO)_2]_2$; FW: 388.76; red xtl.; m.p. 124-125°
air sensitive, (store cold)
For detailed technical note visit strem.com.
100mg
500mg
2g

45-0385 **Chloro[2-methyl{1S,2S-diphenyl-2-[(4-amidophenylsulfonyl)amido] ethyl}amino}phenyl]-2,3,4,5-tetramethylcyclopentadienyl]rhodium(III) Heterogenized Rh(III)-catalyst on a polyethylene sinter plate**
yellow-orange plate (1cm x 1cm x 1.5mm)
Note: Sold under license from PolyAn for research purposes only. PCT/ EP2010/060270 **Limited quantities available"
100mg
500mg

Technical Notes:
1. Catalytic generation of enantioenriched compounds.
2. Simple catalyst separation and recycling - continuously operated reactions possible.
3. Water as a solvent.
4. Formate as hydrogen donor - non-toxic, safe, easy to handle.
5. Irreversible hydrogen transfer (essentially no reverse reaction through the generation of CO_2).



Rhodium content: 0.05 mass%
Support material: Polyethylene
Weight of one plate: 100mg
Mean Particle Size: 30 microns



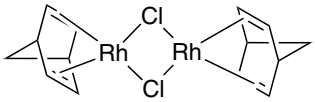
R = H, Cl, NO_2, OMe

References:

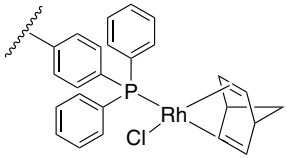
1. *Org. Lett.*, **2005**, *7*, 5489.
2. *Advanced Synthesis & Catalysis*, **2010**, *352(14-15),* 2497.
3. *Synfacts*, **2010**, *1*, 112.
4. *Advanced Synthesis & Catalysis,* **2011**, *353*, 8, 1335

RHODIUM (Compounds)

45-0500 **Chloronorbornadiene rhodium(I) dimer, 99%** *(12257-42-0)*
$[RhCl(C_7H_8)]_2$; FW: 461.00; yellow to orange pwdr.
250mg, 1g



45-1700 **Chloronorbornadienetriphenyl-phosphinerhodium(I) (~5% Rh) polymer-bound FibreCat™**
yellow, fibrous solid
air sensitive
Note: Limited quantities available.
5g

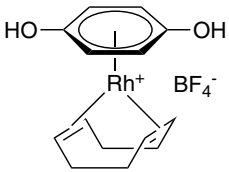


Technical Note:
1. Versatile polymer-bound catalyst used for the selective hydrogenation of polyolefins. The supported rhodium catalyst exhibits similar selectivity to its homogeneous counterpart. In most cases, rhodium leaching is negligible.

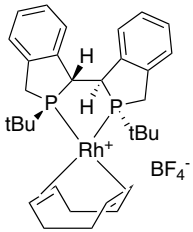
45-0600 **Chloropentaamminerhodium(III) chloride, 99%** *(13820-95-6)*
$[Rh(NH_3)_5Cl]Cl_2$; FW: 294.43; golden yellow xtl.
1g, 5g

45-0650 **Chlorotris(triphenylphosphine)rhodium(I), 99% WILKINSON'S CATALYST**
(14694-95-2)
$RhCl(P(C_6H_5)_3)_3$; FW: 925.23; maroon xtl.
For detailed technical note visit strem.com.
250mg, 1g, 5g

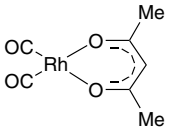
45-0652 **1,5-Cyclooctadiene(hydroquinone)rhodium(I) tetrafluoroborate** *(120967-70-6)*
$[Rh(C_8H_{12})(C_6H_6O_2)]^+BF_4^-$; FW: 408.00; yellow pwdr.
Note: Sold in collaboration with Brown University for research purposes only. Commercial use requires a license. US Patent Application 11/454,760.
For detailed technical note visit strem.com.
250mg, 1g



45-0663 **(1R,1'R,2S,2'S)-(+)-2,2'-Di-t-butyl-2,3,2',3'-tetrahydro-1,1'-bi-1H-isophosphindole(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 98% (R,R,S,S)-DUAN-PHOS-Rh**
$[Rh(C_8H_{12})(C_{24}H_{32}P_2)]^+BF_4^-$; FW: 680.35; orange xtl.
air sensitive
Note: Sold in collaboration with Chiral Quest for research purposes only. US Patent No. 7105702, 7153809, 7169953. Chiral Quest Catalyst and Ligand Toolbox Kit component.
For detailed technical note visit strem.com.
100mg

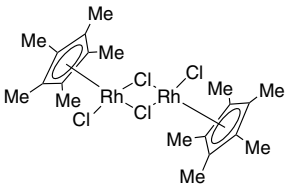


45-0700 **Dicarbonylacetylacetonato rhodium(I), 99%** *(14874-82-9)*
$Rh(CO)_2(C_5H_7O_2)$; FW: 258.04; greenish-red xtl.; m.p. 144-147° subl.
For detailed technical note visit strem.com.
250mg, 1g, 5g



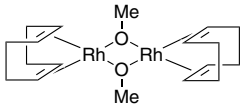
45-0739 **Dicarbonyl(pentamethylcyclopentadienyl)rhodium(I), 99% (99.9%-Rh)**
(32627-01-3)
$(CH_3)_5C_5Rh(CO)_2$; FW: 294.16; red xtl.
air sensitive, (store cold)
100mg, 500mg

45-0195 **Dichloro(pentamethylcyclopentadienyl) rhodium(III) dimer, 99%** *(12354-85-7)*
$[(CH_3)_5C_5RhCl_2]_2$; FW: 618.08; red xtl.
Note: CATHy™ Catalyst Kit component.
For detailed technical note visit strem.com.
100mg, 500mg, 2g



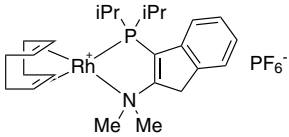
RHODIUM (Compounds)

45-0390 **Di-μ-methoxobis(1,5-cyclooctadiene) dirhodium(I), min. 98%** *(12148-72-0)*
$[Rh(OCH_3)(C_8H_{12})]_2$; FW: 484.24; yellow pwdr.



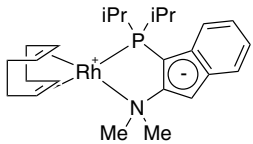
50mg
250mg
1g

45-0198 **3-Di-i-propylphosphino-2-(N,N-dimethylamino)-1H-indene(1,5-cyclooctadiene)rhodium(I) hexafluorophosphate, min. 98%**
$[RhC_{25}H_{38}NP]^+PF_6^-$; FW: 631.42; orange pwdr.
For detailed technical note visit strem.com.



250mg
1g

45-0197 **3-Di-i-propylphosphoranylidene-2-(N,N-dimethylamino)-1H-indene(1,5-cyclooctadiene) rhodium(I), min. 95%** *(540492-55-5)*
$C_{25}H_{37}NPRh$; FW: 485.45; orange-red xtl.
For detailed technical note visit strem.com.

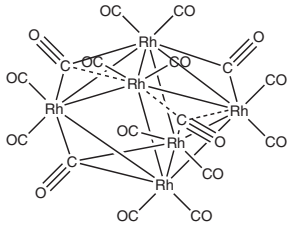


250mg
1g

96-4730 **(R,R)-Duphos and BPE Rhodium Catalyst Kit for Asymmetric Hydrogenation**
See page 479

96-4731 **(S,S)-Duphos and BPE Rhodium Catalyst Kit for Asymmetric Hydrogenation**
See page 480

45-0820 **Hexarhodium hexadecacarbonyl, min. 98%** *(28407-51-4)*
$Rh_6(CO)_{16}$; FW: 1065.61; black xtl.; d. 2.87



250mg
1g

45-0900 **Hydridocarbonyltris(triphenylphosphine)rhodium(I), 98%** *(17185-29-4)*
$RhH(CO)(P(C_6H_5)_3)_3$; FW: 918.79; light yellow xtl.; m.p. 138° dec.
air sensitive

250mg
1g
5g

45-0915 **Hydridotetrakis(triphenylphosphine)rhodium(I), 99%** *(18284-36-1)*
$RhH[P(C_6H_5)_3]_4$; FW: 1153.06; yellow microxtl.
For detailed technical note visit strem.com.

250mg
1g

45-1000 **Hydroxy(1,5-cyclooctadiene)rhodium(I) dimer, min. 97%** *(73468-85-6)*
$[RhOH(C_8H_{12})]_2$; FW: 456.19; yellow pwdr.

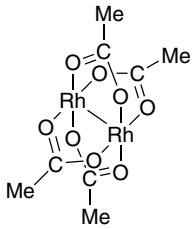
250mg
1g

45-0670 **Polymer-bound chlorotris(triphenylphosphine)rhodium(I) on styrene-divinylbenzene copolymer (20% cross-linked)** *(14694-95-2)*
maroon beads; 20-60 mesh
air sensitive
For detailed technical note visit strem.com.

1g
5g

45-1715 **Potassium hexanitritorhodate(III), min. 97%** *(17712-66-2)*
See page 342

45-1730 **Rhodium(II) acetate dimer, 99%** *(15956-28-2)*
$Rh_2(OOCCH_3)_4$; FW: 442.00; greenish-black xtl.
For detailed technical note visit strem.com.



100mg
500mg
2g
25g

45-1800 **Rhodium(III) acetylacetonate, 97+% (99.9%-Rh)** *(14284-92-5)*
$Rh(C_5H_7O_2)_3$; FW: 400.24; yellow xtl.; m.p. 260°; b.p. dec. >280° (subl. 240°/0.1mm)

250mg
1g
5g

RHODIUM (Compounds)

45-1876 **Rhodium(III) bromide dihydrate** *(15608-29-4)* — 500mg, 2g
$RhBr_3 \cdot 2H_2O$; FW: 342.63 (378.66); brown to black xtl.

45-1878 **Rhodium(III) chloride, anhydrous** *(10049-07-7)* — 250mg, 1g, 5g
$RhCl_3$; FW: 209.28; red pwdr.; m.p. 450° dec.
hygroscopic
For detailed technical note visit strem.com.

45-1880 **Rhodium(III) chloride hydrate (38-41% Rh)** *(20765-98-4)* — 250mg, 1g, 5g, 25g
$RhCl_3 \cdot XH_2O$; FW: 209.28; dark red pwdr.; m.p. 100° (dec.)
hygroscopic
For detailed technical note visit strem.com.

45-1805 **Rhodium(III) iodide (99.9+%-Rh)** *(15492-38-3)* — 250mg, 1g, 5g
RhI_3; FW: 483.62; black pwdr.
hygroscopic

45-1808 HAZ **Rhodium(III) nitrate, solution in water (10% Rh)** *(10139-58-9)* — 1g, 5g, 25g
$Rh(NO_3)_3$; FW: 288.60; amber liq.

45-1809 **Rhodium(II) octanoate dimer, 98%** *(73482-96-9)* — 500mg, 1g, 5g
$[Rh(C_7H_{15}COO)_2]_2$; FW: 778.64; green pwdr.

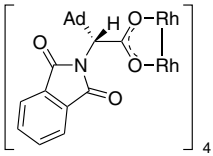
45-1865 **Rhodium(III) oxide, anhydrous (99.9%-Rh)** *(12036-35-0)* — 500mg, 2g
Rh_2O_3; FW: 253.81; gray pwdr.; m.p. 1100° dec.; d. 8.20

45-1866 **Rhodium(III) oxide pentahydrate, 99%** *(39373-27-8)* — 250mg, 1g
$Rh_2O_3 \cdot 5H_2O$; FW: 253.81 (343.89); yellow pwdr.; m.p. dec.

45-1960 **Rhodium(II) trifluoroacetate dimer, min. 95%** *(31126-95-1)* — 100mg, 500mg, 2g
$Rh_2(OOCCF_3)_4$; FW: 657.88; green pwdr.
hygroscopic

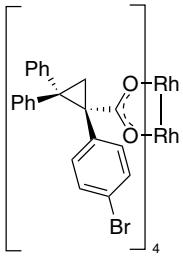
45-2000 **Sodium hexachlororhodate(III) hydrate** *(14972-70-4)*
See page 418

45-2070 **Tetrakis[(R)-(-)-(1-adamantyl)-(N-phthalimido)acetato] dirhodium(II) Rh_2(R-PTAD)$_4$** *(909393-65-3)* — 50mg, 250mg
$C_{80}H_{80}N_4O_{16}Rh_2$; FW: 1559.32; green pwdr.
Note: Sold for research purposes only. US Patent Application 11/606,782.
For detailed technical note visit strem.com.



45-2071 **Tetrakis[(S)-(+)-(1-adamantyl)-(N-phthalimido)acetato]dirhodium(II) Rh_2(S-PTAD)$_4$** *(909389-99-7)* — 50mg, 250mg
$C_{80}H_{80}N_4O_{16}Rh_2$; FW: 1559.32; green pwdr.
Note: Sold for research purposes only. US Patent Application 11/606,782.
For detailed technical note visit strem.com.

45-2080 **Tetrakis[(R)-(-)-[(1R)-1-(4-bromophenyl)-2,2-diphenyl-cyclopropanecarboxylato]dirhodium(II) Rh_2(R-BTP-CP)$_4$** *(1345974-62-0)* — 50mg, 250mg
$C_{88}H_{64}Br_4O_8Rh_2$; FW: 1774.87; green solid
Note: Patent PCT/US2012/040608.
For detailed technical note visit strem.com.

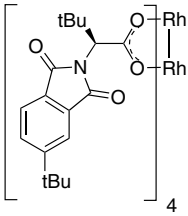


45-2081 **Tetrakis[(S)-(+)-[(1S)-1-(4-bromophenyl)-2,2-diphenylcyclopropanecarboxyl-ato]dirhodium(II) Rh_2(S-BTPCP)$_4$** *(1345974-63-1)* — 50mg, 250mg
$C_{88}H_{64}Br_4O_8Rh_2$; FW: 1774.87; green solid
Note: Patent PCT/US2012/040608.
For detailed technical note visit strem.com.

RHODIUM (Compounds)

45-2105 NEW

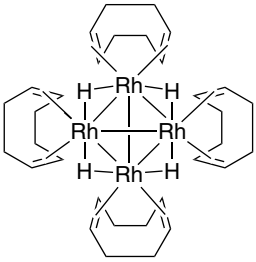
Tetrakis[5-t-butyl-phthaloyl-N-(S)-tert-leucinato] dirhodium bis(ethyl acetate) adduct Rh2(S-tertPTTL)4 *(1884452-99-6)*
$C_{72}H_{88}N_4O_{16}Rh_2$; FW: 1471.30; green pwdr.
Note: Sold for research and development purposes only.
Patent 2014. 2014903620.
For detailed technical note visit strem.com.



50mg
250mg

45-2050

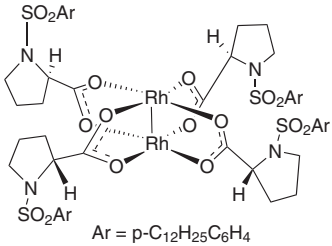
Tetrakis(1,5-cyclooctadiene)tetra-μ-hydridotetrarhodium, min. 98% *(82660-97-7)*
$[RhH(C_8H_{12})]_4$; FW: 848.38; red xtl.
air sensitive



100mg
500mg

45-2100

Tetrakis[(R)-(+)-N-(p-dodecylphenylsulfonyl) prolinato]dirhodium(II) Rh_2(R-DOSP)$_4$ *(178879-60-2)*
$[C_{23}H_{36}NO_4S]_4Rh_2$; FW: 1896.22; green pwdr.
Note: Sold under license for research purposes.
For detailed technical note visit strem.com.



50mg
250mg

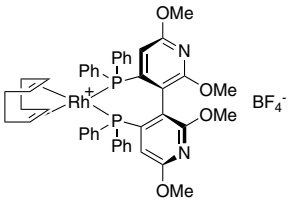
45-2101

Tetrakis[(S)-(-)-N-(p-dodecylphenylsulfonyl)prolinato]dirhodium(II) Rh_2(S-DOSP)$_4$ *(179162-34-6)*
$[C_{23}H_{36}NO_4S]_4Rh_2$; FW: 1896.22; green pwdr.
Note: Sold under license for research purposes.
For detailed technical note visit strem.com.

50mg
250mg

45-2110

(R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% *(573718-56-6)*
$[C_{46}H_{46}N_2O_4P_2Rh]^+BF_4^-$; FW: 942.53; yellow-orange xtl.
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. Patent US5886182.
For detailed technical note visit strem.com.



100mg

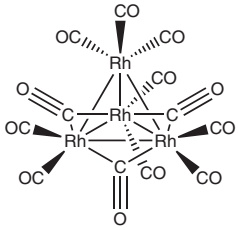
45-2111

(S)-(-)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% *(1174131-02-2)*
$[C_{46}H_{46}N_2O_4P_2Rh]^+BF_4^-$; FW: 942.53; yellow-orange xtl.
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only.
Patent US5886182.
For detailed technical note visit strem.com.

100mg

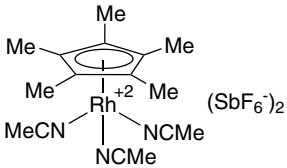
RHODIUM (Compounds)

45-2150 **Tetrarhodium dodecacarbonyl, min. 98%** *(19584-30-6)*
$Rh_4(CO)_{12}$; FW: 747.75; dark red xtl.; d. 2.52
air sensitive, light sensitive, (store cold)



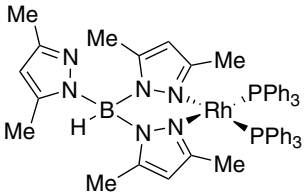
50mg
250mg
1g

45-2160 **Tris(acetonitrile)pentamethylcyclopentadienylrhodium(III) hexafluoroantimonate, min. 98%** *(59738-27-1)*
$[Rh(C_{10}H_{15})(CH_3CN)_3]^+(SbF_6^-)_2$; FW: 832.79; light yellow pwdr.
For detailed technical note visit strem.com.



50mg
250mg
1g

45-0275 **[Tris(3,5-dimethyl-1H-pyrazolato)hydroborato]bis(triphenylphosphine)rhodium(I) toluene adduct, 99%** *(341483-76-9)*
$C_{51}H_{52}BN_6P_2Rh$; FW: 924.66; red xtl.



50mg
250mg

RUBIDIUM (Elemental Forms)

93-3735 amp HAZ **Rubidium (99+%) (prescored ampoule)** *(7440-17-7)*
Rb; FW: 85.47; under argon; m.p. 38.9°; b.p. 688°; d. 1.532
moisture sensitive, pyrophoric
1g
5g

37-3736 amp HAZ **Rubidium (99.9+%) (breakseal ampoule)** *(7440-17-7)*
Rb; FW: 85.47; under argon; m.p. 38.9°; b.p. 688°; d. 1.532
moisture sensitive, pyrophoric
1g
5g

93-3736 amp HAZ **Rubidium (99.9+%) (prescored ampoule)** *(7440-17-7)*
Rb; FW: 85.47; under argon; m.p. 38.9°; b.p. 688°; d. 1.532
moisture sensitive, pyrophoric
1g
5g
25g
50g

RUBIDIUM (Compounds)

93-3701 **Rubidium acetate (99%-Rb)** *(563-67-7)*
$RbOOCCH_3$; FW: 144.52; white xtl.; m.p. 246°
hygroscopic
10g
50g

93-3720 **Rubidium bromide (99%-Rb)** *(7789-39-1)*
RbBr; FW: 165.38; white xtl.; m.p. 682°; b.p. 1340°; d. 3.35
hygroscopic
10g
50g

93-3726 **Rubidium bromide (99.9%-Rb)** *(7789-39-1)*
RbBr; FW: 165.38; white xtl.; m.p. 682°; b.p. 1340°; d. 3.35
hygroscopic
5g
25g

93-3703 **Rubidium carbonate (99%-Rb)** *(584-09-8)*
Rb_2CO_3; FW: 230.95; white xtl.; m.p. 837°
10g
50g

93-3725 **Rubidium carbonate (99.8+%-Rb)** *(584-09-8)*
Rb_2CO_3; FW: 230.95; white pwdr.; m.p. 837°
5g
25g

93-3705 **Rubidium chloride (99%-Rb)** *(7791-11-9)*
RbCl; FW: 120.92; white xtl.; m.p. 715°; b.p. 1390°; d. 2.80
hygroscopic
10g
50g

93-3704 **Rubidium chloride (99.8%-Rb)** *(7791-11-9)*
RbCl; FW: 120.92; white xtl.; m.p. 715°; b.p. 1390°; d. 2.80
hygroscopic
10g
50g

RUBIDIUM (Compounds)

93-3730 HAZ	**Rubidium fluoride, anhydrous (99.8%-Rb)** *(13446-74-7)* RbF; FW: 104.47; white pwdr.; m.p. 775°; b.p. 1410°; d. 3.557 *hygroscopic*	5g 25g
93-3708 HAZ	**Rubidium hydroxide, 50% aqueous solution (99+%-Rb)** *(1310-82-3)* RbOH; FW: 102.48; colorless liq. *air sensitive*	5g 25g 100g
93-3721 HAZ	**Rubidium hydroxide hydrate, fused solid (99.8%-Rb)** *(12026-05-0)* $RbOH{\cdot}XH_2O$; FW: 102.48; white pwdr.; m.p. 300-302°; d. 3.203 *hygroscopic*	5g 25g
93-3710	**Rubidium iodide, 99%** *(7790-29-6)* RbI; FW: 212.37; white xtl.; m.p. 642°; b.p. 1300°; d. 3.55 *hygroscopic*	10g 50g
93-3709	**Rubidium iodide (99.8%-Rb)** *(7790-29-6)* RbI; FW: 212.37; white xtl.; m.p. 642°; b.p. 1300°; d. 3.55 *hygroscopic*	5g 25g
93-3711 HAZ	**Rubidium nitrate (99%-Rb)** *(13126-12-0)* $RbNO_3$; FW: 147.47; white xtl.; d. 3.11 *hygroscopic*	10g 50g
93-3713 HAZ	**Rubidium perchlorate, anhydrous (99.9%-Rb)** *(13510-42-4)* $RbClO_4$; FW: 184.92; white xtl.; d. 2.80 *hygroscopic*	10g 50g
93-3714	**Rubidium sulfate (99.8%-Rb)** *(7488-54-2)* Rb_2SO_4; FW: 267.00; white xtl.; m.p. 1050°; b.p. ~1700°; d. 3.613	10g 50g
37-5000	**2,2,6,6-Tetramethyl-3,5-heptanedionato rubidium [Rb(TMHD)]** *(166439-15-2)* $RbC_{11}H_{19}O_2$; FW: 268.74; white to off-white pwdr.	1g 5g 25g

RUTHENIUM (Elemental Forms)

78-0062	**Platinum-ruthenium/tetra-n-octylammonium chloride colloid (~7 wt% Pt, ~3.5 wt% Ru)** *(7440-06-4)* *See* page 162	
44-4065	**Ruthenium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 4401)** *(7440-18-8)* black pwdr. (d50=18 µm); SA: 900m²/g Note: Sold in collaboration with BASF for research purposes only. BASF Heterogeneous Catalyst Kit component.	5g 25g

Technical Note:

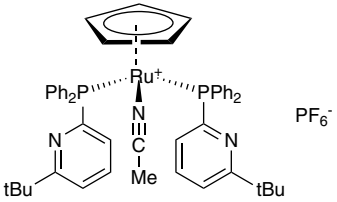
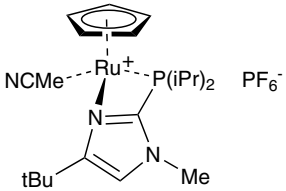
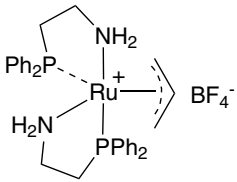
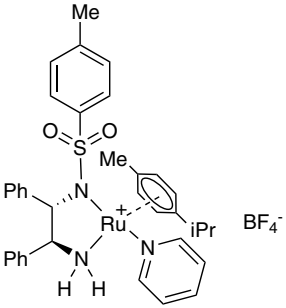
1. Escat™ 4401 catalyst is recommended for a broad range of reactions common to ruthenium on carbon catalysts. Specifically, it is well suited for carbonyl hydrogenation, such as sugars.

44-4060	**Ruthenium, 5% on activated carbon, (50-70% wetted powder) Evonik Noblyst® P3060** *(7440-18-8)* wetted, black pwdr. Note: Sold in collaboration with Evonik for research purposes only. Evonik Heterogeneous Catalyst Kit component. Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation component.	10g 50g
44-3880	**Ruthenium, 0.5% on alumina** *(7440-18-8)* Ru on alumina; 1/8" x 1/8" pellets; SA: ~100 m²/g	25g 100g
44-3910	**Ruthenium, 5% on alumina** *(7440-18-8)* Ru on alumina; pwdr.; SA: 80-100 m²/g; P.Vol. 0.40 cc/g	25g 100g
44-3000 HAZ	**Ruthenium black (99.9%)** *(7440-18-8)* Ru; FW: 101.07; pwdr.; m.p. 2310°; b.p. 3900°; d. 12.3	500mg 2g 10g
44-4000 HAZ	**Ruthenium, 0.5% on carbon** *(7440-18-8)* Ru on carbon; 4-12 mesh gran.; SA: ~1000 m²/g	25g 100g
44-4050 HAZ	**Ruthenium, 5% on carbon** *(7440-18-8)* Ru on carbon; pwdr.	5g 25g 100g
	Ruthenium nanoparticles - surfactant and reactant-free (pure), manufactured via laser ablation *(7440-18-8)* *See* page 165	

RUTHENIUM (Elemental Forms)

44-4275 HAZ	**Ruthenium powder (99.9%)** *(7440-18-8)* Ru; FW: 101.07; -200 mesh bluish-gray pwdr.; m.p. 2310°; b.p. 3900°; d. 12.3	1g 5g
44-4270 HAZ	**Ruthenium powder (99.9%)** *(7440-18-8)* Ru; FW: 101.07; -325 mesh bluish-gray pwdr.; m.p. 2310°; b.p. 3900°; d. 12.3	1g 5g
44-4300 HAZ	**Ruthenium powder (99.95%)** *(7440-18-8)* Ru; FW: 101.07; -325 mesh bluish-gray pwdr.; m.p. 2310°; b.p. 3900°; d. 12.3	1g 5g
44-4350 HAZ	**Ruthenium powder (99.99%)** *(7440-18-8)* Ru; FW: 101.07; -200 mesh pwdr.; m.p. 2310°; b.p. 3900°; d. 12.3	1g 5g

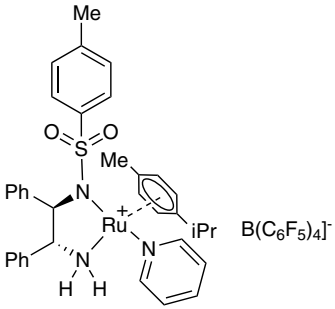
RUTHENIUM (Compounds)

44-0010	**Acetatodicarbonylruthenium, polymer** *(26317-70-4)* $[Ru(CO)_2CH_3COO]_n$; FW: $(216.14)_n$; orange pwdr.	1g 5g
44-0015	**Acetonitrilebis[2-diphenylphosphino-6-t-butylpyridine]cyclopentadienyl-ruthenium(II) hexafluorophosphate, min. 98%** *(776230-17-2)* $Ru(C_5H_5)(CH_3CN)[C_{21}H_{22}NP]_2^+PF_6^-$; FW: 990.94; yellow microxtl. *air sensitive* **For detailed technical note visit strem.com.** 	250mg 1g
44-0017	**Acetonitrile(cyclopentadienyl)[2-(di-i-propyl-phosphino)-4-(t-butyl)-1-methyl-1H-imidazole] ruthenium(II) hexafluorophosphate, min. 98% [Alkene Zipper Catalyst]** *(930601-66-4)* $C_{21}H_{35}F_6N_3P_2Ru$; FW: 606.53; orange solid *air sensitive, (store cold)* **For detailed technical note visit strem.com.** 	100mg 500mg
44-6085 NEW	**Allylbis(2-aminoethyldiphenylphosphino)ruthenium(II) tetrafluoroborate, 98%** *(1352633-94-3)* $C_{31}H_{37}BF_4N_2P_2Ru$; FW: 687.46; off-white to pale yellow solid Note: Sold in collaboration with GreenCentre for research purposes only. Patents: PCT/2013/010275. **For detailed technical note visit strem.com.** 	100mg 500mg
44-6078	**{[(1R,2R)-2-Amino-1,2-diphenylethyl] (4-toluenesulfonyl)amido}(p-cymene) (pyridine)ruthenium(II) tetrafluoroborate, min. 97%** *(1192483-14-9)* $C_{36}H_{40}BF_4N_3O_2RuS$; FW: 766.70; yellow-brown solid *air sensitive* Note: Sold under license from Kanata for research purposes only. WO 2009132443. 	100mg 500mg

RUTHENIUM (Compounds)

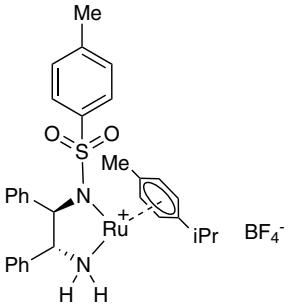
44-6079 **{[(1S,2S)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine)ruthenium(II) tetrafluoroborate, min. 97%** *(1192483-27-4)* — 100mg, 500mg
$C_{36}H_{40}BF_4N_3O_2RuS$; FW: 766.70; yellow-brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only.
WO 2009132443.

44-6080 **{[(1R,2R)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine)ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%** *(1192483-19-4)* — 100mg, 500mg
$C_{60}H_{40}BF_{20}N_3O_2RuS$; FW: 1358.90; yellow brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009132443.



44-6081 **{[(1S,2S)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine)ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%** *(1192483-27-4)* — 100mg, 500mg
$C_{60}H_{40}BF_{20}N_3O_2RuS$; FW: 1358.90; yellow-brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009132443.

44-6075 **{[(1R,2R)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II) tetrafluoroborate, min. 97%** *(1192483-03-6)* — 100mg, 500mg
$C_{31}H_{35}BF_4N_2O_2RuS$; FW: 687.60; brown-purple solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009132443.



44-6076 **{[(1S,2S)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II) tetrafluoroborate, min. 97%** *(1192483-26-3)* — 100mg, 500mg
$C_{31}H_{35}BF_4N_2O_2RuS$; FW: 687.60; brown-purple solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009132443.

44-0020 **Ammonium hexachlororuthenate(IV), 99%** *(18746-63-9)*
See page 5

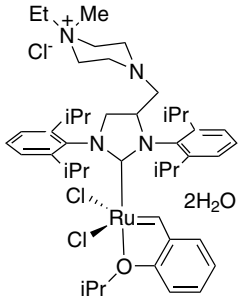
96-0400 **Apeiron Ruthenium Metathesis Catalyst Kit**
See page 466

44-6200 **Bis(cyclopentadienyl)ruthenium, 99% (99.9%-Ru) (Ruthenocene)** *(1287-13-4)* — 1g, 5g
$(C_5H_5)_2Ru$; FW: 231.26; light yellow xtl.; m.p. 194-198°

RUTHENIUM (Compounds)

44-0759
NEW

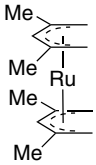
(1,3-Bis(2,6-diisopropylphenyl)-4-((4-ethyl-4-methylpiperzain-1-ium-1-yl)methyl)imidazolidin-2-ylidene)(2-isopropoxybenzylidene)ruthenium(II) chloride dihydrate FixCat *(1799947-97-9)*
$C_{45}H_{67}Cl_2N_4ORuCl\ 2(H_2O)$; FW: 887.47 (923.50); green pwdr.
(store cold)
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 61/603,790; PCT/EP2013/053967
For detailed technical note visit strem.com.



100mg
500mg

44-0030

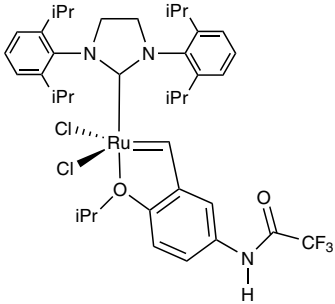
Bis(2,4-dimethylpentadienyl)ruthenium(II), 99% *(85908-78-7)*
$(C_7H_{11})_2Ru$; FW: 291.39; yellow solid; m.p. 85°
For detailed technical note visit strem.com.



250mg
1g

44-0055

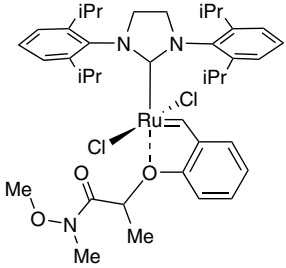
[1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene]-[2-i-propoxy-5-(trifluoroacetamido)phenyl] methyleneruthenium(II) dichloride M71-S1Pr *(1212008-99-5)*
$C_{39}H_{50}Cl_2F_3N_3O_2Ru$; FW: 821.80; green pwdr.
Note: Sold under license from Omega Cat System for research purposes only WO 2008/065187, PCT/EP2008/054901, Fr n°08/05403.
For detailed technical note visit strem.com.



100mg
500mg

44-0750
NEW

[1,3-Bis(2,6-di-i-propylphenyl)imidazolidin-2-ylidene]{2-[[1-(methoxy(methyl)amino)-1-oxopropan-2-yl]oxy]benzylidene}ruthenium(II) dichloride GreenCat *(1448663-06-6)*
$C_{39}H_{53}Cl_2N_3O_3Ru$; FW: 783.33; green pwdr.
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 61/666,009, PCT/EP2013/062435. Aperion Ruthenium Metathesis Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

44-0040

Bis(ethylcyclopentadienyl)ruthenium(II), 98% (99.9%-Ru) *(32992-96-4)*
$[(CH_3CH_2)C_5H_4]_2Ru$; FW: 287.37; pale yellow liq.; d. 1.3412
Note: Available prepacked in ALD cylinder- see 98-4009, 98-4067.

500mg
2g
10g

98-4009

Bis(ethylcyclopentadienyl)ruthenium(II), 98% (99.9%-Ru), 44-0040, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(32992-96-4)*
$[(CH_3CH_2)C_5H_4]_2Ru$; FW: 287.37; pale yellow liq.; d. 1.3412
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4067.

10g

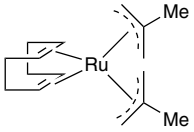
98-4067

Bis(ethylcyclopentadienyl)ruthenium(II), 98% (99.9%-Ru), 44-0040, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD *(32992-96-4)*
$[(CH_3CH_2)C_5H_4]_2Ru$; FW: 287.37; pale yellow liq.; d. 1.3412
Note: Liquid ruthenium CVD precursor.

10g
20g

RUTHENIUM (Compounds)

44-0046 **Bis(2-methylallyl)(1,5-cyclooctadiene)ruthenium(II), min. 97%** *(12289-94-0)*
$(C_4H_7)_2(C_8H_{12})Ru$; FW: 319.45; tan to brown pwdr.; m.p. 80-85°
(store cold)
For detailed technical note visit strem.com.

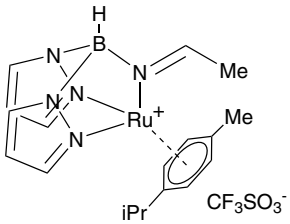


250mg
1g
5g

44-0050 **Bis(pentamethylcyclopentadienyl)ruthenium, 99% (99.9%-Ru) (Decamethylruthenocene)** *(84821-53-4)*
$[(CH_3)_5C_5]_2Ru$; FW: 371.53; off-white xtl.

500mg
2g

44-0355 NEW **[Bis(pyrazol-1-yl)(acetimino)hydridoborato](p-cymene)ruthenium(II) trifluoromethanesulfonate** *(1607436-49-6)*
$C_{19}H_{25}BF_3N_5O_3RuS$; FW: 572.38; yellow pwdr.
Note: Sold under license from USC for research purposes only. U.S. Patent No. 62/082,992.
For detailed technical note visit strem.com.



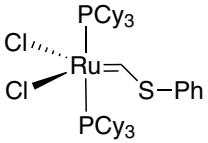
100mg
500mg

44-0060 **Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)(1,5-cyclooctadiene)ruthenium(II), 99% (99.9%-Ru)** *(329735-79-7)*
$(C_{11}H_{19}O_2)_2(C_8H_{12})Ru$; FW: 575.80; yellow-orange microxtl.; m.p. 187-190°; b.p. dec. 220° (subl. 100°/0.05mm)

Technical Note:
1. Ruthenium precursor for MOCVD. Air stable, readily sublimable organometallic complex.

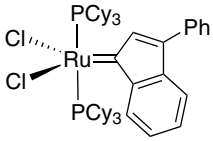
1g
5g

44-0073 **Bis(tricyclohexylphosphine)[(phenylthio)methylene]ruthenium(II) dichloride, min. 97%** *(219770-99-7)*
$RuCl_2(CHSC_6H_5)[P(C_6H_{11})_3]_2$; FW: 855.02; purple pwdr.
For detailed technical note visit strem.com.



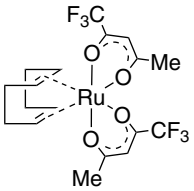
1g
5g

44-0063 **Bis(tricyclohexylphosphine)-3-phenyl-1H-inden-1-ylideneruthenium(II) dichloride** *(250220-36-1)*
$RuCl_2(C_{15}H_{10})[P(C_6H_{11})_3]_2$; FW: 923.07; brown pwdr.
Note: Sold in collaboration with Umicore for research purposes only.
For detailed technical note visit strem.com.



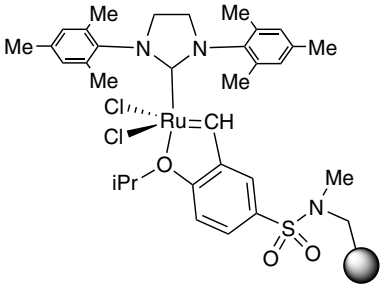
1g
5g

44-8165 NEW **Bis(1,1,1-trifluoro-2,4-pentanedionato)(1,5-cyclooctadiene)ruthenium(II), 98%** *(38704-78-8)*
$C_{18}H_{20}F_6O_4Ru$; FW: 515.41; red-brown low melting solid; b.p. 120-160/1 mm



50mg
250mg

44-0083 **1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene[2-(i-propoxy)-5-(N,N-dimethyl aminosulfonyl)phenyl]methyleneruthenium(II) dichloride (resin supported) Zhan Catalyst II**
FW: >1000; black solid;
Loading: 0.5 mmol/g
Note: Sold under license from Zannan for research purposes only. Patents CN1907992A, US 2007/0043180 A1, PCT WO 2007/003135 A1.
For detailed technical note visit strem.com.

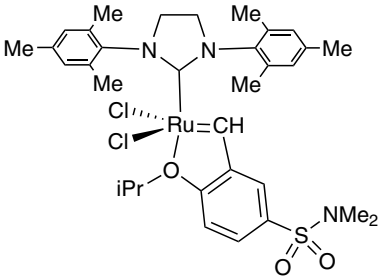


100mg
500mg
2g

RUTHENIUM (Compounds)

44-0082

1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydro-imidazol-2-ylidene[2-(i-propoxy)-5-(N,N-di-methylaminosulfonyl)phenyl]methylene-ruthenium (II) dichloride, Zhan Catalyst-1B, min 96% *(918870-76-5)*
$RuCl_2[C_{21}H_{26}N_2][C_{12}H_{17}NO_3S]$; FW: 733.75; green solid
Note: Sold under license from Zannan for research purposes only. Patents CN1907992A, US 2007/0043180 A1, PCT WO 2007/003135 A1.
For detailed technical note visit strem.com.

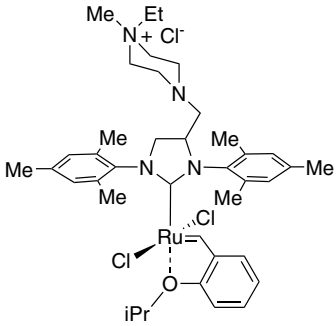


100mg
500mg
2g

44-0768

NEW

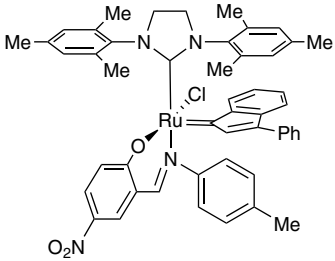
[1,3-Bis(2,4,6-trimethylphenyl)-4-[(4-ethyl-4-methylpiperazin-1-ium-1-yl) methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene)dichlororuthenium(II) chloride AquaMet *(1414707-08-6)*
$C_{39}H_{55}Cl_3N_4ORu$; FW: 803.31; green pwdr.
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 61/603,790,PCT/EP2013/053967. Aperion Ruthenium Metathesis Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

44-0047

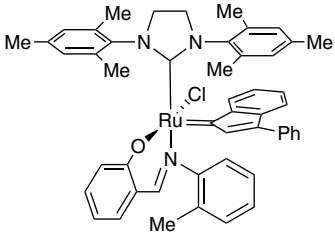
[1,3-Bis(2,4,6-trimethylphenyl)-2-imidazolidinylidene]-[2-[[(4-methylphenyl) imino]methyl]-4-nitrophenolyl]-[3-phenyl-1H-inden-1-ylidene]ruthenium(II) chloride *(934538-04-2)*
$C_{50}H_{47}ClN_4O_3Ru$; FW: 888.46; orange-brown solid
Note: Sold in collaboration with Umicore for research purposes only. EP 1 468 004 B1, US 2002/0349956.
For detailed technical note visit strem.com.



100mg
500mg

44-0049

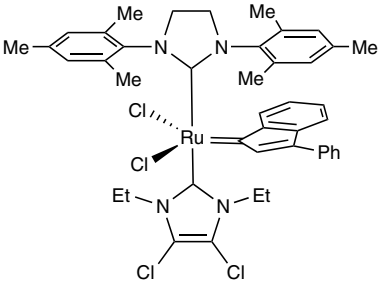
[1,3-Bis(2,4,6-trimethylphenyl)-2-imidazo-lidinylidene]-[2-[[(2-methylphenyl)imino] methyl]phenolyl]-[3-phenyl-1H-inden-1-ylidene]ruthenium(II) chloride *(934538-12-2)*
$C_{50}H_{48}ClN_3ORu$; FW: 843.46; red-brown solid
Note: Sold in collaboration with Umicore for research purposes only. EP 1 468 004 B1, US 2002/0349956.
For detailed technical note visit strem.com.



100mg
500mg

44-0026

1,3-Bis(2,4,6-trimethylphenyl)-2-imidazo-lidinylidene)(3-phenyl-1H-inden-1-ylidene) (4,5-dichloro-1,3-diethyl-1,3-dihydro-2H-imidazol-2-ylidene)ruthenium(II) chloride *(1228169-92-3)*
$C_{43}H_{46}Cl_4N_4Ru$; FW: 861.73; orange-brown solid
Note: Sold in collaboration with Umicore for research purpose only. Patent US 10,873,026.
For detailed technical note visit strem.com.

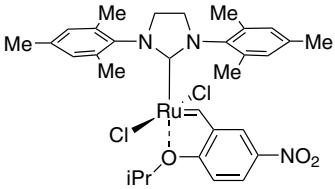


50mg
250mg
1g

RUTHENIUM (Compounds)

44-0758 NEW

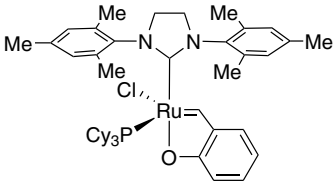
[1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)]-(2-i-propoxy-5-nitrobenzylidene) ruthenium(II) dichloride nitro-Grela *(502964-52-5)*
$C_{31}H_{37}Cl_2N_3O_3Ru$; FW: 671.62; green pwdr.
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 6,867,303, PCT/EP2003/01122. Aperion Ruthenium Metathesis Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

44-0753 NEW

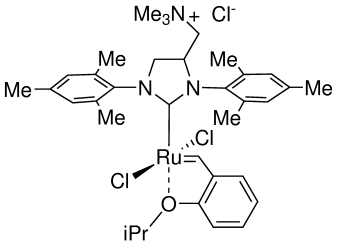
[1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)](tricyclohexylphosphine)-(2-oxobenzylidene)ruthenium(II) chloride LatMet *(1407229-58-6)*
$C_{46}H_{65}ClN_2OPRu$; FW: 829.52; green pwdr.
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 9,328,132, PCT/EP2013/065839. Aperion Ruthenium Metathesis Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

44-0765 NEW

[1,3-Bis(2,4,6-trimethylphenyl)-4-[(trimethylammonio)methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene) dichlororuthenium(II) chloride StickyCat Cl *(1452227-72-3)*
$C_{35}H_{48}Cl_3N_3ORu$; FW: 734.20; green pwdr.
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 61/603,790,PCT/EP2013/053967. Aperion Ruthenium Metathesis Catalyst Kit component.
For detailed technical note visit strem.com.



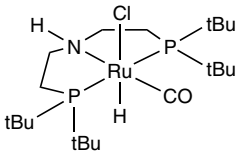
100mg
500mg

44-0090 **Carbonylbis(trifluoroacetato)bis(triphenylphosphine)ruthenium(II) methanol adduct, min. 98%** *(38596-61-1)*
$RuCO[(C_6H_5)_3P]_2(CF_3COO)_2 \cdot XCH_3OH$; FW: 879.71; orange xtl.; m.p. 230° dec.
For detailed technical note visit strem.com.

250mg
1g

44-1035 NEW

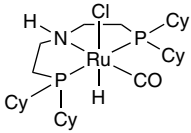
Carbonylchlorohydrido[bis(2-di-t-butylphosphinoethyl)amine]ruthenium(II), min. 97% *(1421060-10-7)*
$C_{21}H_{46}ClNOP_2Ru$; FW: 527.07; off-white solid
air sensitive



250mg
1g

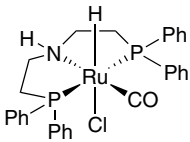
44-1043 NEW

Carbonylchlorohydrido[bis(2-di-cyclohexylphosphinoethyl)amine]ruthenium(II), min. 97% *(1421060-11-8)*
$C_{29}H_{54}ClNOP_2Ru$; FW: 631.22; white solid
air sensitive



250mg
1g

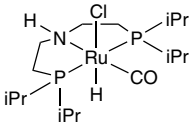
44-0071 **Carbonylchlorohydrido[bis(2-(diphenylphosphinoethyl)amino]ruthenium(II), min.98% Ru-MACHO™** *(1295649-40-9)*
$C_{29}H_{30}ClNOP_2Ru$; FW: 607.03; white to yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. PCT/JP2010-004301.
For detailed technical note visit strem.com.



250mg
1g
5g

44-1032 NEW

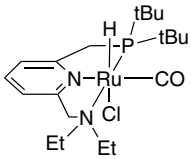
Carbonylchlorohydrido[bis(2-di-i-propylphosphinoethyl)amine]ruthenium(II), min. 97% *(1311164-69-8)*
$C_{17}H_{38}ClNOP_2Ru$; FW: 470.96; off-white solid
air sensitive



250mg
1g

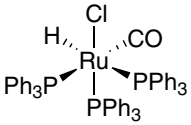
RUTHENIUM (Compounds)

44-0081 **Carbonylchlorohydrido[6-(di-t-butylphosphino-methyl)-2-(N,N-diethylaminomethyl)pyridine] ruthenium(II), min. 98% (Milstein Catalyst Precursor)** *(863971-62-4)*
$C_{20}H_{36}ClN_2OPRu$; FW: 488.01; pale yellow solid
air sensitive
Note: Air-stable in the solid state for several days, but best stored under an inert atmosphere.
For detailed technical note visit strem.com.



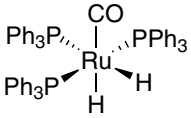
100mg
500mg

44-0085 **Carbonylchlorohydridotris(triphenylphosphine) ruthenium(II), 99%** *(16971-33-8)*
$Ru(CO)ClH[P(C_6H_5)_3]_3$; FW: 952.40; off-white to tan pwdr.; m.p. 209-210°
For detailed technical note visit strem.com.



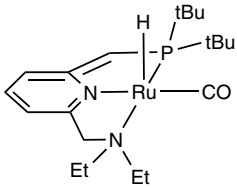
1g
5g

44-0100 **Carbonyl(dihydrido)tris(triphenylphosphine) ruthenium (II), 99%** *(25360-32-1)*
$Ru(CO)(H_2)(P(C_6H_5)_3)_3$; FW: 917.97; white to off-white pwdr.
For detailed technical note visit strem.com.



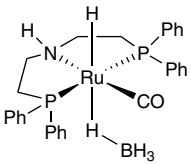
250mg
1g

44-0091 **Carbonylhydrido[6-(di-t-butylphosphinomethylene)-2-(N,N-diethylaminomethyl)-1,6-dihydropyridine] ruthenium(II), min. 98% Milstein Catalyst** *(863971-63-5)*
$C_{20}H_{35}N_2OPRu$; FW: 451.55; red-black solid
air sensitive, (store cold)
For detailed technical note visit strem.com.



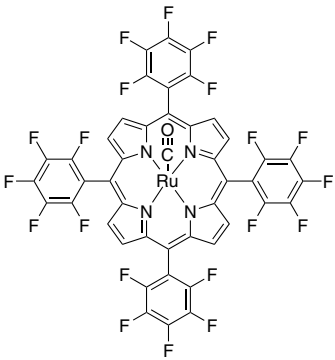
100mg
500mg

44-0074 **Carbonylhydrido(tetrahydroborato)[bis(2-diphenylphosphinoethyl) amino]ruthenium(II), min.98% Ru-MACHO™-BH** *(1295649-41-0)*
$C_{29}H_{34}BNOP_2Ru$; FW: 586.41; white to yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent PCT/JP2010-004301.
For detailed technical note visit strem.com.



250mg
1g
5g

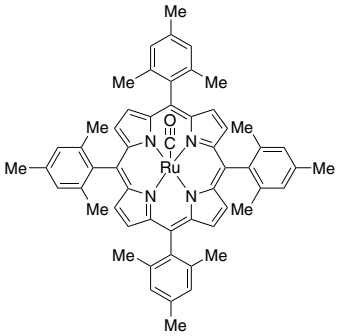
44-1030 **Carbonyl[5,10,15,20-tetrakis(2,3,4,5,6-pentafluorophenyl)-21H,23H-porphinato]ruthenium(II), min. 98%** *(171899-61-9)*
$Ru(C_{44}H_8F_{20}N_4)CO$; FW: 1101.61; red xtl.
For detailed technical note visit strem.com.



50mg
250mg

RUTHENIUM (Compounds)

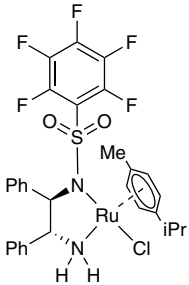
44-1025 **Carbonyl[5,10,15,20-tetrakis(2,4,6-trimethylphenyl)-21H,23H-porphinato]ruthenium(II), min. 98%** *(92669-43-7)*
$Ru(C_{56}H_{52}N_4)CO$; FW: 910.12; red-orange xtl.
For detailed technical note visit strem.com.



50mg
250mg

96-5900 **Chiral Quest Catalyst and Ligand Toolbox Kit for Asymmetric Hydrogenation**
See page 478

44-0156 **Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](pentafluorophenylsulfonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(R,R)-Fsdpen](p-cymene)** *(1026995-71-0)*
$C_{30}H_{28}ClF_5N_2O_2RuS$; FW: 712.14; orange to brown pwdr.
air sensitive
Note: Manufactured under license of Takasago patent US7129367B2.
For detailed technical note visit strem.com.



250mg
1g
5g

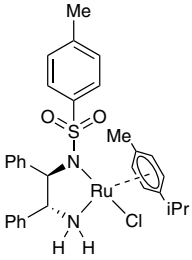
44-0157 **Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](pentafluorophenylsulfonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(S,S)-Fsdpen](p-cymene)** *(1026995-72-1)*
$C_{30}H_{28}ClF_5N_2O_2RuS$; FW: 712.14; orange to brown pwdr.
air sensitive
Note: Manufactured under license of Takasago patent US7129367B2. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0149 **Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(S,S)-Tsdpen](p-cymene)** *(192139-90-5)*
$C_{31}H_{35}ClN_2O_2RuS$; FW: 636.21; yellow to dark brown solid
air sensitive
Note: Manufactured under license of Takasago patent US7129367B2. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

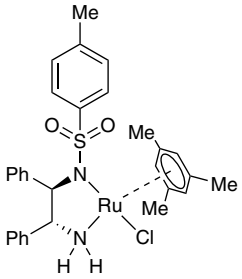
44-0148 **Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II), min. 95% RuCl[(R,R)-Tsdpen](p-cymene)** *(192139-92-7)*
$C_{31}H_{35}ClN_2O_2RuS$; FW: 636.21; yellow to dark brown solid
air sensitive
Note: Manufactured under license of Takasago patent US7129367B2. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.



250mg
1g
5g

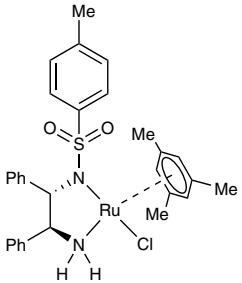
RUTHENIUM (Compounds)

44-0154 **Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(mesitylene)ruthenium(II), min. 90% RuCl[(R,R)-Tsdpen(mesitylene)** *(174813-82-2)*
$C_{30}H_{33}ClN_2O_2RuS$; FW: 622.18; orange pwdr.
air sensitive
Note: Manufactured under license of Takasago patent US7129367B2. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.



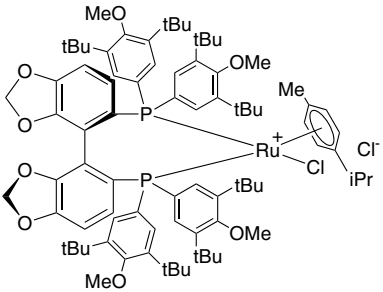
250mg
1g
5g

44-0155 **Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(mesitylene)ruthenium(II), min. 90% RuCl[(S,S)-Tsdpen](mesitylene)** *(174813-81-1)*
$C_{30}H_{33}ClN_2O_2RuS$; FW: 622.18; yellow to dark brown solid
air sensitive
Note: Manufactured under license of Takasago patent US7129367B2. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.



250mg
1g
5g

44-0102 **Chloro{(R)-(-)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-dtbm-segphos®)]Cl** *(944451-32-5)*
$[C_{84}H_{114}ClO_8P_2Ru]^+Cl^-$; FW: 1485.72; orange to brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

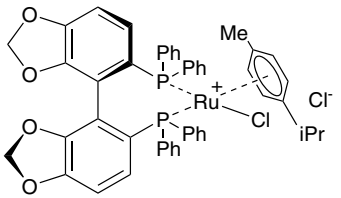


250mg
1g
5g

44-0103 **Chloro{(S)-(+)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-dtbm-segphos®)]Cl** *(944451-33-6)*
$[C_{84}H_{114}ClO_8P_2Ru]^+Cl^-$; FW: 1485.72; orange to brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0096 **Chloro[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-segphos®)]Cl** *(944451-28-9)*
$[C_{48}H_{42}ClO_4P_2Ru]^+Cl^-$; FW: 916.77; yellow pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

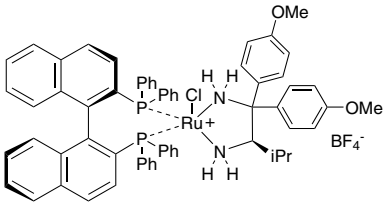


250mg
1g
5g

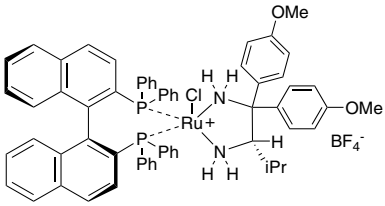
RUTHENIUM (Compounds)

44-0097 **Chloro[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-segphos®)]Cl** *(944451-29-0)*
$[C_{48}H_{42}ClO_4P_2Ru]^+Cl^-$; FW: 916.77; ocher to dark brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.
250mg
1g
5g

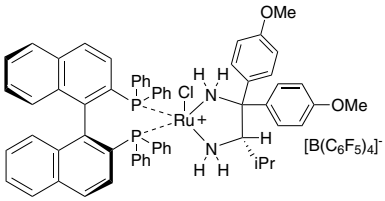
44-0136 **Chloro[(R)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(R)-1,1-bis(4-methoxyphenyl)-3-methylbutane-1,2-diamine]ruthenium(II) tetrafluoroborate, min. 97%**
$C_{63}H_{58}BClF_4N_2O_2P_2Ru$; FW: 1160.42; orange pwdr.
Note: Sold under license from Kanata for research purposes only. PCT/CA2008/001905.
100mg
500mg



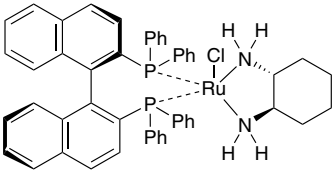
44-6063 **Chloro[(S)-(−)-2,2′-bis[diphenylphosphino]-1,1′-binaphthyl][(S)-1,1-bis(4-methoxyphenyl)-3-methylbutane-1,2-diamine]ruthenium(II) tetrafluoroborate, min. 97%** *(1150112-86-9)*
$C_{63}H_{58}BClF_4N_2O_2P_2Ru$; FW: 1160.40; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.
100mg
500mg



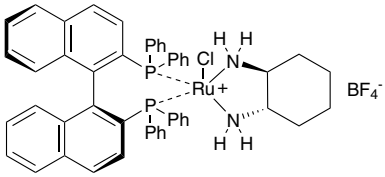
44-6066 **Chloro[(S)-(−)-2,2′-bis[diphenylphosphino]-1,1′-binaphthyl][(S)-1,1-bis(4-methoxyphenyl)-3-methylbutane-1,2-diamine]ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%** *(1150112-87-0)*
$C_{87}H_{58}BClF_{20}N_2O_2P_2Ru$; FW: 1752.70; orange-red solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.
100mg
500mg



44-0134 **Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-cyclohexane-1,2-diamine)]ruthenium(II) tetrafluoroborate, min. 97%**
(1150112-42-7)
$C_{50}H_{46}BClF_4N_2P_2Ru$; FW: 960.19; orange solid
Note: Sold under license from Kanata for research purposes only. PCT/CA2008/001905.
100mg
500mg

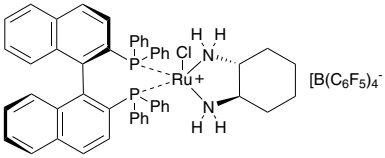


44-6053 **Chloro[(S)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-cyclohexane-1,2-diamine]ruthenium(II) tetrafluoroborate, min. 97%**
$C_{50}H_{46}BClF_4N_2P_2Ru$; FW: 960.19; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.
100mg
500mg



RUTHENIUM (Compounds)

44-6054 **Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-cyclohexane-1,2-diamine]ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%** *(1150112-55-2)*
$C_{74}H_{46}BClF_{20}N_2P_2Ru$; FW: 1552.42; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.

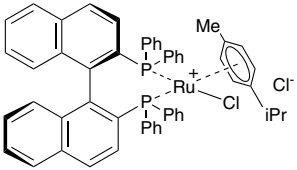


100mg
500mg

44-6055 **Chloro[(S)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-cyclohexane-1,2-diamine]ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%**
$C_{74}H_{46}BClF_{20}N_2P_2Ru$; FW: 1552.42; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.

100mg
500mg

44-0084 **Chloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((R)-binap)]Cl** *(145926-28-9)*
$[C_{54}H_{46}ClP_2Ru]^+Cl^-$; FW: 928.87; orange pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Cymene Catalyst Kit component.
For detailed technical note visit strem.com.

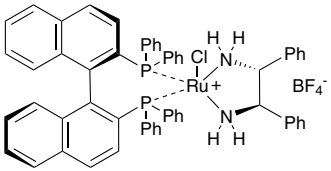


250mg
1g
5g

44-0086 **Chloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-binap)]Cl** *(130004-33-0)*
$[C_{54}H_{46}ClP_2Ru]^+Cl^-$; FW: 928.87; orange pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Cymene Catalyst Kit component.
For detailed technical note visit strem.com.

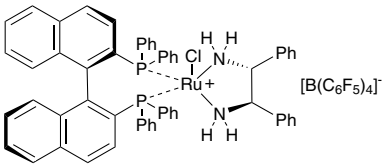
250mg
1g
5g

44-6057 **Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-2-(diphenylphosphino)-1,2-diphenylethanamine]ruthenium(II) tetrafluoroborate, min. 97%** *(1150112-54-1)*
$C_{70}H_{56}BClF_4NP_3Ru$; FW: 1227.45; orange to brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.



100mg
500mg

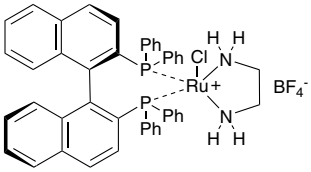
44-6070 **Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl)][(1R,2R)-2-(diphenylphosphino)-1,2-diphenylethanamine] ruthenium(II) , tetrakis(pentafluorophenyl)borate, min. 97%** *(1150112-53-0)*
$C_{94}H_{56}BClF_{20}NP_3Ru$; FW: 1819.68; orange to brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.



100mg
500mg

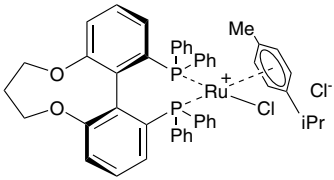
RUTHENIUM (Compounds)

44-6056 **Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][2-(diphenylphosphino)ethanamine]ruthenium(II) tetrafluoroborate, min. 97%** *(1150112-44-9)*
$C_{58}H_{48}BClF_4NP_3Ru$; FW: 1075.26; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.



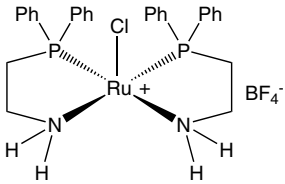
100mg
500mg

44-0109 **Chloro{(R)-(-)-1,13-bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin}(p-cymene) ruthenium(II) chloride (R)-C_3-TUNEPHOS-Ru**
$[RuCl(C_{39}H_{32}O_2P_2)(C_{10}H_{14})]^+Cl^-$;
FW: 900.81; orange to brown pwdr.
air sensitive
Note: Sold in collaboration with Chiral Quest for research purposes only. Patent US 6,521,769. Chiral Quest Catalyst and Ligand Toolbox Kit component.
For detailed technical note visit strem.com.



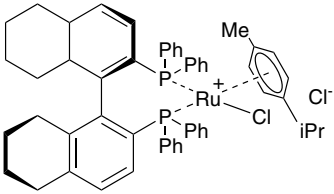
100mg
500mg

44-6060 **Chlorobis[2-(diphenylphosphino) ethanamine]ruthenium(II) tetrafluoroborate, min. 97%** *(1150112-46-1)*
$C_{28}H_{32}BClF_4N_2P_2Ru$; FW: 681.84; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.



100mg
500mg

44-0094 **Chloro[(R)-(+)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((R)-H_8-binap)]Cl** *(944451-26-7)*
$[C_{54}H_{54}ClP_2Ru]^+Cl^-$; FW: 936.93; pale yellow pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

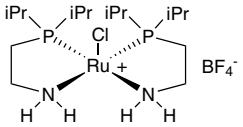


50mg
250mg

44-0095 **Chloro[(S)-(-)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-H_8-binap)]Cl** *(944451-27-8)*
$[C_{54}H_{54}ClP_2Ru]^+Cl^-$; FW: 936.93; pale yellow pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

50mg
250mg

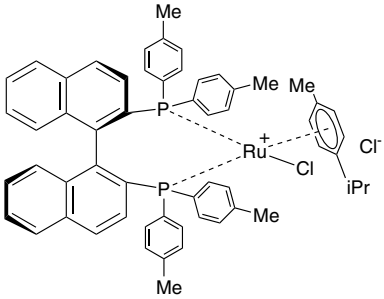
44-6068 **Chlorobis[2-(di-i-propylphosphino)ethanamine] ruthenium(II) tetrafluoroborate, min. 97%**
$C_{16}H_{40}BClF_4N_2P_2Ru$; FW: 546.14; red-brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. WO 2009055912.
For detailed technical note visit strem.com.



100mg
500mg

RUTHENIUM (Compounds)

44-0088 **Chloro[(R)-(+)-2,2'-bis(di-p-tolyl-phosphino)-1,1'-binaphthyl] (p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-tolbinap)]Cl** *(131614-43-2)*
$[C_{58}H_{54}ClP_2Ru]^+Cl^-$; FW: 984.97; brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Cymene Catalyst Kit component.
For detailed technical note visit strem.com.

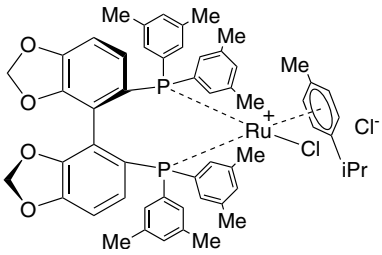


250mg
1g
5g

44-0089 **Chloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-tolbinap)]Cl** *(228120-95-4)*
$[C_{58}H_{54}ClP_2Ru]^+Cl^-$; FW: 984.97; yellow to dark brown solid; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Cymene Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0098 **Chloro{(R)-(+)-5,5'-bis[di(3,5-xylyl) phosphino]-4,4'-bi-1,3-benzodioxole} (p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-dm-segphos®)] Cl** *(944451-30-3)*
$[C_{56}H_{58}ClO_4P_2Ru]^+Cl^-$; FW: 1028.98; orange to brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

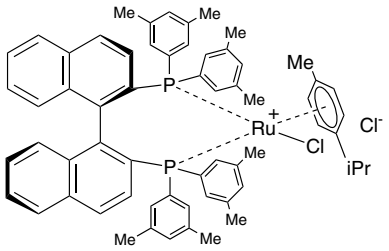


250mg
1g
5g

44-0099 **Chloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole} (p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-dm-segphos®)]Cl** *(944451-31-4)*
$[C_{56}H_{58}ClO_4P_2Ru]^+Cl^-$; FW: 1028.98; orange to brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0092 **Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} (p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-xylbinap)]Cl** *(944451-24-5)*
$[C_{62}H_{62}ClP_2Ru]^+Cl^-$; FW: 1041.08; orange to brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Cymene Catalyst Kit component.
For detailed technical note visit strem.com.



250mg
1g
5g

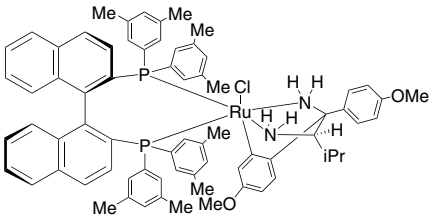
44-0093 **Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}(p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-xylbinap)]Cl** *(944451-25-6)*
$[C_{62}H_{62}ClP_2Ru]^+Cl^-$; FW: 1041.08; orange to brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Cymene Catalyst Kit component.

250mg
1g
5g

Technical Note:
1. See 44-0092 (page 375)

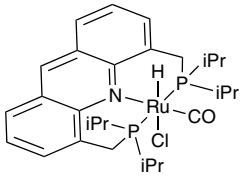
RUTHENIUM (Compounds)

44-0217 **Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2R)-(-)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butanediamine] ruthenium(II) (R)-RUCY™-XylBINAP** *(1384974-38-2)*
$C_{71}H_{73}ClN_2O_2P_2Ru$; FW: 1184.82; yellow to dark brown/green solid
air sensitive
100mg
250mg
1g
5g

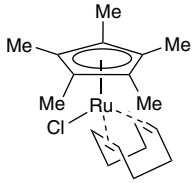


44-0218 **Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}[(2S)- (+)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butanediamine]ruthenium(II) (S)-RUCY™-XylBINAP** *(1312713-89-5)*
$C_{71}H_{73}ClN_2O_2P_2Ru$; FW: 1184.82; yellow to dark brown/green solid
air sensitive
Note: Manufactured under license of Takasago patent application no. JP2010-104552. Takasago BINAP Ru Diamine Catalyst Kit component. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.
250mg
1g
5g

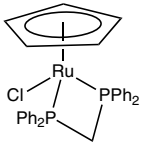
44-0525 **Chlorocarbonylhydrido[4,5-bis-(di-i-propylphosphinomethyl) acridine] ruthenium(II), min.98% Milstein Acridine Catalyst** *(1101230-25-4)*
$C_{28}H_{40}ClNOP_2Ru$; FW: 605.09; orange solid
air sensitive
Note: Patents: US provisional 61/087,708, PCT/IL2009/000778.
For detailed technical note visit strem.com.
25mg
100mg



44-0113 **Chloro(1,5-cyclooctadiene)(pentamethylcyclopentadienyl)ruthenium(II), 98%** *(92390-26-6)*
$RuCl(C_8H_{12})(C_{10}H_{15})$; FW: 379.93; brown microxtls.
(store cold)
For detailed technical note visit strem.com.
250mg
1g

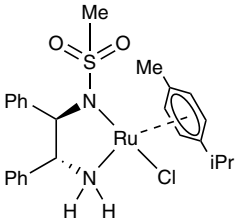


44-0116 **Chloro(cyclopentadienyl)[bis(diphenylphosphino)methane] ruthenium(II), min. 97%** *(71397-33-6)*
$RuCl(C_5H_5)[(C_6H_5)_2PCH_2P(C_6H_5)_2]$; FW: 586.01; orange xtl.
For detailed technical note visit strem.com.
250mg
1g



44-0120 **Chloro(cyclopentadienyl)bis(triphenylphosphine)ruthenium(II), 99%** *(32993-05-8)*
$C_5H_5Ru[P(C_6H_5)_3]_2Cl$; FW: 726.20; orange xtl.; m.p. 130-133° dec.
1g
5g

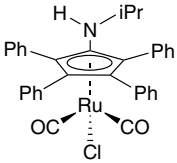
44-2319 **Chloro(p-cymene)[(1R,2R)-(-)-2-amino-1,2-diphenylethyl(methylsulfonylamido)]ruthenium(II) RuCl(p-cymene)[(R,R)-MsDpen]** *(1097730-63-6)*
$C_{25}H_{31}ClN_2O_2RuS$; FW: 560.10; yellow-orange solid
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.
250mg
1g



44-2320 **Chloro(p-cymene)[(1S,2S)-(-)-2-amino-1,2-diphenylethyl((methylsulfonylamido)]ruthenium(II) RuCl(p-cymene)[(S,S)-MsDpen]** *(329371-25-7)*
$C_{25}H_{31}ClN_2O_2RuS$; FW: 560.10; orange solid
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.
250mg
1g

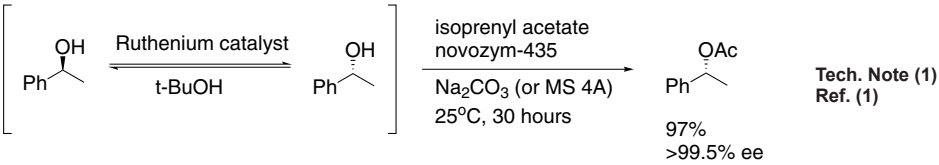
RUTHENIUM (Compounds)

44-0123 **Chlorodicarbonyl[1-(i-propylamino)-2,3,4,5-tetraphenylcyclopentadienyl]ruthenium(II), min. 95%** *(470688-18-7)*
$RuCl(CO)_2(C_{32}H_{28}N)$; FW: 619.11; yellow xtl.; m.p. 197° dec.
air sensitive



500mg
2g

Technical Note:
1. Metal catalyst used in conjunction with enzymes for enantioselective transformations via dynamic kinetic resolution.

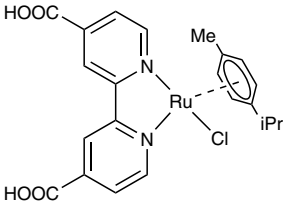


Tech. Note (1)
Ref. (1)

References:

1. *Current Opinion in Biotechnology,* **2002**, *13*, 578
2. *Angew. Chem. Int. Ed.,* **2002**, *41*, 2373
3. *J. Am. Chem. Soc.,* **2003**, *125*, 11494

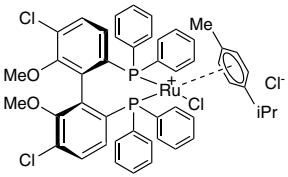
44-0128 **Chloro(4,4'-dicarboxy-2,2'-bipyridine)(p-cymene)ruthenium(II) chloride, min. 98%**
$[RuCl(C_{12}H_8N_2O_4)(C_{10}H_{14})]^+Cl^-$; FW: 550.40; orange pwdr.



250mg
1g

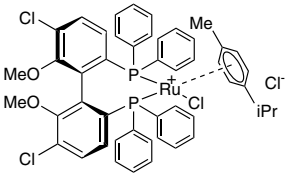
Technical Note:
1. Product used as a dye to sensitize solar cells.

44-0121 **Chloro[(R)-(+)-5,5'-dichloro-6,6'-dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl](p-cymene)ruthenium(II) chloride CH_2Cl_2 adduct** *(821793-33-3)*
$RuCl[(C_{38}H_{30}Cl_2O_2P_2)(C_{10}H_{14})]^+Cl^-\cdot CH_2Cl_2$;
FW: 957.69 (1042.62); orange-brown pwdr.
air sensitive
Note: Sold in collaboration with Lanxess for research purposes only. The product and its uses fall within the scope of US patents 5,710,339 and 5,801,261 and is sold with the right to use such product for research only.
For detailed technical note visit strem.com.



50mg
250mg

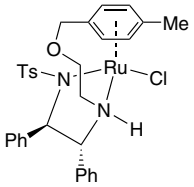
44-0122 **Chloro[(S)-(-)-5,5'-dichloro-6,6'-dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl](p-cymene)ruthenium(II) chloride CH_2Cl_2 adduct** *(821793-35-5)*
$[RuCl(C_{38}H_{30}Cl_2O_2P_2)(C_{10}H_{14})]^+Cl^-\cdot CH_2Cl_2$;
FW: 957.69 (1042.62); orange-brown pwdr.
air sensitive
Note: Sold in collaboration with Lanxess for research purposes only. The product and its uses fall within the scope of US patents 5,710,339 and 5,801,261 and is sold with the right to use such product for research only.
For detailed technical note visit strem.com.



50mg
250mg

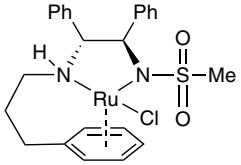
RUTHENIUM (Compounds)

44-0185 **Chloro{N-[(1R,2R)-1,2-diphenyl-2-(2-(4-methyl-benzyloxy)ethylamino)-ethyl]-4-methylbenzene sulfonamide(chloro)ruthenium(II) (R,R)-Ts-DENEB™** *(1333981-84-2)*
$C_{31}H_{33}ClN_2O_3RuS$; FW: 650.19; gray to brown soild
air sensitive
Note: Manufactured under license of Takasago patent application PCT/JP2011/064490.
For detailed technical note visit strem.com.



250mg
1g
5g

44-3020 **Chloro{(1R,2R)-1,2-diphenyl-1-[(3-(η6-phenyl) propyl)amino]-2-(methylsulfonylamido)} ruthenium(II) RuCl[(R,R)–teth-MsDpen]** *(1361415-88-4)*
$C_{24}H_{27}ClN_2O_2RuS$; FW: 544.07; brown pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg

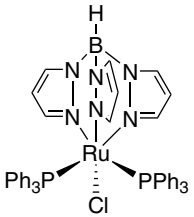
44-3021 **Chloro{(1S,2S)-1,2-diphenyl-1-[(3-(η6-phenyl)propyl)amino]-2-(methylsulfonyl-amido)}ruthenium(II) RuCl[(S,S)–teth-MsDpen]** *(1437326-26-5)*
$C_{24}H_{27}ClN_2O_2RuS$; FW: 544.07; brown pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

100mg
500mg

93-4401 **Chlorohydridotris(triphenylphosphine)ruthenium(II) toluene adduct, 98%** *(55102-19-7)*
$RuHCl[P(C_6H_5)_3]_3 \cdot CH_3C_6H_5$; FW: 924.39 (1016.53); purple xtl.
air sensitive
For detailed technical note visit strem.com.

250mg
1g

44-0124 **Chloro[hydrotris(pyrazol-1-yl)borato]bis(triphenyl-phosphine)ruthenium(II) ethanol adduct** *(141686-21-7)*
$RuCl[(C_6H_5)_3P]_2(C_9H_{10}BN_6) \cdot 0.5CH_3CH_2OH$;
FW: 874.12 (897.16); yellow pwdr.
For detailed technical note visit strem.com.

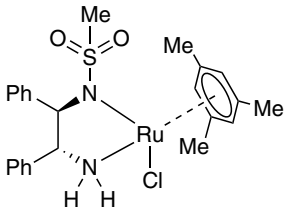


250mg
1g

44-0125 **Chloro(indenyl)bis(triphenylphosphine)ruthenium(II), dichloromethane adduct, min. 98%** *(99897-61-7)*
$RuCl[C_9H_7][P(C_6H_5)_3]_2 \cdot CH_2Cl_2$; FW: 776.26 (861.16); red-brown xtl.

1g
5g

44-2325 **Chloro(mesitylene)[(1R,2R)-(-)-2-amino-1,2-diphenylethyl(methylsulfonylamido)] ruthenium(II) RuCl(mesitylene)[(R,R)-MsDpen]** *(1160707-20-9)*
$C_{24}H_{29}ClN_2O_2RuS$; FW: 546.10; brown pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.



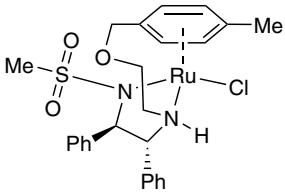
250mg
1g

44-2326 **Chloro(mesitylene)[(1S,2S)-(+)-2-amino-1,2-diphenylethyl(methylsulfonylamido)]ruthenium(II) RuCl(mesitylene)[(S,S)-MsDpen]** *(865488-44-4)*
$C_{24}H_{29}ClN_2O_2RuS$; FW: 546.10; brown pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

250mg
1g

RUTHENIUM (Compounds)

44-0255 **Chloro{N-[(1R,2R)-2-[(S)-[2-[[1,2,3,4,5,6-η)-4-methylphenyl]methoxy]ethyl]amino]-1,2-diphenylethylmethanesulfonamidato}ruthenium(II) Ru-(R,R)-Ms-DENEB** *(1333981-86-4)*
$C_{25}H_{29}ClN_2O_3RuS$; FW: 574.10; light to dark brown pwdr.
Note: Manufactured under license of Takasago patent application PCT/JP2011/064490.
Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.



250mg
1g
5g

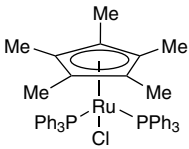
44-0256 **Chloro{N-[(1S,2S)-2-[(R)-[2-[[1,2,3,4,5,6-η)-4-methylphenyl]methoxy]ethyl]amino]-1,2-diphenylethylmethanesulfonamidato}ruthenium(II) Ru-(S,S)-Ms-DENEB** *(1361318-83-3)*
$C_{25}H_{29}ClN_2O_3RuS$; FW: 574.10; light to dark brown pwdr.
Note: Manufactured under license of Takasago patent application PCT/JP2011/064490. Takasago ATH Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0130 **Chloropentaammineruthenium(III) chloride, 98%** *(18532-87-1)*
$[Ru(NH_3)_5Cl]Cl_2$; FW: 292.58; yellow xtl.

1g
5g

44-0117 **Chloro(pentamethylcyclopentadienyl)bis(triphenylphosphine)ruthenium(II), 99%** *(92361-49-4)*
$RuCl(C_{10}H_{15})[P(C_6H_5)_3]_2$; FW: 796.32; orange pwdr.
(store cold)
For detailed technical note visit strem.com.

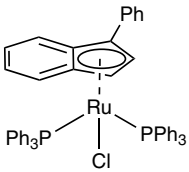


250mg
1g

44-0145 **Chloro(pentamethylcyclopentadienyl)ruthenium(II) tetramer, min. 95%**
(113860-07-4)
$[C_{10}H_{15}RuCl]_4$; FW: 1087.01; dark red xtl.
air sensitive

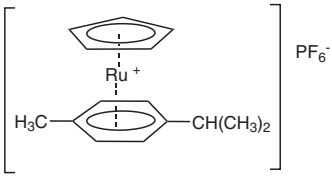
100mg
500mg
2g

44-0138 **Chloro(1-phenylindenyl)bis(triphenylphosphine) ruthenium(II), min. 98%** *(1360949-97-8)*
$C_{51}H_{41}ClP_2Ru$; FW: 852.34; red-brown solid
For detailed technical note visit strem.com.



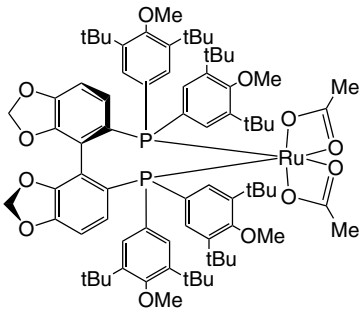
250mg
1g

44-0160 **Cyclopentadienyl(p-cymene)ruthenium(II) hexafluorophosphate, min. 98%**
(147831-75-2)
$[Ru(C_5H_5)(C_{10}H_{14})]^+PF_6^-$; FW: 445.35; off-white to pale brown pwdr.; m.p. 82-84°



250mg
1g

44-0180 **Diacetato{(R)-(-)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) Ru(OAc)$_2$[(R)-dtbm-segphos®]** *(1025477-38-6)*
$C_{78}H_{106}O_{12}P_2Ru$; FW: 1398.69; yellow to brownish-red to dark green solid
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

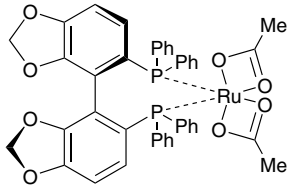


250mg
1g
5g

RUTHENIUM (Compounds)

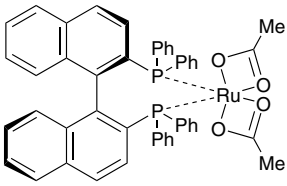
44-0181 **Diacetato{(S)-(+)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) Ru(OAc)$_2$[(S)-dtbm-segphos®]** *(1025476-84-9)* — 250mg, 1g, 5g
$C_{78}H_{106}O_{12}P_2Ru$; FW: 1398.69; yellow to brownish-red to dark green solid
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

44-0168 **Diacetato[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]ruthenium(II) Ru(OAc)$_2$[(R)-segphos®]** *(944450-48-0)* — 250mg, 1g, 5g
$C_{42}H_{34}O_8P_2Ru$; FW: 829.73; dark yellow pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.



44-0169 **Diacetato[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole] ruthenium(II) Ru(OAc)$_2$[(S)-segphos®]** *(373650-12-5)* — 250mg, 1g, 5g
$C_{42}H_{34}O_8P_2Ru$; FW: 829.73; yellow to black solid; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

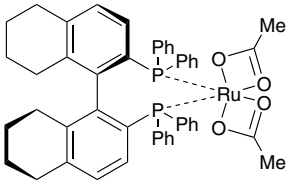
44-0152 **Diacetato[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II) Ru(OAc)$_2$[(R)-binap]** *(325146-81-4)* — 250mg, 1g, 5g
$C_{48}H_{38}O_4P_2Ru$; FW: 841.83; pale yellow pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Acetate Catalyst Kit component.
For detailed technical note visit strem.com.



44-0153 **Diacetato[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II) Ru(OAc)$_2$[(S)-binap]** *(261948-85-0)* — 250mg, 1g, 5g
$C_{48}H_{38}O_4P_2Ru$; FW: 841.83; pale yellow pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Acetate Catalyst Kit component.

Technical Note:
1. See 44-0152 (page 380)

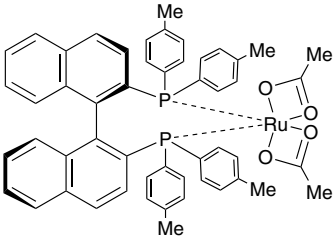
44-0166 **Diacetato[(R)-(+)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl]ruthenium(II) Ru(OAc)$_2$[(R)-H$_8$-binap]** *(374067-51-3)* — 50mg, 250mg
$C_{48}H_{46}O_4P_2Ru$; FW: 849.89; ocher to olive solid; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.



44-0167 **Diacetato[(S)-(-)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl]ruthenium(II) Ru(OAc)$_2$[(S)-H$_8$-binap]** *(142962-95-6)* — 50mg, 250mg
$C_{48}H_{46}O_4P_2Ru$; FW: 849.89; yellow to dark brown solid; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

RUTHENIUM (Compounds)

44-0162 **Diacetato[(R)-(+)-2,2'-bis(di-p-tolyl-phosphino)-1,1'-binaphthyl]ruthenium(II) Ru(OAc)$_2$[(R)-tolbinap]** *(116128-29-1)*
$C_{52}H_{46}O_4P_2Ru$; FW: 897.94; brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Acetate Catalyst Kit component.
For detailed technical note visit strem.com.



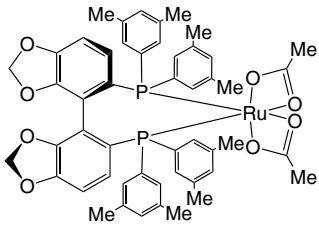
250mg
1g
5g

44-0163 **Diacetato[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]ruthenium(II) Ru(OAc)$_2$[(S)-tolbinap]** *(106681-15-6)*
$C_{52}H_{46}O_4P_2Ru$; FW: 897.94; brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Acetate Catalyst Kit component.

250mg
1g
5g

Technical Note:
1. See 44-0162 (page 381)

44-0174 **Diacetato{(R)-(+)-5,5'-bis[di(3,5-xylyl) phosphino]-4,4'-bi-1,3-benzodioxole} ruthenium(II) Ru(OAc)$_2$[(R)-dm-segphos®]** *(944450-49-1)*
$C_{50}H_{50}O_8P_2Ru$; FW: 941.95; yellow to brownish-red to dark green solid; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

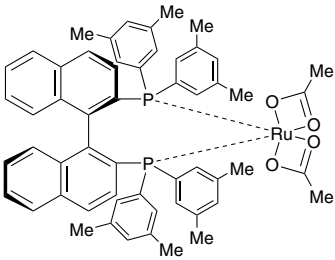


250mg
1g
5g

44-0176 **Diacetato{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole} ruthenium(II) Ru(OAc)$_2$[(S)-dm-segphos®]** *(944450-50-4)*
$C_{50}H_{50}O_8P_2Ru$; FW: 941.95; yellow to brownish-red to dark green solid; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0164 **Diacetato{(R)-(+)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}ruthenium(II) Ru(OAc)$_2$[(R)-xylbinap]** *(374067-50-2)*
$C_{56}H_{54}O_4P_2Ru$; FW: 954.04; dark brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Acetate Catalyst Kit component.
For detailed technical note visit strem.com.



250mg
1g
5g

44-0165 **Diacetato{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}ruthenium(II) Ru(OAc)$_2$[(S)-xylbinap]** *(374067-49-9)*
$C_{56}H_{54}O_4P_2Ru$; FW: 954.04; dark brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Acetate Catalyst Kit component.

250mg
1g
5g

Technical Note:
1. See 44-0164 (page 381)

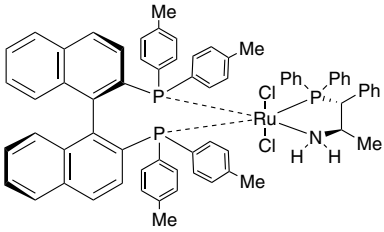
44-0175 **Dicarbonylcyclopentadienylruthenium dimer, 99%** *(12132-87-5)*
$[C_5H_5Ru(CO)_2]_2$; FW: 444.36; orangish-brown xtl.

100mg
500mg
2g

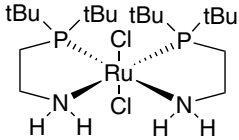
RUTHENIUM (Compounds)

44-0170 **Dichloro(benzene)ruthenium(II) dimer, 98%** *(37366-09-9)*
$[C_6H_6RuCl_2]_2$; FW: 500.18; orange pwdr.
250mg
1g

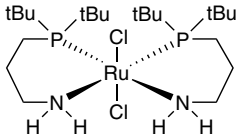
44-0232 **Dichloro{(R)-2,2'-bis[bis(4-methylphenyl)]-1,1'-binaphthyl}[(1R,2R)-2-amino-1-phenylpropyldiphenylphosphine]ruthenium(II), min. 97%** *(1150113-55-5)*
$C_{69}H_{62}Cl_2NP_3Ru$; FW: 1170.13; orange solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US Patents 7,579,295 and 7,317,131.
For detailed technical note visit strem.com.
100mg
500mg



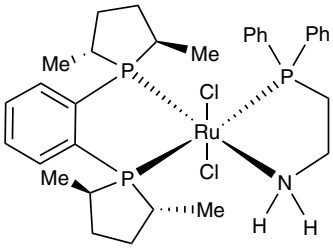
44-0260 **Dichlorobis[2-(di-t-butylphosphino)ethylamine]ruthenium(II), min. 97%** *(1092372-91-2)*
$RuCl_2(C_{10}H_{24}NP)_2$; FW: 550.53; orange pwdr.
Note: Sold under license from Kanata for research purposes only. Patent WO0222526, EP1366004, US2004063966.
For detailed technical note visit strem.com.
250mg
1g



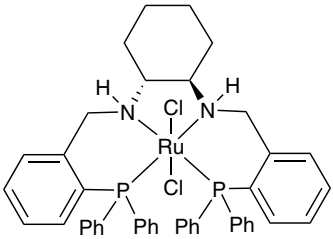
44-6050 **Dichlorobis[3-(di-t-butylphosphino)propylamine]ruthenium(II), min. 97%** *(1196147-60-0)*
$C_{22}H_{52}Cl_2N_2P_2Ru$; FW: 578.58; brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.
250mg
1g



44-6015 **Dichloro{1,2-bis[(2R,5R)-2,5 dimethylphospholanobenzene]}[2-(diphenylphosphino)ethylamine]ruthenium(II), min. 97%**
$C_{32}H_{44}Cl_2NP_3Ru$; FW: 707.60; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only.
100mg
500mg

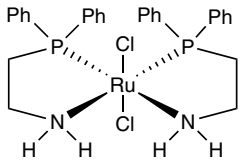


44-6018 **Dichloro{(1R,2R)-N,N-bis[2-(diphenylphosphino)benzyl]cyclohexane-1,2-diamine}ruthenium(II), min. 97%** *(429678-11-5)*
$C_{44}H_{44}Cl_2N_2P_2Ru$; FW: 834.76; orange solid
air sensitive
100mg
500mg



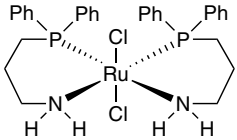
44-6019 **Dichloro{(1S,2S)-N,N-bis[2-(diphenylphosphino)benzyl]cyclohexane-1,2-diamine}ruthenium(II), min. 97%** *(302924-37-4)*
$C_{44}H_{44}Cl_2N_2P_2Ru$; FW: 834.76; orange solid
air sensitive
100mg
500mg

44-0263 **Dichlorobis[2-(diphenylphosphino)ethylamine]ruthenium(II), min. 95% (mixture of isomers)** *(506417-41-0)*
$RuCl_2(C_{14}H_{32}NP)_2$; FW: 630.49; yellow pwdr.
Note: Sold under license from Kanata for research purposes only. Patent WO0222526, EP1366004, US2004063966.
For detailed technical note visit strem.com.
250mg
1g



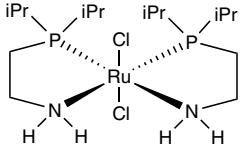
RUTHENIUM (Compounds)

44-6040 **Dichlorobis[3-(diphenylphosphino]propylamine] ruthenium(II), min. 97%** *(1196467-26-1)*
$C_{30}H_{36}Cl_2N_2P_2Ru$; FW: 658.54; yellow-brown solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.



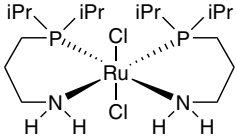
250mg
1g

44-0265 **Dichlorobis[2-(di-i-propylphosphino)ethylamine] ruthenium(II), min. 97%** *(1092372-90-1)*
$RuCl_2(C_8H_{20}NP)_2$; FW: 494.43; orange pwdr.
Note: Sold under license from Kanata for research purposes only. Patent WO0222526, EP1366004, US2004063966.
For detailed technical note visit strem.com.



250mg
1g

44-6043 **Dichlorobis[3-(di-i-propylphosphino)propylamine]ruthenium(II), min. 97%** *(1196147-57-5)*
$C_{18}H_{44}Cl_2N_2P_2Ru$; FW: 522.48; yellow-orange solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.

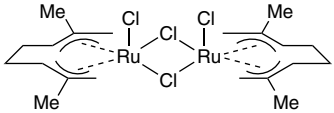


250mg
1g

44-0200 **cis-Dichlorobis(2,2'-bipyridine)ruthenium(II) dihydrate, 99%** *(15746-57-3)*
$RuCl_2(C_{10}H_8N_2)_2 \cdot 2H_2O$; FW: 484.35 (520.38); black xtl.

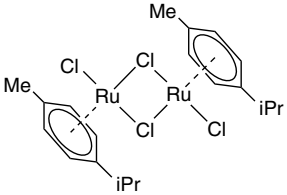
1g
5g

44-0203 **Dichlorobis(μ-chloro) bis[(1,2,3,6,7,8-≈)-2,7-dimethyl-2,6-octadien-1,8-diyl]diruthenium(IV), 99%** *(34801-97-3)*
$Ru_2Cl_4(C_{10}H_{16})_2$; FW: 616.42; purple pwdr.; m.p. 196° (dec.)
moisture sensitive
For detailed technical note visit strem.com.



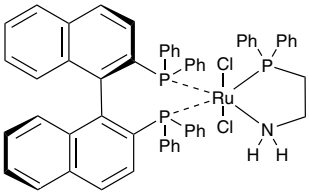
250mg
1g

44-0190 **Di-μ-chlorobis[(p-cymene)chlororuthenium(II)], min. 98%** *(52462-29-0)*
$[RuCl_2(C_{10}H_{14})]_2$; FW: 612.39; brown pwdr.



1g
5g
25g

44-6025 **Dichloro[(R)-bis(diphenylphosphino)-1,1-binaphthyl][2-(diphenylphosphino) ethylamine]ruthenium(II), min. 97%** *(1097731-98-0)*
$C_{58}H_{48}Cl_2NP_3Ru$; FW: 1023.91; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.



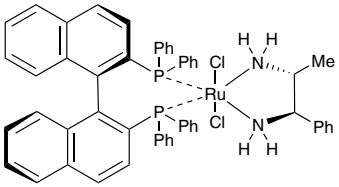
100mg
500mg

44-6026 **Dichloro[(S)-bis(diphenylphosphino)-1,1-binaphthyl][2-(diphenylphosphino) ethylamine]ruthenium(II), min. 97%**
$C_{58}H_{48}Cl_2NP_3Ru$; FW: 1023.91; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.

100mg
500mg

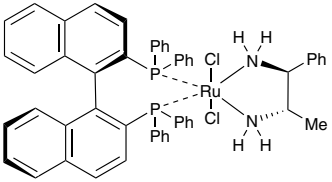
RUTHENIUM (Compounds)

44-6022 **Dichloro[(R)-bis(diphenylphosphino)-1,1-binaphthyl][(1R,2R)-2-amino-1-phenylpropyldiphenylphosphine] ruthenium(II), min. 97%**
$C_{65}H_{54}Cl_2NP_3Ru$; FW: 1114.03; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.



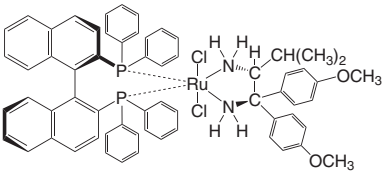
100mg
500mg

44-6023 **Dichloro[(R)-bis(diphenylphosphino)-1,1-binaphthyl][1S,2S)-2-amino-1-phenylpropyldiphenylphosphine] ruthenium(II), min. 97%**
$C_{65}H_{54}Cl_2NP_3Ru$; FW: 1114.03; yellow solid
air sensitive
Note: Sold under license from Kanata for research purposes only. US 7317131 and US 7579295.



100mg
500mg

44-0210 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) dichloromethane adduct, min. 97%** *(329735-86-6)*
$C_{63}H_{58}Cl_2N_2O_2P_2Ru$; FW: 1109.10; white to pale yellow pwdr.; m.p. >100° dec.
air sensitive, (store cold)
For detailed technical note visit strem.com.

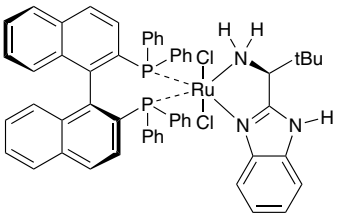


10mg
50mg
250mg

44-0211 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) dichloromethane adduct, min. 97%** *(212143-24-3)*
$C_{63}H_{58}Cl_2N_2O_2P_2Ru$; FW: 1109.10; white to pale yellow pwdr.; m.p. >100° dec.
air sensitive, (store cold)
For detailed technical note visit strem.com.

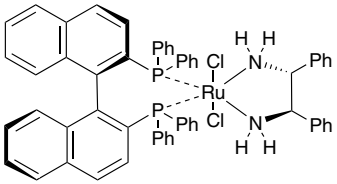
10mg
50mg
250mg

44-0925 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(t-butyl) methanamine)-1H-benzimidazole] ruthenium(II), min. 95%**
$C_{56}H_{49}Cl_2N_3P_2Ru$; FW: 997.93; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru BINAP Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

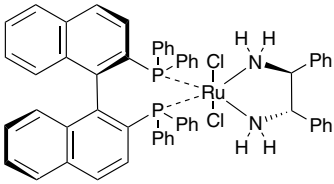
44-0220 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine] ruthenium(II), min. 90%** *(212143-23-2)*
$C_{58}H_{48}Cl_2N_2P_2Ru$; FW: 1006.96; white to pale yellow pwdr.; m.p. >100° dec.
air sensitive, (store cold)
For detailed technical note visit strem.com.



10mg
50mg
250mg

RUTHENIUM (Compounds)

44-0221 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 90%** *(212210-87-2)*
$C_{58}H_{48}Cl_2N_2P_2Ru$; FW: 1006.96; white to pale yellow pwdr.; m.p. >100° dec.
air sensitive, (store cold)
For detailed technical note visit strem.com.



10mg
50mg
250mg

44-0222 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 98%** *(329735-87-7)*
$C_{58}H_{48}Cl_2N_2P_2Ru$; FW: 1006.96; white to pale yellow pwdr.; m.p. >100° dec.
air sensitive, (store cold)

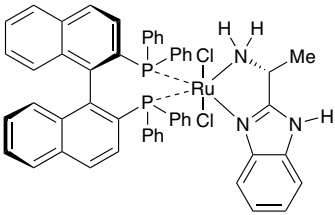
10mg
50mg
250mg

Technical Note:
1. See 44-0221 (page 385)

44-0223 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 98%** *(329736-05-2)*
$C_{58}H_{48}Cl_2N_2P_2Ru$; FW: 1006.96; white to pale yellow pwdr.; m.p. >100° dec.
air sensitive, (store cold)
For detailed technical note visit strem.com.

10mg
50mg
250mg

44-0910 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%**
$C_{53}H_{43}Cl_2N_3P_2Ru$; FW: 955.85; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru BINAP Catalyst Kit component.
For detailed technical note visit strem.com.



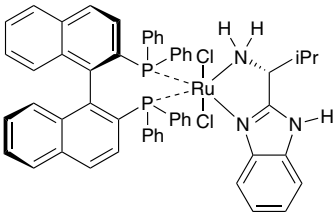
100mg
500mg

44-0905 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%** *(1443051-87-3)*
$C_{53}H_{43}Cl_2N_3P_2Ru$; FW: 955.85; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru BINAP Catalyst Kit component.

100mg
500mg

Technical Note:
1. See 44-0910 (page 385)

44-0920 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-(i-propyl) methanamine)-1H-benzimidazole] ruthenium(II), min. 95%**
$C_{55}H_{47}Cl_2N_3P_2Ru$; FW: 983.90; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru BINAP Catalyst Kit component.
For detailed technical note visit strem.com.



100mg
500mg

RUTHENIUM (Compounds)

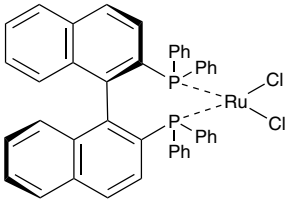
44-0915 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%** — 100mg, 500mg

$C_{55}H_{47}Cl_2N_3P_2Ru$; FW: 983.90; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru BINAP Catalyst Kit component.

Technical Note:
1. See 44-0920 (page 385)

44-0248 **Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1, 1'-binaphthyl] ruthenium(II), min. 95%** *(132071-87-5)* — 100mg, 500mg, 2g

$[RuCl_2(C_{44}H_{32}P_2)]\cdot$; FW: 794.67; orange pwdr.
air sensitive
For detailed technical note visit strem.com.

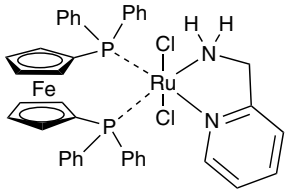


44-0249 **Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II), min. 95%** *(134524-84-8)* — 100mg, 500mg, 2g

$[RuCl_2(C_{44}H_{32}P_2)]\cdot$; FW: 794.67; orange pwdr.
air sensitive
For detailed technical note visit strem.com.

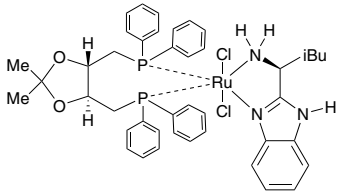
44-2310 **Dichloro[1,1'-bis(diphenylphosphino) ferrocene](2-aminomethylpyridine) ruthenium(II) $RuCl_2$(AMPY)(DPPF)** *(1287255-62-2)* — 250mg, 1g

$C_{40}H_{36}Cl_2FeN_2P_2Ru$; FW: 834.49; yellow pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.



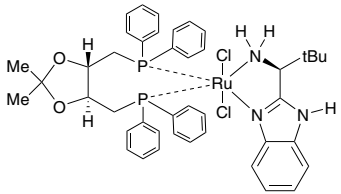
44-0975 **Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(i-butyl)methanamine)-1H-benzimidazole] ruthenium(II), min. 95%** *(1574321-76-8)* — 100mg, 500mg

$C_{43}H_{48}Cl_2N_3O_2P_2Ru$; FW: 873.79; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru DIOP Catalyst Kit component.
For detailed technical note visit strem.com.



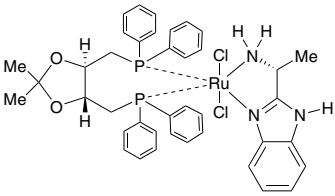
44-0980 **Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(t-butyl)methanamine)-1H-benzimidazole] ruthenium(II), min. 97%** *(1443051-98-6)* — 100mg, 500mg

$C_{43}H_{48}Cl_2N_3O_2P_2Ru$; FW: 873.79; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru DIOP Catalyst Kit component.
For detailed technical note visit strem.com.



RUTHENIUM (Compounds)

44-0960 **Dichloro[(4R,5R)-(-)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%** *(1280732-29-7)*
$C_{40}H_{43}Cl_2N_3O_2P_2Ru$; FW: 831.71; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru DIOP Catalyst Kit component.
For detailed technical note visit strem.com.



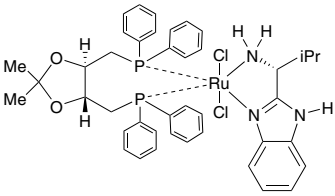
100mg
500mg

44-0955 **Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 98%** *(1280730-21-3)*
$C_{40}H_{43}Cl_2N_3O_2P_2Ru$; FW: 831.71; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru DIOP Catalyst Kit component.

100mg
500mg

Technical Note:
1. See 44-0960 (page 387)

44-0970 **Dichloro[(4R,5R)-(-)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(R)-(+)-2-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%**
$C_{42}H_{47}Cl_2N_3O_2P_2Ru$; FW: 859.76; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru DIOP Catalyst Kit component.
For detailed technical note visit strem.com.



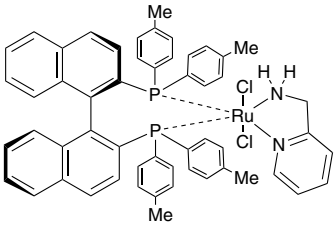
100mg
500mg

44-0965 **Dichloro[(4S,5S)-(+)-4,5-bis(diphenyphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%** *(1443051-97-5)*
$C_{42}H_{47}Cl_2N_3O_2P_2Ru$; FW: 859.76; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru DIOP Catalyst Kit component.

100mg
500mg

Technical Note:
1. See 44-0970 (page 387)

44-2314 **Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](2-aminomethylpyridine)ruthenium(II) $RuCl_2$(AMPY) [(R)Tol-Binap]** *(858116-31-1)*
$C_{54}H_{48}Cl_2N_2P_2Ru$; FW: 958.89; yellow pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.



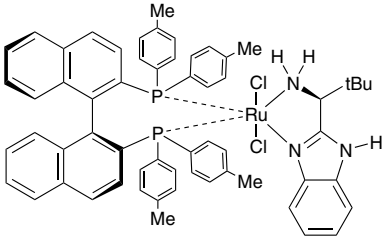
250mg
1g

RUTHENIUM (Compounds)

44-2315 **Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](2-aminomethylpyridine)ruthenium(II) $RuCl_2$(AMPY)[(S)-Tol-Binap]** *(857678-55-8)* — 250mg, 1g

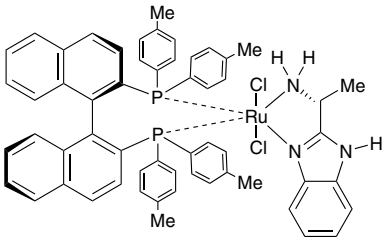
$C_{54}H_{48}Cl_2N_2P_2Ru$; FW: 958.89; yellow pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.

44-0950 **Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(t-butyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 97%** — 100mg, 500mg



$C_{60}H_{57}Cl_2N_3P_2Ru$; FW: 1054.04; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit component.
For detailed technical note visit strem.com.

44-0935 **Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%** — 100mg, 500mg



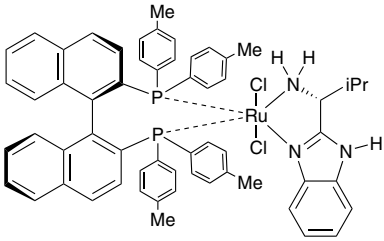
$C_{57}H_{51}Cl_2N_3P_2Ru$; FW: 1011.96; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit component.
For detailed technical note visit strem.com.

44-0930 **Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 97%** — 100mg, 500mg

$C_{57}H_{51}Cl_2N_3P_2Ru$; FW: 1011.96; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit component.

Technical Note:
1. See 44-0935 (page 388)

44-0945 **Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-(i-propyl) methanamine)-1H-benzimidazole] ruthenium(II), min. 95%** — 100mg, 500mg



$C_{59}H_{55}Cl_2N_3P_2Ru$; FW: 1040.01; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit component.
For detailed technical note visit strem.com.

RUTHENIUM (Compounds)

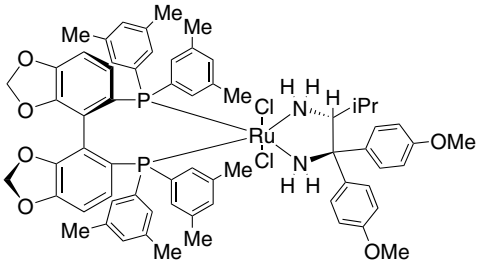
44-0940 **Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%** — 100mg, 500mg

$C_{59}H_{55}Cl_2N_3P_2Ru$; FW: 1040.01; yellow-brown pwdr.
air sensitive
Note: Sold under license from Enantiotech for research purposes only. PCT/CN2008/073648, CN 200810038929. Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit component.

Technical Note:
1. See 44-0945 (page 388)

44-0214 **Dichloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(R)-dm-segphos®][(R)-daipen]** *(944450-43-5)* — 250mg, 1g, 5g

$C_{65}H_{70}Cl_2N_2O_6P_2Ru$; FW: 1209.18; yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.



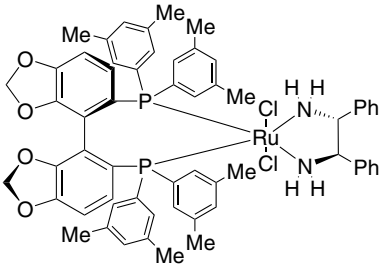
44-0215 **Dichloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(S)-dm-segphos®][(S)-daipen]** *(944450-44-6)* — 250mg, 1g, 5g

$C_{65}H_{70}Cl_2N_2O_6P_2Ru$; FW: 1209.18; yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.

Technical Note:
1. See 44-0214 (page 389)

44-0228 **Dichloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(R)-dm-segphos®][(R,R)-dpen]** *(944450-45-7)* — 250mg, 1g, 5g

$C_{60}H_{60}Cl_2N_2O_4P_2Ru$; FW: 1075.04; yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.



44-0229 **Dichloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(S)-dm-segphos®][(S,S)-dpen]** *(944450-46-8)* — 250mg, 1g, 5g

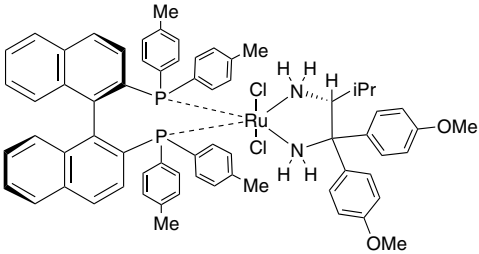
$C_{60}H_{60}Cl_2N_2O_4P_2Ru$; FW: 1075.04; yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.

Technical Note:
1. See 44-0228 (page 389)

RUTHENIUM (Compounds)

44-0212 **Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(R)-xylbinap][(R)-daipen]** *(220114-32-9)* — 250mg, 1g, 5g

$C_{71}H_{74}Cl_2N_2O_2P_2Ru$; FW: 1221.28; yellow to dark brown or green solid
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Diamine Catalyst Kit component.
For detailed technical note visit strem.com.



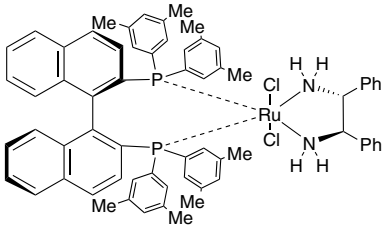
44-0213 **Dichloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(S)-xylbinap][(S)-daipen]** *(220114-01-2)* — 250mg, 1g, 5g

$C_{71}H_{74}Cl_2N_2O_2P_2Ru$; FW: 1221.28; orange pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Diamine Catalyst Kit component.

Technical Note:
1. See 44-0212 (page 390)

44-0226 **Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(R)-xylbinap][(R,R)-dpen]** *(220114-38-5)* — 250mg, 1g, 5g

$C_{66}H_{64}Cl_2N_2P_2Ru$; FW: 1119.15; yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Diamine Catalyst Kit component.
For detailed technical note visit strem.com.



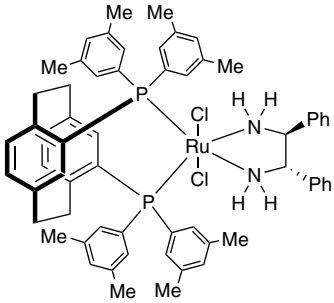
44-0224 **Dichloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(S)-xylbinap][(S,S)-dpen]** *(220114-03-4)* — 250mg, 1g, 5g

$C_{66}H_{64}Cl_2N_2P_2Ru$; FW: 1119.15; yellow pwdr.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Diamine Catalyst Kit component.

Technical Note:
1. See 44-0226 (page 390)

RUTHENIUM (Compounds)

44-0380 **Dichloro[(R)-(-)-4,12-bis(di(3,5-xylyl) phosphino)-[2.2]-paracyclophane] [(1S,2S)-(-)-1,2-diphenylethylene-diamine]ruthenium(II), min. 95%** *(325150-57-0)*
$RuCl_2[C_{48}H_{50}P_2][C_{14}H_{16}N_2]$; FW: 1073.12; cream colored pwdr.
air sensitive
Note: *Limited quantities available*
Sold in collaboration with Chirotech for research purposes only. US Patent nos. 5874629 and 6486337.
For detailed technical note visit strem.com.

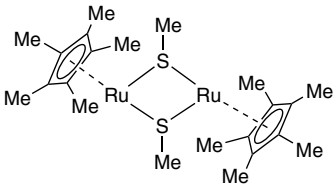


10mg
50mg

44-0381 **Dichloro[(S)-(+)-4,12-bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane] [(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%**
(364795-64-2)
$RuCl_2[C_{48}H_{50}P_2][C_{14}H_{16}N_2]$; FW: 1073.12; cream colored pwdr.
air sensitive
Note: ** Limited quantities available ** Sold in collaboration with Chirotech for research purposes only. US Patent nos. 5874629 and 6486337.
For detailed technical note visit strem.com.

10mg
50mg

44-0645 **Dichlorobis(μ-methanethioato) bis(pentamethylcyclopentadienyl) diruthenium(III), 99% (minimum 90% syn isomer)** *(216064-20-9)*
$C_{22}H_{36}Cl_2Ru_2S_2$; FW: 637.70; black xtl.
For detailed technical note visit strem.com.

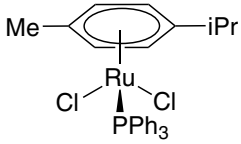


100mg
500mg
2g

44-0425 **Dichloro(1,5-cyclooctadiene)ruthenium(II) polymer, min. 97%** *(50982-12-2)*
$[Ru(1,5\text{-}C_8H_{12})Cl_2]_x$; FW: 280.16; brown pwdr.; m.p. 200° dec.

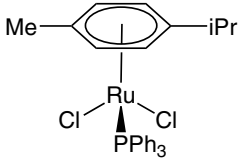
250mg
1g
5g

44-0430 **Dichloro(p-cymene)tricyclo-hexylphosphineruthenium(II), min. 97%**
(145381-23-3)
$RuCl_2(C_{10}H_{14})P(C_6H_{11})_3$; FW: 586.62; orange pwdr.
For detailed technical note visit strem.com.



250mg
1g

44-0433 **Dichloro(p-cymene)triphenylphosphineruthe-nium(II) dichloromethane adduct, min. 98%**
(52490-94-5)
$C_{28}H_{29}Cl_2PRu{\cdot}CH_2Cl_2$; FW: 568.48 (653.41); orange to red pwdr.
For detailed technical note visit strem.com.

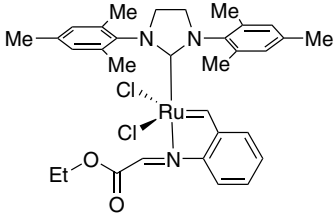


250mg
1g
5g

44-0400 **Dichlorodicarbonylbis(triphenylphosphine)ruthenium(II), min. 98%**
(14564-35-3)
$RuCl_2(CO)_2(P(C_6H_5)_3)_2$; FW: 752.56; white pwdr.

250mg
1g

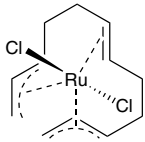
44-0760 NEW **Dichloro(1,3-dimesitylimidazolidin-2-ylidene){2-[(ethoxy-2-oxoethylidene) amino]benzylidene} ruthenium(II) HeatMet**
$C_{32}H_{37}Cl_2N_3O_2Ru$; FW: 667.63; dark purple xtls.
(store cold)
Note: Sold in collaboration with Apeiron Synthesis, Inc. U.S. Patent 14/443,034; PCT/IN2013/002543.
For detailed technical note visit strem.com.



100mg
500mg

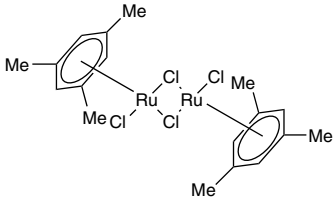
RUTHENIUM (Compounds)

44-0172 **Dichloro(2,6,10-dodecatriene-1,12-diyl)ruthenium(IV), 99%** *(12170-97-7)*
$RuCl_2(C_{12}H_{18})$; FW: 334.24; orange xtl.; m.p. 192° (dec.)
For detailed technical note visit strem.com.



250mg
1g

44-0428 NEW **Dichloro(mesitylene)ruthenium(II) dimer, 98%** *(52462-31-4)*
$C_{18}H_{24}Cl_4Ru_2$; FW: 584.33; red pwdr.
air sensitive, (store cold)



500mg
2g

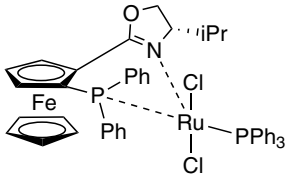
44-0440 **Dichloro(pentamethylcyclopentadienyl)ruthenium(III) polymer** *(96503-27-4)*
$[C_5(CH_3)_5RuCl_2]_n$; FW: $(307.20)_n$; red to brown pwdr.
air sensitive, (store cold)

250mg
1g
5g

44-0442 **(+)-Dichloro[(4R)-4-(i-propyl)-2-{(R)-2-(diphenylphosphino)ferrocenyl} oxazoline](triphenylphosphine)ruthenium(II)** *(1312582-16-3)*
$RuCl_2[(C_6H_5)_3P](C_{28}H_{28}FeNOP)$; FW: 915.70; orange-brown pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.

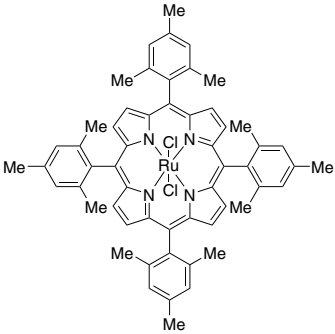
100mg
500mg
2g
10g

44-0443 **(-)-Dichloro[(4S)-4-(i-propyl)-2-{(S)-2-(diphenylphosphino)ferrocenyl}oxazoline] (triphenylphosphine)ruthenium(II)** *(212133-11-4)*
$RuCl_2[(C_6H_5)_3P](C_{28}H_{28}FeNOP)$; FW: 915.70; orange-brown pwdr.
Note: Sold in collaboration with Solvias for research purposes only.
For detailed technical note visit strem.com.



100mg
500mg
2g
10g

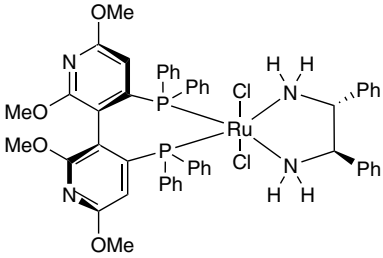
44-1020 **Dichloro[5,10,15,20-tetrakis(2,4,6-tri methylphenyl)-21H,23H-porphinato] ruthenium(IV), min. 98%** *(145698-90-4)*
$Ru(C_{56}H_{52}N_4)Cl_2$; FW: 953.01; purple xtl.
For detailed technical note visit strem.com.



25mg
100mg

RUTHENIUM (Compounds)

44-0385 **Dichloro[(R)-(+)-2,2',6,6'-tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%** *(478308-91-7)*
$RuCl_2[C_{38}H_{34}N_2O_4P_2][C_{14}H_{16}N_2]$; FW: 1028.90; yellow solid
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom. PCT/JP96/03573.
For detailed technical note visit strem.com.

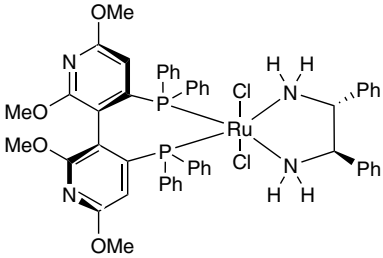


100mg
500mg

44-0386 **Dichloro[(S)-(-)-2,2',6,6'-tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%** *(821793-36-6)*
$RuCl_2[C_{38}H_{34}N_2O_4P_2][C_{14}H_{16}N_2]$; FW: 1028.90; yellow solid
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom. PCT/JP96/03573.
For detailed technical note visit strem.com.

100mg
500mg

44-0390 **Dichloro[(R)-(+)-2,2',6,6'-tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%** *(478308-93-9)*
$RuCl_2[C_{46}H_{50}N_2O_4P_2][C_{14}H_{16}N_2]$; FW: 1141.11; yellow solid
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.
For detailed technical note visit strem.com.

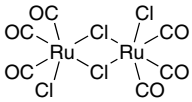


100mg
500mg

44-0391 **Dichloro[(S)-(-)-2,2',6,6'-tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%** *(821793-37-7)*
$RuCl_2[C_{46}H_{50}N_2O_4P_2][C_{14}H_{16}N_2]$; FW: 1141.11; yellow solid
air sensitive
Note: Sold in collaboration with Johnson Matthey for research purposes only. US patent Application No US Patent 5 886 182, 1999 and patents arising therefrom.
For detailed technical note visit strem.com.

100mg
500mg

44-0450 **Dichlorotricarbonylruthenium(II) dimer, min. 98%** *(22594-69-0)*
$[RuCl_2(CO)_3]_2$; FW: 512.02; off-white xtl.; m.p. 208° dec.



100mg
500mg
2g

44-0500 **Dichlorotris(triphenylphosphine)ruthenium(II), 99%** *(15529-49-4)*
$RuCl_2(P(C_6H_5)_3)_3$; FW: 958.85; black xtl.
air sensitive

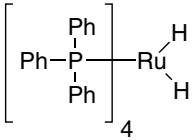
1g
5g
25g

RUTHENIUM (Compounds)

44-0460 NEW

Dihydrotetrakis(triphenylphosphine)ruthenium(II), 95%
(19529-00-1)
$C_{72}H_{60}P_4Ru$; FW: 1152.23; yellow to green pwdr.; m.p. 181-183°
air sensitive

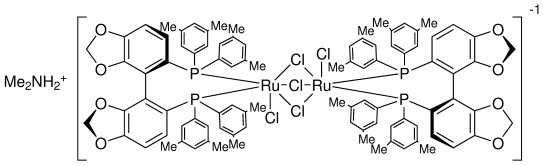
250mg
1g



44-0520

Dimethylammonium dichlorotri(μ-chloro)bis{(R)-(+)-5,5'-bis[di(3,5-xylyl) phosphino]-4,4'-bi-1,3-benzodioxole}diruthenate(II) [NH_2Me_2][{RuCl((R)-dm-segphos®)}$_2$(μ-Cl)$_3$] *(935449-46-0)*
$(CH_3)_2NH_2^+[C_{92}H_{88}Cl_5O_8P_4Ru_2]^-$; FW: 1870.06; light brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g



44-0521

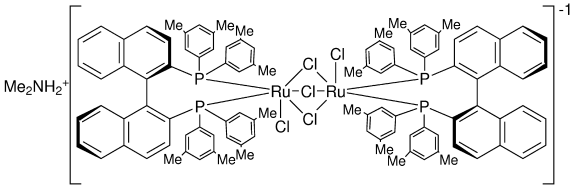
Dimethylammonium dichlorotri(μ-chloro)bis{(S)-(-)-5,5'-bis[di(3,5-xylyl) phosphino]-4,4'-bi-1,3-benzodioxole}diruthenate(II) [NH_2Me_2][{RuCl((S)-dm-segphos®)}$_2$(μ-Cl)$_3$] *(944451-14-3)*
$(CH_3)_2NH_2^+[C_{92}H_{88}Cl_5O_8P_4Ru_2]^-$; FW: 1870.06; light brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g

44-0514

Dimethylammonium dichlorotri(μ-chloro)bis{(R)-(+)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}diruthenate(II) [NH_2Me_2][{RuCl((R)-xylbinap)}$_2$(μ-Cl)$_3$] *(944451-08-5)*
$(CH_3)_2NH_2^+[C_{104}H_{96}Cl_5P_4Ru_2]^-$; FW: 1894.26; red-brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Dimer Catalyst Kit component.
For detailed technical note visit strem.com.

250mg
1g
5g



44-0515

Dimethylammonium dichlorotri(μ-chloro)bis{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}diruthenate(II) [NH_2Me_2][{RuCl((S)-xylbinap)}$_2$(μ-Cl)$_3$] *(944451-10-9)*
$(CH_3)_2NH_2^+[C_{104}H_{96}Cl_5P_4Ru_2]^-$; FW: 1894.26; red-brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Dimer Catalyst Kit component.

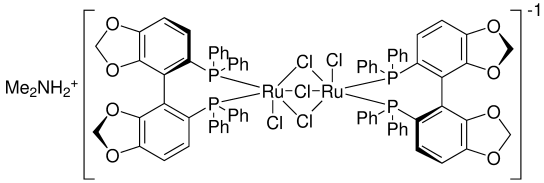
250mg
1g
5g

Technical Note:
1. See 44-0514 (page 394)

RUTHENIUM (Compounds)

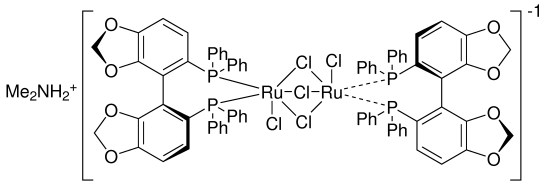
44-0518 **Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]diruthenate(II) [NH_2Me_2] [{RuCl((R)-segphos®)}$_2$(μ-Cl)$_3$]** *(346457-41-8)* — 250mg, 1g, 5g

$(CH_3)_2NH_2^+[C_{76}H_{48}Cl_5O_8P_4Ru_2]^-$; FW: 1637.57; light brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.



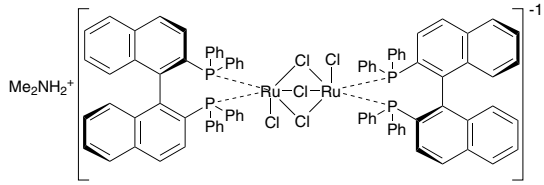
44-0519 **Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]diruthenate(II) [NH_2Me_2] [{RuCl((S)-segphos®)}$_2$(μ-Cl)$_3$]** *(488809-34-3)* — 250mg, 1g, 5g

$(CH_3)_2NH_2^+[C_{76}H_{48}Cl_5O_8P_4Ru_2]^-$; FW: 1637.57; light brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago SEGPHOS® Ru Catalyst Kit component.
For detailed technical note visit strem.com.



44-0510 **Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]diruthenate(II) [NH_2Me_2][{RuCl((R)-binap)}$_2$(μ-Cl)$_3$]** *(199684-47-4)* — 250mg, 1g, 5g

$(CH_3)_2NH_2^+[C_{88}H_{64}Cl_5P_4Ru_2]^-$; FW: 1669.83; orange pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Dimer Catalyst Kit component.
For detailed technical note visit strem.com.



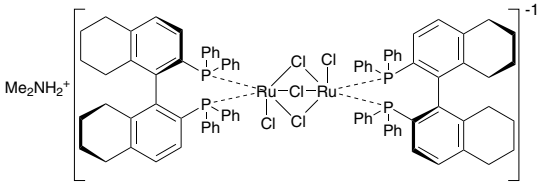
44-0511 **Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]diruthenate(II) [NH_2Me_2][{RuCl((S)-binap)}$_2$(μ-Cl)$_3$]** *(199541-17-8)* — 250mg, 1g, 5g

$(CH_3)_2NH_2^+[C_{88}H_{64}Cl_5P_4Ru_2]^-$; FW: 1669.83; orange pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Dimer Catalyst Kit component.
For detailed technical note visit strem.com.

RUTHENIUM (Compounds)

44-0516 **Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl] diruthenate(II) [NH_2Me_2][{RuCl((R)-H_8-binap)}$_2$(μ-Cl)$_3$]** *(204933-84-6)* — 50mg, 250mg

$(CH_3)_2NH_2^+[C_{88}H_{80}Cl_5P_4Ru_2]^-$; FW: 1685.96; red-brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

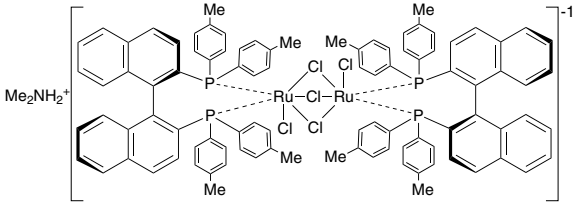


44-0517 **Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl] diruthenate(II) [NH_2Me_2][{RuCl((S)-H_8-binap)}$_2$(μ-Cl)$_3$]** *(944451-12-1)* — 50mg, 250mg

$(CH_3)_2NH_2^+[C_{88}H_{80}Cl_5P_4Ru_2]^-$; FW: 1685.96; red-brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

44-0512 **Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]diruthenate(II) [NH_2Me_2][{RuCl((R)-tolbinap)}$_2$(μ-Cl)$_3$]** *(749935-02-2)* — 250mg, 1g, 5g

$(CH_3)_2NH_2^+[C_{96}H_{80}Cl_5P_4Ru_2]^-$; FW: 1782.05; brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Dimer Catalyst Kit component.
For detailed technical note visit strem.com.



44-0513 **Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]diruthenate(II) [NH_2Me_2][{RuCl((S)-tolbinap)}$_2$(μ-Cl)$_3$]** *(309735-86-2)* — 250mg, 1g, 5g

$(CH_3)_2NH_2^+[C_{96}H_{80}Cl_5P_4Ru_2]^-$; FW: 1782.05; brown pwdr.; m.p. >100° dec.
air sensitive
Note: Manufactured under license of Takasago patent. Takasago BINAP Ru Dimer Catalyst Kit component.

Technical Note:
1. See 44-0512 (page 396)

44-0186 **N-[(1S,2S)-1,2-Diphenyl-2-(2-(4-methylbenzyloxy)ethylamino)-ethyl]-4-methylbenzene sulfonamide(chloro)ruthenium(II) (S,S)-Ts-DENEB™** *(1384974-37-1)* — 250mg, 1g, 5g

$C_{31}H_{33}ClN_2O_3RuS$; FW: 650.19; gray to brown solid
air sensitive
Note: Manufactured under license of Takasago patent application PCT/JP2011/064490.
For detailed technical note visit strem.com.

96-3705 **Enantiotech BIMAH Ru BINAP Catalyst Kit for Asymmetric Hydrogenation**
See page 481

96-3715 **Enantiotech BIMAH Ru DIOP Catalyst Kit for Asymmetric Hydrogenation**
See page 482

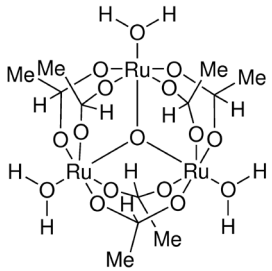
96-3710 **Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit for Asymmetric Hydrogenation**
See page 483

RUTHENIUM (Compounds)

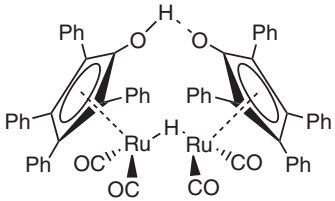
44-0610 NEW
Hexaammineruthenium(II) chloride, 98% *(15305-72-3)*
$Ru(NH_3)_6Cl_2$; FW: 274.16; pale yellow pwdr.
air sensitive
250mg
1g
5g

44-0620
Hexaammineruthenium(III) chloride, 99% *(14282-91-8)*
$Ru(NH_3)_6Cl_3$; FW: 309.61; pale yellow pwdr.
250mg
1g
5g

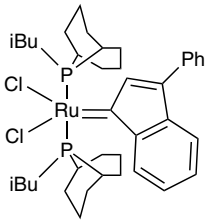
44-0700
Hexakis[μ-(acetato-O:O')]-triaqua-μ3-oxotriruthenium(III), min. 95% (Ruthenium(III) acetate) *(38998-79-7)*
$[Ru_3O(OOCCH_3)_6(H_2O)_3]^+$
$OOCCH_3^-$; FW: 786.57; green pwdr.
1g
5g



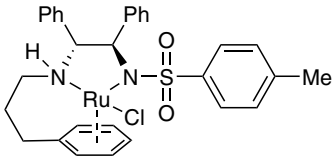
44-0780
1-Hydroxytetraphenylcyclo-pentadienyl(tetraphenyl-2,4-cyclopentadien-1-one)-μ-hydrotetracarbonyldiruthenium(II), 98% SHVO'S CATALYST *(104439-77-2)*
$C_{62}H_{42}O_6Ru_2$; FW: 1085.13; orange pwdr.
For detailed technical note visit strem.com.
100mg
500mg
2g



44-7778
3-Phenyl-1H-inden-1-ylidene[bis(i-butylphoban)] ruthenium(II) dichloride *(894423-99-5)*
$C_{39}H_{56}Cl_2P_2Ru$; FW: 758.78; red pwdr.
Note: Sold in collaboration with Umicore for research purposes only. Patent US 10,518,716.
For detailed technical note visit strem.com.
250mg
1g



44-0111
{N-[3-(η6-phenyl)propyl]-[(1R-2R)-1,2-di-phenyl-1-4-methylbenzenesulfonylami-dato(kN')-ethyl-2-amino-(kN)]}ruthenium(II) (R,R)-Teth-TsDpen RuCl WILLS CATALYST *(1192620-83-9)*
$C_{30}H_{31}ClN_2O_2RuS$; FW: 620.17; orange pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.
100mg
500mg



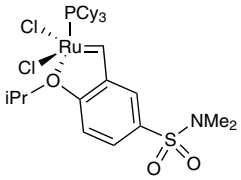
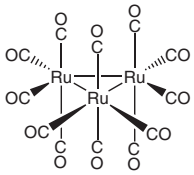
44-0110
{N-[3-(η6-phenyl)propyl]-[(1S-2S)-1,2-diphenyl-1-4-methylbenzenesulfonylam idato(kN')-ethyl-2-amino-(kN)]}ruthenium(II) (S,S)-Teth-TsDpen RuCl WILLS CATALYST *(851051-43-9)*
$C_{30}H_{31}ClN_2O_2RuS$; FW: 620.17; orange pwdr.
air sensitive
Note: Sold in collaboration with JM for research purposes only.
For detailed technical note visit strem.com.
100mg
500mg

44-1700
Potassium hexacyanoruthenate(II) hydrate *(15002-31-0)*
See page 342

93-1987
Potassium pentachlororuthenate(III) hydrate *(14404-33-2)*
See page 343

44-1750
Potassium perruthenate, 98% *(10378-50-4)*
See page 343

RUTHENIUM (Compounds)

44-0078	**{[2-(i-Propoxy)-5-(N,N-dimethylaminosulfonyl) phenyl]methylene}(tricyclohexylphosphine) ruthenium(II) dichloride Zhan Catalyst -1C** *(918871-44-0)* $C_{30}H_{50}Cl_2NO_3PRuS$; FW: 707.74; brown solid Note: Sold under license from Zannan for research purposes only. Patents CN1907992A, US 2007/0043180 A1, PCT WO 2007/003135 A1. **For detailed technical note visit strem.com.** 	500mg 2g
44-1800	**Ruthenium(III) acetylacetonate, 99%** *(14284-93-6)* $Ru(CH_3COCHCOCH_3)_3$; FW: 398.40; red to brown xtl.; m.p. 230-235°	1g 5g
44-1825	**Ruthenium(III) bromide hydrate** *(14014-88-1)* $RuBr_3 \cdot XH_2O$; FW: 340.80; black xtl.	1g 5g
44-1850	**Ruthenium carbonyl, 99%** *(15243-33-1)* $Ru_3(CO)_{12}$; FW: 639.34; orange xtl.; m.p. 150° dec. **For detailed technical note visit strem.com.** 	1g 5g 25g
44-5850 HAZ	**Ruthenium(III) chloride, anhydrous** *(10049-08-8)* $RuCl_3$; FW: 207.43; black pwdr.; m.p. >500° dec. *hygroscopic*	1g 5g 25g
44-5880 HAZ	**Ruthenium(III) chloride hydrate (40-43% Ru) (99.9%-Ru)** *(14898-67-0)* $RuCl_3 \cdot XH_2O$; FW: 207.43; black pwdr.; m.p. 100° (dec.) *hygroscopic*	1g 5g 25g
44-5885 NEW HAZ	**Ruthenium(III) chloride hydrate (40-43% Ru) (99.99+%-Ru) PURATREM [free of Ru(II) and Ru(IV) by electrochemical analysis]** *(14898-67-0)* $RuCl_3 \cdot XH_2O$; FW: 207.43; black pwdr. *hygroscopic*	1g 5g
44-2500	**Ruthenium(III) iodide, anhydrous, 98+%** *(13896-65-6)* RuI_3; FW: 481.78; black xtl.	1g 5g
44-3815	**Ruthenium(III) nitrosyl chloride monohydrate, 99%** *(18902-42-6)* $Ru(NO)Cl_3 \cdot H_2O$; FW: 237.44 (255.46); red xtl. *hygroscopic*	1g 5g
44-3800 HAZ	**Ruthenium(III) nitrosyl nitrate, solution (1.5% Ru)** *(34513-98-9)* $Ru(NO)(NO_3)_3$; FW: 317.09; orange to brown liq.	50g 250g 1kg
44-1977	**Ruthenium(IV) oxide, anhydrous (99.9+%-Ru)** *(12036-10-1)* RuO_2; FW: 133.07; black pwdr.; m.p. dec.; d. 6.97	1g 5g
44-1980	**Ruthenium(IV) oxide hydrate** *(32740-79-7)* $RuO_2 \cdot XH_2O$; FW: 133.07; -100 mesh black pwdr.; SA: high	1g 5g
44-2000 amp HAZ	**Ruthenium(VIII) oxide (0.5% stabilized aqueous solution)** *(20427-56-9)* RuO_4; FW: 165.70; yellow liq. *heat sensitive, (store cold)*	10ml 5 x 10ml
96-6955	**Takasago ATH (Asymmetric Transfer Hydrogenation) Catalyst Kit** *See* page 490	
96-6953	**Takasago BINAP Ru Acetate Catalyst Kit** *See* page 492	
96-6951	**Takasago BINAP Ru Cymene Catalyst Kit** *See* page 493	
96-6954	**Takasago BINAP Ru Diamine Catalyst Kit** *See* page 494	
96-6952	**Takasago BINAP Ru Dimer Catalyst Kit** *See* page 495	
96-6901	**Takasago SEGPHOS® Ru Catalyst Kit** *See* page 496	

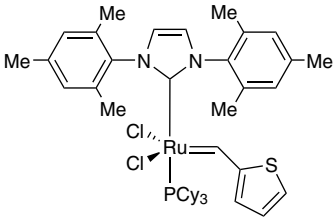
RUTHENIUM (Compounds)

44-7760 **Tetrabutylammonium perruthenate, min. 97% TBAP** *(96317-72-5)*
See page 7

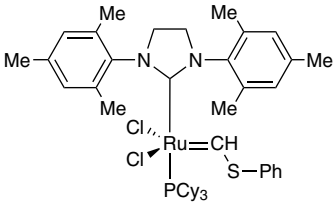
44-7000 **cis-Tetrakis(dimethylsulfoxide)dichlororuthenium(II), 98%** *(11070-19-2)* — 250mg, 1g, 5g
$RuCl_2[CH_3S(O)CH_3]_4$; FW: 484.49; yellow pwdr.

44-7850 **Tetrapropylammonium perruthenate, min. 97% TPAP** *(114615-82-6)*
See page 8

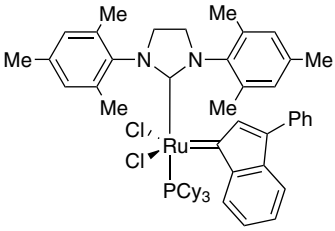
44-7785 **Tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl) imidazol-2-ylidene][2-thienylmethylene]ruthenium(II) dichloride, min. 95% [catMETium® RF 2]** *(1190427-49-6)* — 100mg, 500mg, 2g
$C_{44}H_{61}Cl_2N_2PRuS$; FW: 852.98; brown pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Patent US 6635768.
For detailed technical note visit strem.com.



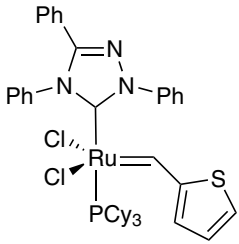
44-7780 **Tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene][(phenylthio)methylene]ruthenium(II) dichloride** *(1155422-69-7)* — 100mg, 500mg
$RuCl_2[C_{21}H_{26}N_2][C_7H_6S][P(C_6H_{11})_3]$; FW: 881.04; purple-brown solid
For detailed technical note visit strem.com.



44-7775 **Tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene][3-phenyl-1H-inden-1-ylidene]ruthenium(II) dichloride, min. 95% [catMETium® RF1]** *(254972-49-1)* — 100mg, 500mg, 2g
$RuCl_2[C_{21}H_{24}N_2][C_{15}H_{10}][P(C_6H_{11})_3]$; FW: 947.07; orange to brown pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Patent US 6635768. For use in pharmaceutical applications only. Other uses are unauthorized.
For detailed technical note visit strem.com.

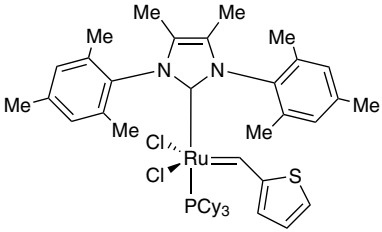


44-7795 **Tricyclohexylphosphine[2,4-dihydro-2,4,5-triphenyl-3H-1,2,4-triazol-3-ylidene][2-thienylmethylene]ruthenium(II) dichloride, min. 95% [catMETium® RF 4]** *(1190427-51-0)* — 100mg, 500mg, 2g
$C_{43}H_{52}Cl_2N_3PRuS$; FW: 845.91; violet to brown pwdr.
Note: Sold in collaboration with Evonik for research purposes only. Patent US 6635768.
For detailed technical note visit strem.com.



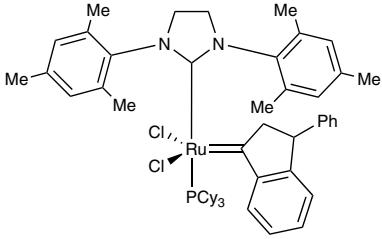
RUTHENIUM (Compounds)

44-7790 **Tricyclohexylphosphine[4,5-dimethyl-1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene][2-thienylmethylene]ruthenium(II) dichloride, min. 95% [catME-Tium® RF 3]** *(1190427-50-9)*
$C_{46}H_{65}Cl_2N_2PRuS$; FW: 881.04; violet to brown pwdr.
Note: Sold in collaboration with Evonik for research purposes only.
Patent US 6635768.
For detailed technical note visit strem.com.



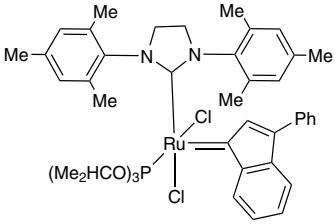
100mg
500mg
2g

44-7777 **Tricyclohexylphosphine[3-phenyl-1H-inden-1-ylidene][1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene]ruthenium(II) dichloride, min. 95%** *(536724-67-1)*
$C_{54}H_{69}Cl_2N_2PRu$; FW: 949.09; dark red pwdr.
Note: Sold in collaboration with Umicore for research purposes only.
For use in lifescience applications and research purposes only.
For detailed technical note visit strem.com.



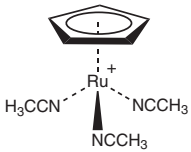
100mg
500mg

44-7783 **Tri(i-propoxy)phosphine(3-phenyl-1H-inden-1-ylidene)[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene]ruthenium (II) dichloride, min. 95% cis-Caz-1**
$C_{45}H_{57}Cl_2N_2O_3PRu$; FW: 876.89; brown pwdr.
For detailed technical note visit strem.com.



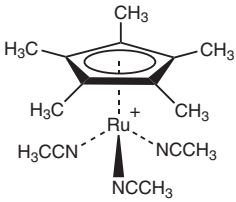
50mg
250mg

44-7870 **Tris(acetonitrile)cyclopentadienylruthenium(II) hexafluorophosphate, min. 98%** *(80049-61-2)*
$C_5H_5Ru(CH_3CN)_3^+PF_6^-$; FW: 434.30; yellow to orange pwdr.; m.p. 117-118° (dec.)
air sensitive, (store cold)
For detailed technical note visit strem.com.



250mg
1g
5g

44-7880 **Tris(acetonitrile)pentamethylcyclopentadienylruthenium(II) hexafluorophosphate, min. 98%** *(99604-67-8)*
$[Ru(C_{10}H_{15})(CH_3CN)_3]^+PF_6^-$; FW: 504.42; yellow orange pwdr.
air sensitive, (store cold)
For detailed technical note visit strem.com.



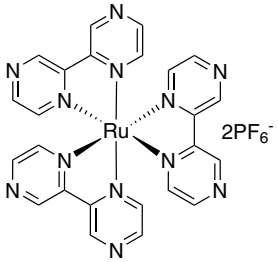
50mg
250mg
1g

44-7890 **Tris(acetonitrile)pentamethylcyclopentadienylruthenium(II) trifluoromethanesulfonate, min. 98%** *(113860-02-9)*
$[Ru(C_{10}H_{15})(CH_3CN)_3]^+CF_3SO_3^-$; FW: 508.52; orange pwdr.
air sensitive, (store cold)
For detailed technical note visit strem.com.

250mg
1g

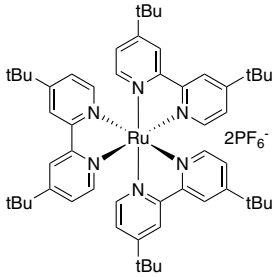
RUTHENIUM (Compounds)

44-7910 NEW
Tris(2,2'-bipyrazine)ruthenium(II) hexafluorophosphate, 95% *(80907-56-8)*
$C_{24}H_{18}F_{12}N_{12}P_2Ru$; FW: 865.48; red pwdr.
air sensitive
Note: Photocatalyst.
For detailed technical note visit strem.com.
50mg
250mg

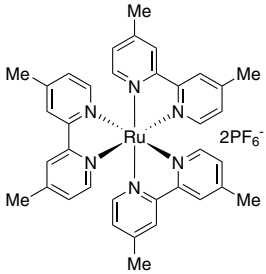


44-7900
Tris(2,2'-bipyridyl)ruthenium(II) chloride hexahydrate, min. 98% *(50525-27-4)*
$Ru(C_{10}H_8N_2)_3Cl_2 \cdot 6H_2O$; FW: 640.54 (748.63); orange to red xtl.
1g
5g

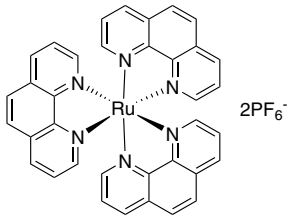
44-7940 NEW
Tris[4,4'-bis(t-butyl)-2,2'-bipyridine] ruthenium(II) hexafluorophosphate, 95%
(75777-87-6)
$C_{54}H_{72}F_{12}N_6RuP_2$; FW: 1196.19; red pwdr.
air sensitive
Note: Photocatalyst.
For detailed technical note visit strem.com.
50mg
250mg



44-7930 NEW
Tris(4,4'-dimethyl-2,2'-bipyridine)ruthenium(II) hexafluorophosphate, 95%, DMBPY *(83605-44-1)*
$C_{36}H_{36}F_{12}N_6RuP_2$; FW: 943.71; red pwdr.
air sensitive
Note: Photocatalyst.
50mg
250mg



44-7955 NEW
Tris(1,10-phenanthroline)ruthenium(II) hexafluorophosphate, 95% *(60804-75-3)*
$C_{36}H_{24}F_{12}N_6RuP_2$; FW: 931.62; red pwdr.
air sensitive
Note: Photocatalyst
50mg
250mg



44-8000
Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)ruthenium(III), 99% (99.9%-Ru) [Ru(TMHD)$_3$] *(38625-54-6)*
$Ru(C_{11}H_{19}O_2)_3$; FW: 650.88; orange pwdr.; m.p. 210-213°; b.p. dec. 250° (subl. 120°/0.5mm)
1g
5g

SAMARIUM (Elemental Forms)

93-6236
Samarium chips (99.9% REO) *(7440-19-9)*
Sm; FW: 150.4; m.p. 1072°; b.p. 1778°; d. 7.4
air sensitive, moisture sensitive
10g
50g

93-6240
Samarium foil (99.9% REO) *(7440-19-9)*
Sm; FW: 150.4; 0.62 mm thick (~2.9g/25 x 25 mm); m.p. 1072°; b.p. 1778°; d. 7.4
air sensitive, moisture sensitive
25 x 25mm
50 x 50mm

SAMARIUM (Elemental Forms)

93-6237	**Samarium ingot (99.9% REO)** *(7440-19-9)* Sm; FW: 150.4; ingot; m.p. 1072°; b.p. 1778°; d. 7.4 *air sensitive, moisture sensitive*	25g 100g
93-6235 HAZ	**Samarium powder (99.9% REO)** *(7440-19-9)* Sm; FW: 150.4; -40 mesh; m.p. 1072°; b.p. 1778°; d. 7.4 *air sensitive, moisture sensitive*	1g 10g 50g
62-6235 NEW HAZ	**Samarium powder (99.9% REO) 325 mesh** *(7440-19-9)* Sm; FW: 140.4; 325 mesh; m.p. 1072º; b.p. 1778º; d. 7.40 *air sensitive, moisture sensitive*	5g 25g

SAMARIUM (Compounds)

93-6201	**Samarium(III) acetate hydrate (99.9%-Sm) (REO)** *(100587-91-5)* $Sm(OOCCH_3)_3 \cdot XH_2O$; FW: 327.53; off-white pwdr.	25g 100g
93-6226	**Samarium(III) acetylacetonate hydrate (99.9%-Sm) (REO)** *(14589-42-5)* $Sm(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 447.69; white to off-white pwdr.	25g 100g
62-2000	**Samarium(III) carbonate hydrate (99.9%-Sm) (REO)** *(5895-47-6)* $Sm_2(CO_3)_3 \cdot XH_2O$; FW: 480.72; white to light yellow pwdr.; m.p. >500° dec.	10g 50g
62-3000 amp	**Samarium(III) chloride, anhydrous (99.9%-Sm) (REO)** *(10361-82-7)* $SmCl_3$; FW: 256.76; white to yellow pwdr.; m.p. 686°; d. 4.465 *hygroscopic*	5g 25g 100g
93-6225	**Samarium(III) chloride hexahydrate (99.9%-Sm) (REO)** *(13465-55-9)* $SmCl_3 \cdot 6H_2O$; FW: 256.71 (364.80); light yellow xtl.	25g 100g
93-6205	**Samarium(III) fluoride (99.9%-Sm) (REO)** *(13765-24-7)* SmF_3; FW: 207.35; off-white pwdr.; m.p. 1306°; b.p. 2323°; d. 6.928 *hygroscopic*	5g 25g
62-3100 HAZ	**Samarium(II) iodide, 0.1M in THF** *(32248-43-4)* SmI_2; FW: 404.21; liq. stabilized with Sm pwdr.; d. 0.922 g/ml *air sensitive, moisture sensitive* Note: Free rubber septum included. **For detailed technical note visit strem.com.**	50ml 250ml
93-6206	**Samarium(III) naphthenate (8-10% Sm)** *(61790-20-3)* viscous liq.	25g 100g
93-6207 HAZ	**Samarium(III) nitrate hexahydrate (99.9%-Sm) (REO)** *(13759-83-6)* $Sm(NO_3)_3 \cdot 6H_2O$; FW: 336.37 (444.47); yellow xtl. *hygroscopic*	25g 100g
93-6209	**Samarium(III) oxalate hydrate (99.9%-Sm) (REO)** *(14175-03-2)* $Sm_2(C_2O_4)_3 \cdot XH_2O$; FW: 564.76; white pwdr.	10g 50g
93-6211	**Samarium(III) oxide (99.9%-Sm) (REO)** *(12060-58-1)* Sm_2O_3; FW: 348.70; white to off-white pwdr.; d. 8.347	25g 100g 500g
93-6231	**Samarium(III) oxide (99.99+%-Sm) (REO) PURATREM** *(12060-58-1)* Sm_2O_3; FW: 348.70; white to off-white pwdr.; d. 8.347	5g 25g
93-6212 HAZ	**Samarium(III) perchlorate, 50% aqueous solution (99.9%-Sm) (REO)** *(13569-60-3)* $Sm(ClO_4)_3$; FW: 448.70; colorless liq.	2g 10g
93-6214 HAZ	**Samarium(III) i-propoxide, min. 97% (99.9%-Sm) (REO)** *(3504-40-3)* $Sm(OC_3H_7)_3$; FW: 1535.94; cream colored pwdr. *moisture sensitive*	1g 5g 25g
93-6216	**Samarium(III) sulfate octahydrate (99.9%-Sm) (REO)** *(13465-58-2)* $Sm_2(SO_4)_3 \cdot 8H_2O$; FW: 588.89 (733.01); colorless to pale yellow xtl.; d. 2.930	25g 100g
93-6219	**Samarium(III) trifluoroacetylacetonate (99.9%-Sm) (REO)** *(23301-82-8)* $Sm(CF_3COCHCOCH_3)_3$; FW: 609.59; white pwdr.	1g 5g
62-3300	**Samarium(III) trifluoromethanesulfonate, min. 98% (Samarium triflate)** *(52093-28-4)* $Sm(CF_3SO_3)_3$; FW: 597.57; white to off-white pwdr. *hygroscopic*	5g 25g

SAMARIUM (Compounds)

62-3500 amp HAZ	**Tris(cyclopentadienyl)samarium (99.9%-Sm) (REO)** *(1298-55-1)* $(C_5H_5)_3Sm$; FW: 345.69; orange pwdr.; m.p. 356° *air sensitive, moisture sensitive*	1g 5g
62-4000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)samarium(III) (99.9%-Sm) (REO) [Sm(TMHD)$_3$]** *(15492-50-9)* $Sm(C_{11}H_{19}O_2)_3$; FW: 700.11; pale yellow xtl.; m.p. 191-193°; b.p. dec. 250° (subl. 183°/1.3mm)	1g 5g

SCANDIUM (Elemental Forms)

93-2122	**Scandium lump, vacuum remelted (99.9% REO)** *(7440-20-2)* Sc; FW: 44.956; lump; m.p. 1539°; b.p. 2730°; d. 3.0 *air sensitive*	500mg 2g
93-2120 HAZ	**Scandium powder (99.9% REO)** *(7440-20-2)* Sc; FW: 44.956; pwdr.; m.p. 1539°; b.p. 2730°; d. 3.0 *air sensitive*	100mg 500mg 2g

SCANDIUM (Compounds)

93-2101	**Scandium(III) acetate hydrate (99.9%-Sc) (REO)** *(3804-23-7)* $Sc(OOCCH_3)_3 \cdot XH_2O$; FW: 222.10; white xtl.	1g 5g
93-2110	**Scandium(III) carbonate hydrate (99.99%-Sc) (REO) PURATREM** *(5809-49-4)* $Sc_2(CO_3)_3 \cdot XH_2O$; FW: 269.96; white pwdr.	1g 5g
93-2102	**Scandium (III) chloride, anhydrous (99.99%-Sc) (REO), sublimed, PURATREM** *(10361-84-9)* $ScCl_3$; FW: 151.32; white pwdr.; m.p. 939°; d. 2.39 *hygroscopic*	250mg 1g 5g
93-2111	**Scandium(III) chloride hexahydrate (99.9%-Sc) (REO)** *(20662-14-0)* $ScCl_3 \cdot 6H_2O$; FW: 151.32 (259.41); white xtl.	1g 5g
93-2112	**Scandium(III) fluoride (99.9%-Sc) (REO)** *(13709-47-2)* ScF_3; FW: 101.95; white pwdr.; m.p. 1515° *hygroscopic*	1g 5g
93-2104 HAZ	**Scandium(III) nitrate pentahydrate (99.9%-Sc) (REO)** *(13465-60-6)* $Sc(NO_3)_3 \cdot 5H_2O$; FW: 230.97 (321.05); white xtl.	1g 5g
93-2113	**Scandium(III) oxide (99.9%-Sc) (REO)** *(12060-08-1)* Sc_2O_3; FW: 137.91; white pwdr.; d. 3.864	1g 5g 25g
21-2112	**Scandium(III) oxide (99.99%-Sc) (REO) PURATREM** *(12060-08-1)* Sc_2O_3; FW: 137.91; white pwdr. (~7 micron); d. 3.864	1g 5g 25g
21-0750	**Scandium(III) oxide, sintered lumps (99.9%-Sc) (REO)** *(12060-08-1)* Sc_2O_3; FW: 137.91; 6-25mm irregular pieces	1g 5g
21-2000	**Scandium(III) trifluoromethanesulfonate, min. 98% (Scandium triflate)** *(144026-79-9)* $Sc(SO_3CF_3)_3$; FW: 492.17; white pwdr. *hygroscopic* **For detailed technical note visit strem.com.**	250mg 1g 5g
21-2004	**Scandium(III) trifluoromethanesulfonate (Scandium triflate), Microencapsulated in a Styrene Polymer [~13% $Sc(SO_3CF_3)_3$]** $Sc(SO_3CF_3)_3$; white solid **For detailed technical note visit strem.com.**	500mg
21-2023	**Scandium(III) trifluoromethanesulfonimide, min. 97%** *(176726-07-1)* $Sc(C_2F_6NO_4S_2)_3$; FW: 885.40; white pwdr. *hygroscopic*	250mg 1g
21-1000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)scandium(III), 99% (99.9%-Sc) (REO) [Sc(TMHD)$_3$]** *(15492-49-6)* $Sc(C_{11}H_{19}O_2)_3$; FW: 594.77; white pwdr.; m.p. 150-152°; b.p. dec. 275°	500mg 2g

SELENIUM (Elemental Forms)

93-3416 HAZ	**Selenium powder (99.5%)** *(7782-49-2)* Se; FW: 78.96; -200 mesh; m.p. 170-217°; b.p. 690°; d. 4.81	25g 100g 500g

SELENIUM (Elemental Forms)

34-0090 HAZ	**Selenium powder (99.99%)** *(7782-49-2)* Se; FW: 78.96; -200 mesh; m.p. 170-217°; b.p. 690°; d. 4.81	100g 500g
93-3417 HAZ	**Selenium shot (99.99%)** *(7782-49-2)* Se; FW: 78.96; gray pellets (~2mm dia.); m.p. 170-217°; b.p. 690°; d. 4.81	50g 250g

SELENIUM (Compounds)

34-0380 HAZ	**Diethyldiselenide, min. 97%** *(628-39-7)* $C_2H_5SeSeC_2H_5$; FW: 216.04; red-brown liq.; b.p. 85°/21mm *air sensitive, (store cold), STENCH*	2g 10g 50g
34-0550 amp HAZ	**Dimethylselenide, 99%** *(593-79-3)* $(CH_3)_2Se$; FW: 109.03; colorless to yellow liq.; b.p. 57-58°; d. 1.4077 *air sensitive, heat sensitive, (store cold), STENCH*	10g 50g
34-0650 HAZ	**Diphenyldiselenide, 98%** *(1666-13-3)* $C_6H_5SeSeC_6H_5$; FW: 312.13; yellow pwdr.; m.p. 59-62°	5g 25g
34-0700 HAZ	**Diphenylselenide** *(1132-39-4)* $(C_6H_5)_2Se$; FW: 233.17; amber liq.; m.p. 3°; b.p. 165-167°/12 mm; d. 1.338 *STENCH*	2g 10g
34-1400 HAZ	**Phenylselenium chloride** *(5707-04-0)* C_6H_5SeCl; FW: 191.52; red xtl.; m.p. 64-65°; b.p. 92°/5 mm *moisture sensitive*	2g 10g
34-1600 HAZ	**Phenylselenol, 97%** *(645-96-5)* C_6H_5SeH; FW: 157.07; colorless to light yellow liq.; b.p. 67-68°/12 mm; f.p. 158°F; d. 1.479 *air sensitive, STENCH*	1g 5g
93-3420 HAZ	**Selenic acid, 40% solution** *(7783-08-6)* H_2SeO_4; FW: 144.97; colorless liq.	50g 250g
93-3410 HAZ	**Selenium(IV) bromide, 99%** *(7789-65-3)* $SeBr_4$; FW: 398.6; reddish black xtl.; m.p. 75° dec. *moisture sensitive*	5g 25g
93-3404 HAZ	**Selenium(I) chloride (99%-Se)** *(10025-68-0)* Se_2Cl_2; FW: 228.53; red liq.; m.p. -85°; b.p. 130° dec.; d. 2.77 *moisture sensitive*	10g 50g
93-3411 HAZ	**Selenium(IV) chloride (99.8%-Se)** *(10026-03-6)* $SeCl_4$; FW: 220.77; -8 mesh yellow pwdr.; m.p. 196° subl.; b.p. 288° dec.; d. 1.807 *moisture sensitive*	10g 50g
93-3408 HAZ	**Selenium dichloride oxide, 97%** *(7791-23-3)* $SeOCl_2$; FW: 165.87; yellow to orange liq.; m.p. 8.5°; b.p. 176.4°; d. 2.42 *moisture sensitive*	5g 25g
93-3406 HAZ	**Selenium(IV) oxide, 99.8%** *(7446-08-4)* SeO_2; FW: 110.96; off-white pwdr.; b.p. 340-350° subl.; d. 3.95	100g 500g
93-3405 HAZ	**Selenium(IV) oxide (99.999%-Se) PURATREM** *(7446-08-4)* SeO_2; FW: 110.96; off-white pwdr.; b.p. 340-350° subl.; d. 3.95	5g 25g
93-3415 HAZ	**Selenium(IV) sulfide, min. 94%** *(7488-56-4)* SeS_2; FW: 143.09; red pwdr.; m.p. < 100°; b.p. dec.	25g 100g
34-1900 HAZ	**Selenourea, 99+%** *(630-10-4)* NH_2CSeNH_2; FW: 123.02; pink solid; m.p. 200° dec. *air sensitive, light sensitive, (store cold)*	1g 5g 25g
34-0100 HAZ	**Selenous acid (99.999%-Se) PURATREM** *(7783-00-8)* H_2SeO_3; FW: 128.97; white xtl.; m.p. 70° dec.; d. 3.004 *hygroscopic*	25g 100g

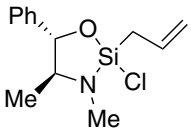
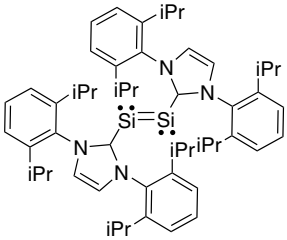
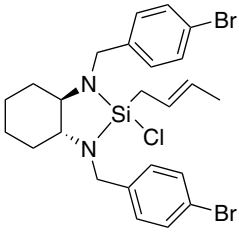
SILICON (Elemental Forms)

14-0600	**Silicon chips (99.9999%)** *(7440-21-3)* Si; FW: 28.09; 1-3 mm; m.p. 1420°; b.p. 2600°; d. 2.42	100g 500g
93-1496 HAZ	**Silicon powder (99+%)** *(7440-21-3)* Si; FW: 28.09; -325 mesh; m.p. 1420°; b.p. 2600°; d. 2.42	100g 500g
14-0700 HAZ	**Silicon powder (99.999%)** *(7440-21-3)* Si; FW: 28.09; -325 mesh; m.p. 1420°; b.p. 2600°; d. 2.42	25g 100g 500g

SILICON (Elemental Forms)

14-0655 HAZ	**Silicon powder (amorphous), min. 97%** *(7440-21-3)* Si; brown pwdr.; SA: >50 m²/g *air sensitive*	5g 25g
14-0650	**Silicon powder (nanocrystalline), min. 97%** *(7440-21-3)* *See* page 165	
93-1495	**Silicon random pieces (99.5%)** *(7440-21-3)* Si; FW: 28.09; 1/2" and down; m.p. 1420°; b.p. 2600°; d. 2.42	500g 2kg

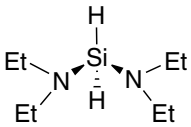
SILICON (Compounds)

14-1815	**(4S,5S)-2-Allyl-2-chloro-3,4-dimethyl-5-phenyl-1-oxa-3-aza-2-silacyclopentane, min. 98% (~2:1 mixture of diastereomers)** *(447440-43-9)* $C_{13}H_{18}ClNOSi$; FW: 267.83; colorless oil *moisture sensitive, (store cold)* Note: Patent WO 03/074534, WO 06/062901. **For detailed technical note visit strem.com.** 	1g 5g
93-1402 HAZ	**3-Aminopropyltriethoxysilane, 98%** *(919-30-2)* $H_2N(CH_2)_3Si(OC_2H_5)_3$; FW: 221.38; colorless liq.; b.p. 217°; f.p. 220°F; d. 0.943 *moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4036, 98-4037.	100g 500g
98-4036 HAZ	**3-Aminopropyltriethoxysilane, 98%, 93-1402, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(919-30-2)* $H_2N(CH_2)_3Si(OC_2H_5)_3$; FW: 221.38; colorless liq.; m.p. 300°; b.p. 217°; f.p. 220°F; d. 0.943 *moisture sensitive* Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4037.	25g
98-4037 HAZ	**3-Aminopropyltriethoxysilane, 98%, 93-1402, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD** *(919-30-2)* $H_2N(CH_2)_3Si(OC_2H_5)_3$; colorless liq.; b.p. 217°; f.p. 220°F; d. 0.943 *moisture sensitive*	25g
14-1050	**1,2-Bis[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]disilene** *(1070876-63-9)* $C_{54}H_{72}N_4Si_2$; FW: 833.35; red xtl. *air sensitive* Note: Sold under license from the University of Georgia Research Foundation, Inc. for research purposes only. US Patent 8,278,456. **For detailed technical note visit strem.com.** 	50mg 250mg
14-1883	**(1R,2R)-(-)-[N,N'-Bis(4-bromobenzyl)-1,2-cyclohexanediamino][(2E)-2-buten-1-yl]chlorosilane, min. 98%** *(804559-39-5)* $C_{24}H_{29}Br_2ClN_2Si$; FW: 568.85; white solid; m.p. 92-96° *moisture sensitive* Note: Patent WO 03/074534, WO 06/062901. 	250mg 1g
14-1884	**(1S,2S)-(+)-[N,N'-Bis(4-bromobenzyl)-1,2-cyclohexanediamino][(2E)-2-buten-1-yl]chlorosilane, min. 98%** *(1072220-37-1)* $C_{24}H_{29}Br_2ClN_2Si$; FW: 568.85; white solid; m.p. 92-96° *moisture sensitive* Note: Patent WO 03/074534, WO 06/062901.	250mg 1g
14-1060 amp HAZ	**Bis(t-butylamino)silane, 97+% BTBAS** *(186598-40-3)* $[NH(C_4H_9)]_2SiH_2$; FW: 174.36; colorless liq.; b.p. 167°C; f.p. 30°F; d. 0.816 *moisture sensitive, (store cold)*	1g 5g 25g

SILICON (Compounds)

14-1072 NEW
Bis(t-butylamino)silane, BTBAS (99.999%-Si) PURATREM *(186598-40-3)*
$C_8H_{22}N_2Si$; FW: 174.36; colorless liq.; b.p. 167°C; f.p. 30°C; d. 0.816
moisture sensitive
1g 5g 25g

14-7030 HAZ
Bis(diethylamino)silane, 97% BDEAS *(27804-64-4)*
$SiH_2[N(CH_2CH_3)_2]_2$; FW: 174.36; colorless liq.; b.p. 70° (30mm); d. 0.804
air sensitive, moisture sensitive
For detailed technical note visit strem.com.
5g 25g

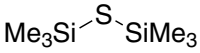


98-8810 NEW HAZ
Bis(diethylamino)silane, 99% (99.999%-Si) BDEAS PURATREM *(27804-64-4)*
$SiH_2[N(CH_2CH_3)_2]_2$; FW: 174.36; colorless liq.
air sensitive, moisture sensitive
5g 25g

14-1000 HAZ
Bis(trimethylsilyl)acetylene, min. 97% *(14630-40-1)*
$(CH_3)_3SiC{\equiv}CSi(CH_3)_3$; FW: 170.40; colorless liq.; m.p. 22-23°; b.p. 133-135°; f.p. 37°F; d. 0.752
10g 50g

14-1500 HAZ
Bis(trimethylsilyl)methane, 97% *(2117-28-4)*
$[(CH_3)_3Si]_2CH_2$; FW: 160.41; colorless liq.; m.p. -71°; b.p. 133-134°; f.p. 55°F; d. 0.751
1g 5g

14-1015 HAZ
Bis(trimethylsilyl)sulfide, min. 98% *(3385-94-2)*
$(CH_3)_3SiSSi(CH_3)_3$; FW: 178.44; colorless liq.; b.p. 164°; d. 0.846
(store cold), STENCH
1g 5g 25g

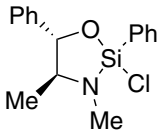


14-1775 HAZ
t-Butyldimethylchlorosilane, min. 97% *(18162-48-6)*
$(CH_3)_3CSi(CH_3)_2Cl$; FW: 150.70; white pwdr.; m.p. 86-89°; b.p. 125°; f.p. 73°F
10g 50g

14-1800 HAZ
t-Butyldimethylsilyl trifluoromethanesulfonate, 98% *(69739-34-0)*
$(C_4H_9)(CH_3)_2Si(SO_3CF_3)$; FW: 264.34; clear liq.; f.p. 98°F; d. 1.151
moisture sensitive
1g 5g 25g

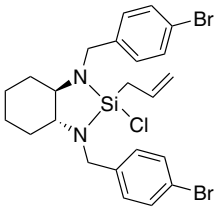
93-1403 amp HAZ
n-Butyltrichlorosilane *(7521-80-4)*
$(C_4H_9)SiCl_3$; FW: 191.50; colorless liq.; b.p. 142°; f.p. 130°F; d. 1.160
moisture sensitive
10g 50g

14-1810
(4S,5S)-2-Chloro-3,4-dimethyl-2,5-diphenyl-1-oxa-3-aza-2-silacyclopentane, min. 98% (~2:1 mixture of diastereomers) *(680592-40-9)*
$C_{16}H_{18}ClNOSi$; FW: 303.86; colorless oil
moisture sensitive, (store cold)
Note: Patent WO 03/074534, WO 06/062901.
For detailed technical note visit strem.com.
1g 5g

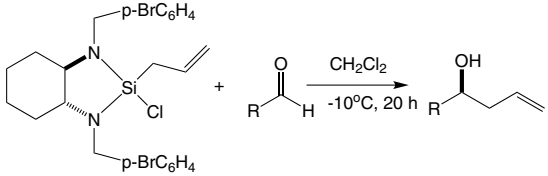


93-1404
3-Chloropropyltrimethoxysilane, min. 97% *(2530-87-2)*
$(ClCH_2CH_2CH_2)Si(OCH_3)_3$; FW: 198.72; colorless liq.; b.p. 183°; f.p. 173°F; d. 1.077
moisture sensitive
50g 250g

14-1880
(1R,2R)-[1,2-Cyclohexanediamino-N,N'-bis(4-bromobenzyl)allylchlorosilane, min. 98% *(546084-25-7)*
$C_{23}H_{27}Br_2ClN_2Si$; FW: 554.82; white solid
moisture sensitive, (store cold)
Note: Patent WO 3/074534, WO 06/062901.
250mg 1g

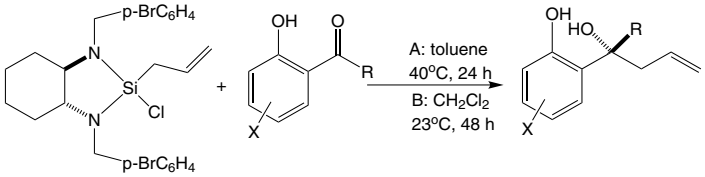


Technical Notes:
1. Reagent used in the enantioselective allylation of aldehydes.
2. Useful reagent for the enantioselective allylation of sterically hindered and functionalized ketones.



Tech. Note (1)
Ref. (1)

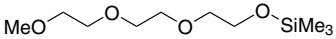
SILICON (Compounds)



Tech. Note (2)
Ref. (2)

References:

1. *Angew. Chem. Int. Ed.,* **2003**, *42*, 946
2. *Angew. Chem. Int. Ed.,* **2006**, *45*, 3811

14-1950	**Dimethylbis(indenyl)silane, min. 98%** *(136946-83-3)* $(CH_3)_2Si(C_8H_7)_2$; FW: 288.46; viscous yellow liq.	5g 25g
93-1493 HAZ	**Dimethyldichlorosilane, 99%** *(75-78-5)* $(CH_3)_2SiCl_2$; FW: 129.07; colorless liq.; m.p. -76°; b.p. 70.5°; f.p. 3°F; d. 1.070 *moisture sensitive*	250g 1kg
93-1406 HAZ	**Dimethyldiethoxysilane, 97%** *(78-62-6)* $(CH_3)_2Si(OC_2H_5)_2$; FW: 148.30; colorless liq.; m.p. -70°; b.p. 114-115°; f.p. 53°F; d. 0.840 *moisture sensitive*	50g 250g
93-1497	**Dimethylpolysilane** *(28883-63-8)* $[(CH_3)_2Si\text{-}]_n$; FW: 1100-1700; off-white pwdr.	10g 50g
14-1946 NEW	**2,2-Dimethyl-4,7,10,13-tetraoxa-2-silatetradecane, 99+% Electrolyte Solvent ANL-1S1M3** *(864079-63-0)* $C_{11}H_{26}O_4Si$; FW: 250.41; colorless liq. *air sensitive, moisture sensitive* Note: Use for batteries for medical devices expressly excluded. U.S. Patent: 8,076,032 **For detailed technical note visit strem.com.** 	1g 5g
14-1930 NEW	**2,2-Dimethyl-3,6,9,12-tetroxa-2-silatridecane, 99+% Electrolyte Solvent ANL-1NM3** *(864079-62-9)* $C_{10}H_{24}O_4Si$; FW: 236.38; colorless liq. Note: Use for batteries for medical devices expressly excluded. U.S. Patent: 8,076,032 **For detailed technical note visit strem.com.** 	1g 5g
14-1925 NEW	**2,2-Dimethyl-3,6,9-trioxa-2-siladecane, 99+% Electrolyte Solvent ANL-1NM2** *(62199-57-9)* $C_8H_{20}O_3Si$; FW: 192.33; colorless liq. *air sensitive, moisture sensitive* Note: U.S. Patent: 8,475,688 **For detailed technical note visit strem.com.** 	500mg 2g
93-1407 HAZ	**Diphenyldichlorosilane, min. 97%** *(80-10-4)* $(C_6H_5)_2SiCl_2$; FW: 253.22; colorless liq.; m.p. -22°; b.p. 304°; f.p. 316°F; d. 1.204 *moisture sensitive*	50g 250g
14-2500	**Diphenyldimethoxysilane, min. 97%** *(6843-66-9)* $(C_6H_5)_2Si(OCH_3)_2$; FW: 244.36; colorless liq.; b.p. 161°/15 mm; f.p. 250°F; d. 1.0771 *moisture sensitive*	50g 250g
93-1485	**Diphenylsilane, min. 97%** *(775-12-2)* $(C_6H_5)_2SiH_2$; FW: 184.30; colorless liq.; b.p. 95-97°/13 mm; f.p. 209°F; d. 1.00 *air sensitive, moisture sensitive*	5g 25g
93-1410 HAZ	**Diphenylsilanediol, min. 95%** *(947-42-2)* $(C_6H_5)_2Si(OH)_2$; FW: 216.32; white pwdr.; m.p. 140° dec.; f.p. 129°F *moisture sensitive*	25g 50g
15-1823	**Diphenyl[3-(triethoxysilyl)propyl]phosphine, 98%** *(52090-23-0)* *See* page 309	
93-1457 HAZ	**1,3-Divinyltetramethyldisiloxane, min. 97%** *(2627-95-4)* $[CH_2{=}CH(CH_3)_2Si]_2O$; FW: 186.40; colorless liq.; b.p. 139-140°; f.p. 76°F; d. 0.809 *moisture sensitive*	25g 100g

SILICON (Compounds)

93-1411
HAZ

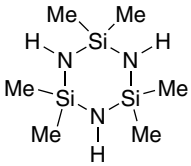
Ethyltrichlorosilane, 98% *(115-21-9)*
$C_2H_5SiCl_3$; FW: 163.52; colorless liq.; m.p. -105.6°; b.p. 98.8°; f.p. 14°F; d. 1.238
moisture sensitive
100g
500g

14-1955
NEW
HAZ

Hexakis(ethylamino)disilane (99.995%-Si) PURATREM *(532980-53-3)*
$(C_2H_5NH)_6Si_2$; FW: 320.63; colorless liq.; m.p. -7°; b.p. 257°; d. 1.0
moisture sensitive
1g
5g

14-1510
HAZ

2,2,4,4,6,6-Hexamethylcyclotrisilazane, 97%
(1009-93-4)
$C_6H_{21}N_3Si_3$; FW: 219.51; colorless liq.



5g
25g

93-1494
HAZ

Hexamethyldisilane, 97% *(1450-14-2)*
$(CH_3)_3SiSi(CH_3)_3$; FW: 146.40; colorless liq.; b.p. 112-113°; f.p. 29°F; d. 0.715
5g
25g

93-1413
HAZ

Hexamethyldisilazane, min. 97% *(999-97-3)*
$(CH_3)_3SiNHSi(CH_3)_3$; FW: 161.40; colorless liq.; b.p. 126°; f.p. 48°F; d. 0.774
moisture sensitive
100g
500g

93-1486
HAZ

Methyldichlorosilane, min. 97% *(75-54-7)*
CH_3SiCl_2H; FW: 115.05; colorless liq.; m.p. -93°; b.p. 41.5°; f.p. -26°F; d. 1.110
moisture sensitive
250g
1kg

93-1415
HAZ

Methylphenyldichlorosilane, min. 97% *(149-74-6)*
$(CH_3)(C_6H_5)SiCl_2$; FW: 191.11; colorless liq.; b.p. 205°; f.p. 181°F; d. 1.187
moisture sensitive
100g
500g

93-1416

Methylphenyldimethoxysilane, min. 97% *(3027-21-2)*
$(CH_3)(C_6H_5)Si(OCH_3)_2$; FW: 182.30; colorless liq.; b.p. 199-200°; f.p. 177°F; d. 0.993
moisture sensitive
25g
100g

93-1418
HAZ

Methyltriethoxysilane, 98+% *(2031-67-6)*
$CH_3Si(OC_2H_5)_3$; FW: 178.31; colorless liq.; b.p. 143°; f.p. 75°F; d. 0.896
moisture sensitive
100g
500g

93-1487
HAZ

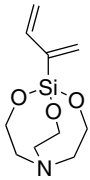
Methyltrimethoxysilane, min. 95% *(1185-55-3)*
$CH_3Si(OCH_3)_3$; FW: 136.23; colorless liq.; b.p. 102-103°; f.p. 52°F; d. 0.955
moisture sensitive
25g
100g

93-4216

12-Molybdosilicic acid hydrate *(11089-20-6)*
See page 138

14-1960

2,2',2"-Nitrilotris(ethanolato)(buta-1,3-dien-2-yl)silane, min. 98% *(1026785-83-0)*
$C_{10}H_{17}NO_3Si$; FW: 227.33; light yellow pwdr.
moisture sensitive
Note: Sold under license from Wake Forest University for research purposes only. PCT US2007/022872.



250mg
1g

Technical Note:
1. Reagent used in Diels-Alder cross-coupling reactions.

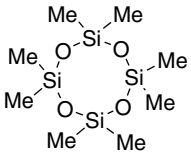
References:
1. *Org. Lett.* **2007**, *9*, 1623

93-1469

Nonamethyltrisilazane, 98% *(1586-73-8)*
$N[Si(CH_3)_3]_3$; FW: 233.60; white to colorless waxy solid; m.p. 70-71°; b.p. 76°/12 mm; d. 0.8635
5g
25g

14-5400
HAZ

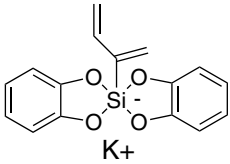
Octamethylcyclotetrasiloxane, 98% *(556-67-2)*
$C_8H_{24}O_4Si_4$; FW: 296.62; colorless liq.; m.p. 17-18°; b.p. 175-176°; d. 0.956
moisture sensitive



25g
100g

SILICON (Compounds)

93-1419 HAZ	**Phenyltrichlorosilane, 97+%** *(98-13-5)* $C_6H_5SiCl_3$; FW: 211.55; colorless liq.; b.p. 201°; f.p. 196°F; d. 1.321 *moisture sensitive*	100g 500g
93-1488	**Phenyltrimethoxysilane, 97%** *(2996-92-1)* $C_6H_5Si(OCH_3)_3$; FW: 198.30; colorless liq.; b.p. 211°; f.p. 112°C; d. 1.064 *moisture sensitive*	50g 250g
14-1965	**Potassium bis(1,2-benzenediolato)(1,3-butadien-2-yl)silicate, min. 98%** *(1021940-25-9)* $K^+[C_{16}H_{13}O_4Si]^-$; FW: 336.46; white xtl. *moisture sensitive* Note: Sold under license from Wake Forest University for research purposes only. PCT US2007/022872.	250mg 1g



Technical Note:
1. Reagent used in Diels-Alder cross-coupling reactions.

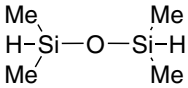
References:
1. *Org. Lett.,* **2007**, *9*, 1623

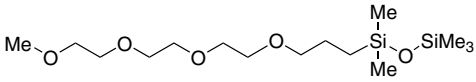
93-1427	**Silica gel, 70-200 mesh (TLC)** *(63231-67-4)* H_2SiO_3; FW: 78.10; white pwdr.; SA: ~835m²/g	500g 2kg
93-1423	**Silica gel, 6-16 mesh (indicating)** *(63231-67-4)* H_2SiO_3; FW: 78.10; blue xtl.	500g 2kg
93-1424	**Silica gel, 12-24 mesh (liquid drying)** *(63231-67-4)* H_2SiO_3; FW: 78.10; white xtl.; SA: ~835m²/g	500g 2kg
14-7400	**Silica gel, large pore** *(63231-67-4)* H_2SiO_3; 8 mesh white gran.; SA: ~300m²/g; P.Vol. ~1cc/g	250g 1kg
14-7420	**Silica gel, large pore** *(63231-67-4)* H_2SiO_3; microspheroidal white pwdr.; SA: ~300m²/g; P.Vol. ~1.65cc/g	250g 1kg
14-6052	**Silica Nanosprings™ coated with zinc oxide and grown on fiber glass substrate (3.5 x 8cm)** *(7631-86-9)* *See* page 165	
93-1443 HAZ	**Silicon(IV) acetate, min. 95%** *(562-90-3)* $Si(OOCCH_3)_4$; FW: 264.27; white xtl.; m.p. 160° dec.; b.p. 148°/6 mm (110° subl.) *moisture sensitive, (store cold)*	25g 100g
93-1445 HAZ	**Silicon(IV) bromide, 99+%** *(7789-66-4)* $SiBr_4$; FW: 347.72; colorless liq.; m.p. 5.4°; b.p. 154°; d. 2.772 *moisture sensitive*	5g 25g
14-1445 NEW HAZ	**Silicon(IV) bromide, (99.99% Si) PURATREM** *(7789-66-4)* $SiBr_4$; FW: 347.72; colorless liq.; m.p. 5.4º; b.p. 154º; d. 2.772 *moisture sensitive*	5g 25g
93-1432	**Silicon carbide, -100 mesh** *(409-21-2)* SiC; FW: 40.10; light gray pwdr.; m.p. 2700°; d. 3.22	500g 2kg
14-7126 NEW	**Silicon carbide (alpha phase), 0.2-1.2 microns (99%-Si)** *(409-21-2)* SiC; FW: 40.10; light-gray pwdr.	100g 500g
14-7123 NEW	**Silicon carbide (>90% beta phase), 0.2-5.0 microns (99+%-Si)** *(409-21-2)* SiC; FW: 40.10; light-gray pwdr.	50g 250g
14-7120 NEW	**Silicon carbide (>90% beta phase), 0.1-1.2 microns (99%-Si)** *(409-21-2)* SiC; FW: 40.10; gray pwdr.	50g 250g
98-0147 HAZ	**Silicon(IV) chloride, fiber optic grade (99.9999%-Si, 50ppm-Fe) PURATREM** *(10026-04-7)* $SiCl_4$; FW: 169.90; colorless liq.; m.p. -70°; b.p. 57.6°; d. 1.483 *moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4027.	100g 500g

SILICON (Compounds)

98-4027 HAZ	**Silicon(IV) chloride, fiber optic grade (99.9999%-Si, 50ppm-Fe) PURATREM, 98-0147, contained in a 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD** *(10026-04-7)* $SiCl_4$; FW: 169.90; colorless liq.; m.p. -70°; b.p. 57.6°; d. 1.483 *moisture sensitive*	50g
93-1447 HAZ	**Silicon(IV) iodide (99.9%-Si)** *(13465-84-4)* SiI_4; FW: 535.70; off-white pwdr.; m.p. 120.5°; b.p. 287.5°; d. 4.198 *moisture sensitive*	2g 10g
93-1442	**Silicon(IV) nitride, < 5 micron (99%-Si)** *(12033-89-5)* Si_3N_4; FW: 140.28; light gray pwdr.; m.p. 1900°; d. 3.44	50g 250g
14-7410 NEW	**Silicon nitride (>90% alpha phase), 0.2-4.0 microns (99%-Si)** *(12033-89-5)* Si_3N_4; FW: 140.28; gray pwdr.	100g 500g
14-7423 NEW	**Silicon nitride, 0.2-2.5 microns (99.99%-Si) PURATREM** *(12033-89-5)* Si_3N_4; FW: 140.28; light gray pwdr.	50g 250g
93-1478	**Silicon(II) oxide, -325 mesh (99.9%-Si)** *(10097-28-6)* SiO; FW: 44.09; brown pwdr.; m.p. > 1702°; b.p. 1880°; d. 2.13	25g 100g
93-1477	**Silicon(II) oxide, granular +10 mesh (99.9%-Si)** *(10097-28-6)* SiO; FW: 44.09; brown pwdr.; m.p. > 1702°; b.p. 1880°; d. 2.13	25g 100g
93-1436	**Silicon(IV) oxide, 98%** *(7631-86-9)* SiO_2; FW: 60.09; white pwdr. (3-10 microns); SA: 0.7m²/g; m.p. 1500°; d. 2.6	250g 1kg
93-1434	**Silicon(IV) oxide, 99+%, 0.012 micron (fumed colloidal silica)** *(112945-52-5)* SiO_2; FW: 60.09; white pwdr.; SA: 200 m2/g	100g 500g
98-0145	**Silicon(IV) oxide, elec. gr. (99.999%-Si) PURATREM** *(7631-86-9)* SiO_2; FW: 60.09; white pwdr.; m.p. 1500°; d. 2.6	5g 25g 100g
93-1435	**Silicon(IV) oxide, -100 mesh, 99.7%** *(7631-86-9)* SiO_2; FW: 60.09; white pwdr.; m.p. 1500°; d. 2.6	250g 1kg
14-2000	**Silicon(IV) phthalocyanine dichloride, 85%** *(19333-10-9)* $(C_{32}H_{16}N_8)SiCl_2$; FW: 611.53; purple pwdr.; m.p. 430° subl.	1g 5g
11-1500	**Sodium hexamethyldisilazane, min. 95%** *(1070-89-9)* *See* page 419	
93-1451	**Tetrabutoxysilane, min. 97%** *(4766-57-8)* $Si(OC_4H_9)_4$; FW: 320.53; colorless liq.; b.p. 115°/3 mm; f.p. 174°F; d. 0.90 *moisture sensitive*	10g 50g
93-1452	**Tetradecyloxysilane** *(18845-54-0)* $Si(OC_{10}H_{21})_4$; FW: 657.20; light orange liq.	25g 100g
93-1454 HAZ	**Tetraethoxysilane, min. 98% TEOS** *(78-10-4)* $Si(OC_2H_5)_4$; FW: 208.33; colorless liq.; m.p. -77°; b.p. 165.8°; f.p. 116°F; d. 0.934 *moisture sensitive*	500g 2kg
14-6990 NEW HAZ	**Tetrakis(ethylmethylamino)silane, 98%, TEMAS** *(477284-75-6)* [CH3(CH2CH2)N]4Si; FW: 260.57; colorless liq.; b.p. 40°C; d. 0.89 *moisture sensitive*	1g 5g 25g
14-7000	**Tetrakis(trimethylsilyl)silane, 98% TMSS** *(4098-98-0)* $Si[Si(CH_3)_3]_4$; FW: 320.85; off-white pwdr.	1g
93-1459 HAZ	**Tetramethoxysilane, 98%** *(681-84-5)* $Si(OCH_3)_4$; FW: 152.20; colorless liq.; m.p. 4-5°; b.p. 121-122°; f.p. 84°F; d. 1.032 *moisture sensitive*	25g 100g

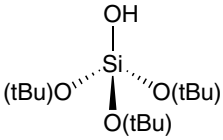
SILICON (Compounds)

14-7025 NEW HAZ
1,1,3,3-Tetramethyldisiloxane, 99+% TMDSO (99.9999%-Si) PURATREM *(3277-26-7)*
$C_4H_{14}OSi_2$; FW: 134.32; colorless liq.; b.p. 70-71°; f.p. -26°C; d. 0.76
moisture sensitive

25g
100g

14-1943 NEW
2,2,4,4-Tetramethyl-3,8,11,14,17-pentaoxa-2,4-disilaoctadecane, 99+% Electrolyte solvent ANL-2SM3 *(855996-83-7)*
$C_{15}H_{36}O_5Si_2$; FW: 352.61; colorless liq.
Note: Use for batteries for medical devices expressly excluded. U.S. Patent: 8,076,031 B1; 14/266,052.
For detailed technical note visit strem.com.

5g
25g

93-1458 HAZ
Tetramethylsilane, 99.9+% (NMR grade) *(75-76-3)*
$Si(CH_3)_4$; FW: 88.23; colorless liq.; b.p. 26.5°; f.p. -17°F; d. 0.651 (15°)
25g
100g

14-7028
Tri-t-butoxysilanol (99.9+%-Si) *(18166-43-3)*
$[(CH_3)_3CO]_3SiOH$; FW: 264.43; colorless liq.; m.p. 63-65°
moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.
For detailed technical note visit strem.com.
5g
25g

14-7015
Tri-t-butoxysilanol (99.999%-Si) PURATREM
(18166-43-3)
$[(CH_3)_3CO]_3SiOH$; FW: 264.43; white solid; m.p. 63-65°
moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.
Available prepacked in ALD cylinder- see 98-6025.

1g
5g

98-6025
Tri-t-butoxysilanol (99.999%-Si) PURATREM 14-7015 contained in 50 ml Swagelok® cylinder (96-1077) for CVD/ALD *(18166-43-3)*
$[(CH_3)_3CO]_3SiOH$; FW: 264.43; white solid
moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.
25g

93-1417 HAZ
Trichloromethylsilane, min. 97% *(75-79-6)*
CH_3SiCl_3; FW: 149.50; colorless liq.; m.p. -77.8°; b.p. 66.4°; f.p. 5°F; d. 1.273 (25°)
moisture sensitive
100g
500g

93-1463 amp HAZ
Triethylchlorosilane, 99% *(994-30-9)*
$(C_2H_5)_3SiCl$; FW: 150.73; colorless liq.; b.p. 144°/735 mm; f.p. 85°F; d. 0.8967 (20°)
moisture sensitive
5g
25g

14-7750 HAZ
Triethylsilane, 99% *(617-86-7)*
$(C_2H_5)_3SiH$; FW: 116.28; colorless liq.; b.p. 107-108°; f.p. 25°F; d. 0.728
air sensitive
25g
100g

14-7850 HAZ
Triethylsilylacetylene, min. 97% *(1777-03-3)*
$(C_2H_5)_3SiC{\equiv}CH$; FW: 140.30; colorless liq.; f.p. 63°F; d. 0.783
5g
25g

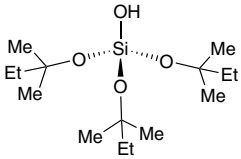
14-7910 HAZ
Triethylsilyl trifluoromethanesulfonate, 99% *(79271-56-0)*
$CF_3SO_3Si(C_2H_5)_3$; FW: 264.34; colorless liq.; b.p. 85-86°/12mm; f.p. 161°F; d. 1.169
moisture sensitive
5g
25g

14-7990 HAZ
Trifluoromethyltrimethylsilane, min. 97% *(81290-20-2)*
$CF_3Si(CH_3)_3$; FW: 142.20; colorless liq.; b.p. 45°; f.p. 14°F; d. 0.96
moisture sensitive
5g
25g

93-1464 HAZ
Trimethylchlorosilane, min. 97% *(75-77-4)*
$(CH_3)_3SiCl$; FW: 108.65; colorless to pale yellow liq.; m.p. -40°; b.p. 57.3°; f.p. -18°F; d. 0.8536 (27°)
moisture sensitive
100g
500g

93-1465 HAZ
Trimethylethoxysilane, min. 97% *(1825-62-3)*
$(CH_3)_3SiOC_2H_5$; FW: 118.30; colorless liq.; b.p. 75-76°; f.p. -4°F; d. 0.757
moisture sensitive
25g
100g

SILICON (Compounds)

14-7925 HAZ	**Trimethylsilane, 97%** *(993-07-7)* $(CH_3)_3SiH$; FW: 74.20; gas; m.p. -135.9°; b.p. 6.7°; f.p. <-4°F; d. 0.638 (6.7°)	100g
14-8200 HAZ	**Trimethylsilylacetylene, min. 97%** *(1066-54-2)* $(CH_3)_3SiC{\equiv}CH$; FW: 98.22; colorless liq.; b.p. 53°; f.p. <-30°F; d. 0.709	5g 25g
14-8600 HAZ	**Trimethylsilyl trifluoromethanesulfonate, min. 97%** *(27607-77-8)* $CF_3SO_3Si(CH_3)_3$; FW: 222.26; colorless liq.; b.p. 77°/80 mm; f.p. 78°F; d. 1.150 *moisture sensitive*	5g 25g
14-7950 HAZ	**Trimethylsilylcyclopentadiene, 97% (mixture of isomers)** *(3559-74-8)* $(C_5H_5)Si(CH_3)_3$; FW: 138.29; colorless liq.; b.p. 138-140°; f.p. 85°F; d. 0.833 *moisture sensitive, (store cold)*	1g 5g 25g
14-8000 HAZ	**Trimethylsilylpentamethylcyclopentadiene** *(87778-95-8)* $[C_5(CH_3)_5]Si(CH_3)_3$; FW: 208.42; light yellow liq.; b.p. 100°/10 mm; d. 0.833 *moisture sensitive, (store cold)*	1g 5g
14-7020	**Tri-t-pentoxysilanol (99.999%-Si) PURATREM** *(17906-35-3)* $[CH_3CH_2C(CH_3)_2O]_3SiOH$; FW: 306.51; colorless liq. *moisture sensitive* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1. ***Limited quantities available.*** 	1g 5g
93-1466 HAZ	**Triphenylchlorosilane, 97%** *(76-86-8)* $(C_6H_5)_3SiCl$; FW: 294.9; white xtl.; m.p. 91-92°; b.p. 378° *moisture sensitive*	10g 50g
93-1467	**Triphenylsilane, min. 97%** *(789-25-3)* $(C_6H_5)_3SiH$; FW: 260.41; off-white pwdr.; m.p. 43°; b.p. 152°/2 mm; f.p. 169°F *air sensitive, moisture sensitive*	10g 50g
93-1468	**Triphenylsilanol, min. 98%** *(791-31-1)* $(C_6H_5)_3SiOH$; FW: 276.41; white pwdr.; m.p. 153°	2g 10g
14-8750 HAZ	**Tris(dimethylamino)silane, 99+% 3DMAS** *(15112-89-7)* $[(CH_3)_2N]_3SiH$; FW: 161.32; colorless to light yellow liq.; b.p. 145-148° (4°/16mm); f.p. 77°F; d. 0.84 Note: Available prepacked in ALD cylinder- see 98-4035.	5g 25g
98-4035 HAZ	**Tris(dimethylamino)silane, 99+% 3DMAS, 14-8750, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(15112-89-7)* $[(CH_3)_2N]_3SiH$; FW: 161.32; colorless to light yellow liq.; b.p. 145-148° (4°/16mm); f.p. 77°F; d. 0.84 *air sensitive, moisture sensitive*	25g
14-9000	**Tris(trimethylsilyl)methane, min. 97%** *(1068-69-5)* $[(CH_3)_3Si]_3CH$; FW: 232.65; colorless liq.; b.p. 104°/20mm; f.p. 170°F; d. 0.827	1g 5g
14-9250 HAZ	**Vinyltriacetoxysilane** *(4130-08-9)* $CH_2{=}CHSi(OOCCH_3)_3$; FW: 232.27; colorless to pale yellow liq.; b.p. 115°/10 mm; d. 1.167 (20°) *air sensitive, moisture sensitive*	50g 250g
93-1492 HAZ	**Vinyltrichlorosilane, min. 97%** *(75-94-5)* $CH_2{=}CHSiCl_3$; FW: 161.49; colorless liq.; b.p. 92°; f.p. 51°F; d. 1.243 (20°) *moisture sensitive*	50g 250g
93-1471 HAZ	**Vinyltriethoxysilane, min. 97%** *(78-08-0)* $CH_2{=}CHSi(OC_2H_5)_3$; FW: 190.32; colorless liq.; b.p. 161°; f.p. 94°F; d. 0.9050 (20°) *moisture sensitive*	100g 500g

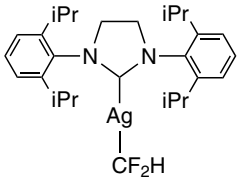
SILVER (Elemental Forms)

93-4760	**Silver flake (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 100% < 20 micron; m.p. 960.5°; b.p. 2212°; d. 10.49	5g 25g
93-4761	**Silver flake (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 90% < 3 micron; m.p. 960.5°; b.p. 2212°; d. 10.49	5g 25g
47-0050	**Silver foil (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 1.0mm thick (~6.6g/25 x 25mm); m.p. 960.5°; b.p. 2212°; d. 10.49	25 x 25mm 50 x 50mm 100 x 100mm

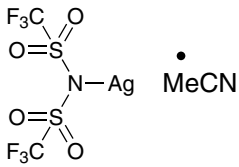
SILVER (Elemental Forms)

47-0055	**Silver foil (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 0.127mm thick (~3.3g/50 x 50mm); m.p. 960.5°; b.p. 2212°; d. 10.49	50 x 50mm 100 x 100mm 200 x 200mm
	Silver nanoparticles (0.02mg/ml in 2mM sodium citrate) *(7440-22-4)* *See*	
	Silver nanoparticles (0.02mg/ml in 2mM sodium citrate) reactant free *(7440-22-4)* *See*	
	Silver nanoparticles - surfactant and reactant-free (pure), manufactured via laser ablation *(7440-22-4)* *See* page 166	
47-0645	**Silver Nano-Porous Catalyst (promoted with zirconium oxide)** *See* page 166	
47-0058	**Silver needles (99.999%)** *(7440-22-4)* Ag; FW: 107.87; m.p. 960.5°; b.p. 2212°; d. 10.49	10g 50g 250g
47-2500	**Silver on alumina** *(7440-22-4)* Ag on Al_2O_3; FW: 107.87; 2-4mm spheres	100g 500g
47-0060	**Silver plate (99.95%)** *(7440-22-4)* Ag; FW: 107.87; 3.175mm thick (~83.3g/5 x 5cm); m.p. 960.5°; b.p. 2212°; d. 10.49	5 x 5cm 10 x 10cm
93-4758 HAZ	**Silver powder (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 4-7 micron; SA: 0.1-0.4 m^2/g; m.p. 960.5°; b.p. 2212°; d. 10.49	5g 25g
93-4759 HAZ	**Silver powder (99.9%)** *(7440-22-4)* Ag; FW: 107.87; -325 mesh; SA: 0.5-1.0 m^2/g; m.p. 960.5°; b.p. 2212°; d. 10.49	5g 25g
93-4755 HAZ	**Silver powder (99.95%)** *(7440-22-4)* Ag; FW: 107.87; -100 mesh; m.p. 960.5°; b.p. 2212°; d. 10.49	25g 100g
93-4757 HAZ	**Silver powder (99.999+%)** *(7440-22-4)* Ag; FW: 107.87; -22 mesh; m.p. 960.5°; b.p. 2212°; d. 10.49	5g 25g
47-0070	**Silver rod (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 6.35mm dia. (~3.3g/cm); m.p. 960.5°; b.p. 2212°; d. 10.49	2cm 10cm
47-0080	**Silver shot (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 1-5 mm; m.p. 960.5°; b.p. 2212°; d. 10.49	10g 50g
47-0085	**Silver shot (99.99%)** *(7440-22-4)* Ag; FW: 107.87; 1-3mm; m.p. 960.5°; b.p. 2212°; d. 10.49	10g 50g
93-4763	**Silver shot (99.999%)** *(7440-22-4)* Ag; FW: 107.87; 1-3 mm; m.p. 960.5°; b.p. 2212°; d. 10.49	10g 50g
47-0200	**Silver wire (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 2.0 mm dia. (~33g/m); m.p. 960.5°; b.p. 2212°; d. 10.49	50cm 250cm
47-0250	**Silver wire (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 1.0 mm dia. (~8.2g/m); m.p. 960.5°; b.p. 2212°; d. 10.49	1m 5m 25m
47-0300	**Silver wire, annealed (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 0.5 mm dia. (~2g/m); m.p. 960.5°; b.p. 2212°; d. 10.49	2m 10m 50m
47-0350	**Silver wire (99.9%)** *(7440-22-4)* Ag; FW: 107.87; 0.25 mm dia. (~0.52g/m); m.p. 960.5°; b.p. 2212°; d. 10.49	25m 100m

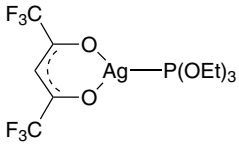
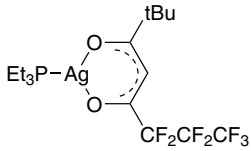
SILVER (Compounds)

47-2575	**[1,3-Bis[2,6-bis(i-propyl)phenyl]-2-imidazolidinylidene]difluoromethylsilver(I)** $C_{28}H_{40}AgF_2N_2$; FW: 550.50 *air sensitive*  	100mg 500mg
93-4739	**Potassium silver cyanide (99.9%-Ag)** *(506-61-6)* *See* page 344	

SILVER (Compounds)

93-4701	**Silver acetate, 99%** *(563-63-3)* $AgOOCCH_3$; FW: 166.92; off-white pwdr.; m.p. dec. *light sensitive*	10g 50g
47-0650	**Silver bis(trifluoromethanesulfonyl)imide aceto-nitrile adduct, min. 97%** *(189114-61-2)* $Ag[(N(CF_3SO_2)_2]\cdot CH_3CN$; FW: 388.02; white to off-white solid 	500mg 2g
93-4705	**Silver bromide (99.9%-Ag)** *(7785-23-1)* AgBr; FW: 187.78; yellow pwdr.; m.p. 432°; d. 6.473 *light sensitive*	10g 50g
93-4706	**Silver carbonate (99+%-Ag)** *(534-16-7)* Ag_2CO_3; FW: 275.75; yellow to pale green pwdr.; m.p. 218°; d. 6.077 *light sensitive*	10g 50g
93-4707	**Silver chloride (99.9%-Ag)** *(7783-90-6)* AgCl; FW: 143.32; white pwdr.; m.p. 455°; b.p. 1550°; d. 5.56 *light sensitive*	10g 50g
93-4745 HAZ	**Silver chromate, 99%** *(7784-01-2)* Ag_2CrO_4; FW: 331.73; brown xtl.; d. 5.625	10g 50g
93-4708 HAZ	**Silver cyanide, 99%** *(506-64-9)* AgCN; FW: 133.84; white to off-white pwdr.; m.p. 320° dec.; d. 3.95 *light sensitive*	10g 50g
93-4709	**Silver cyclohexanebutyrate (AAS)** *(62638-04-4)* $Ag[OOC(CH_2)_3C_6H_{11}]$; FW: 227.11; off-white pwdr.	1g 5g
93-4741	**Silver 2-ethylhexanoate, 99%** *(26077-31-6)* $AgOOCCH(C_2H_5)C_4H_9$; FW: 251.08; white to off-white pwdr. *light sensitive*	1g 5g
93-4746 HAZ	**Silver(I) fluoride, 98%** *(7775-41-9)* AgF; FW: 126.87; yellow to brown solid; m.p. 435°; b.p. ~1159°; d. 5.852 *light sensitive, hygroscopic*	5g 25g
93-4747 HAZ	**Silver(II) fluoride, 98%** *(7783-95-1)* AgF_2; FW: 145.87; brown pwdr.; m.p. 690°; b.p. 700° dec.; d. 4.58 *light sensitive, hygroscopic*	5g 25g
93-4748 HAZ	**Silver hexafluoroantimonate(V), 98%** *(26042-64-8)* $AgSbF_6$; FW: 343.61; white to off-white pwdr. *hygroscopic*	1g 5g 25g
47-0900 HAZ	**Silver hexafluoroarsenate(V), 98.5%** *(12005-82-2)* $AgAsF_6$; FW: 296.78; off-white pwdr.; m.p. dec. *hygroscopic*	2g 10g
47-1000 HAZ	**Silver hexafluorophosphate, 99%** *(26042-63-7)* $AgPF_6$; FW: 252.83; white xtl. *light sensitive, hygroscopic*	1g 5g 25g
93-4714	**Silver iodide (99.9%-Ag)** *(7783-96-2)* AgI; FW: 234.77; yellow pwdr.; m.p. 558°; b.p. 1506°; d. 6.010 *light sensitive*	10g 50g
47-1050	**Silver neodecanoate, min. 97%** *(68683-18-1)* $Ag(C_{10}H_{19}O_2)$; FW: 279.13; white to off-white solid	1g 5g
93-4718 HAZ	**Silver nitrate (99.9%-Ag) (ACS)** *(7761-88-8)* $AgNO_3$; FW: 169.87; white xtl.; m.p. 212°; b.p. 444° dec.; d. 4.352	25g 100g 500g
47-1325 HAZ	**Silver nitrate (99.9995%-Ag) PURATREM** *(7761-88-8)* $AgNO_3$; FW: 169.87; white xtl.; m.p. 212°; b.p. 444° dec.; d. 4.352	10g 50g
93-4719 HAZ	**Silver nitrite, 99%** *(7783-99-5)* $AgNO_2$; FW: 153.88; off-white pwdr.; m.p. 140° (dec.); d. 4.453	10g 50g
93-4743 HAZ	**Silver(I) oxide, 99+% (99.99%-Ag) PURATREM** *(20667-12-3)* Ag_2O; FW: 231.74; black pwdr.; m.p. 300° dec.; d. 7.143	10g 50g

SILVER (Compounds)

93-4742 HAZ	**Silver(II) oxide (99.9%-Ag)** *(1301-96-8)* AgO; FW: 123.87; black pwdr.; m.p. > 100° dec.; d. 7.44	10g 50g
93-4722 HAZ	**Silver perchlorate, anhydrous, min. 97%** *(7783-93-9)* $AgClO_4$; FW: 207.32; white xtl.; m.p. 486° dec.; d. 2.806 *hygroscopic*	5g 25g
93-4749 HAZ	**Silver perchlorate monohydrate, 99%** *(14242-05-8)* $AgClO_4 \cdot H_2O$; FW: 207.32 (225.34); white xtl. *hygroscopic*	10g 50g
47-1700 HAZ	**Silver perrhenate, 99% (99.995+%-Re) PURATREM** *(20654-56-2)* $AgReO_4$; FW: 358.07; white pwdr.; m.p. 430°; d. 7.05	1g 5g
93-4725	**Silver phosphate, 99+%** *(7784-09-0)* Ag_3PO_4; FW: 418.58; yellow pwdr.; m.p. 849°; d. 6.37	10g 50g
93-4731	**Silver sulfate, 98+% (ACS)** *(10294-26-5)* Ag_2SO_4; FW: 311.80; white pwdr.; m.p. 652°; b.p. 1085° dec.; d. 5.45	10g 50g
93-4733	**Silver telluride (99.99%-Ag/Te) PURATREM** *(12002-99-2)* Ag_2Te; FW: 343.34; black xtl.; m.p. 955°; d. 8.5	1g 5g
93-4734 HAZ	**Silver tetrafluoroborate, 99%** *(14104-20-2)* $AgBF_4$; FW: 194.67; off-white pwdr.; m.p. 200° dec. *light sensitive, hygroscopic* Note: Packaged in PFA/FET bottle.	5g 25g
93-4735	**Silver thiocyanate, 99%** *(1701-93-5)* AgSCN; FW: 165.95; white to off-white pwdr.; m.p. dec.	5g 25g
93-4736	**Silver trifluoroacetate, min. 98%** *(2966-50-9)* $AgOOCCF_3$; FW: 220.88; white to off-white pwdr.	5g 25g
47-2000	**Silver trifluoromethanesulfonate, 99% (Silver triflate)** *(2923-28-6)* $AgSO_3CF_3$; FW: 256.94; off-white pwdr. *light sensitive, hygroscopic* **For detailed technical note visit strem.com.**	5g 25g 100g
47-2012 NEW	**Silver trifluoromethanesulfonate (99.95%-Ag) (Silver triflate)** *(2923-28-6)* $AgSO_3CF_3$; FW: 256.94; off-white pwdr. *light sensitive, hygroscopic* **For detailed technical note visit strem.com.**	1g 5g 25g
93-4737	**Silver tungstate, 99%** *(13465-93-5)* Ag_2WO_4; FW: 463.59; white to off-white pwdr.	10g 50g
47-2600	**2,2,6,6-Tetramethyl-3,5-heptanedionato silver(I) (99.9%-Ag) [Ag(TMHD)]** *(79827-25-1)* $AgC_{11}H_{19}O_2$; FW: 291.14; gray pwdr.; m.p. 178° dec.	1g 5g 25g
47-3010	**Triethoxyphosphine(trifluoroacetylacetonate) silver(I), min. 98%** *(783334-85-0)* $Ag(CF_3COCHCOCH_3)P(OCH_2CH_3)_3$; FW: 427.10; yellow solid **For detailed technical note visit strem.com.** 	1g 5g
47-3025	**Triethylphosphine(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)silver(I), min. 98%** *(165461-74-5)* $Ag(C_3F_7COCHCOC_4H_9)P(CH_2CH_3)_3$; FW: 521.20; yellow liq. to low melting solid; d. 1.623 *light sensitive, (store cold)* **For detailed technical note visit strem.com.** 	1g 5g
47-3000	**Trimethylphosphine(hexafluoroacetylacetonato)silver(I), 99% (99.9%-Ag)** *(148630-66-4)* $Ag(CF_3COCHCOCF_3)P(CH_3)_3$; FW: 391.00; white to yellow xtl.; m.p. 140-142°; b.p. subl. 95°/0.1mm	1g 5g 25g
47-8000	**Vinyltriethylsilane(hexafluoroacetylacetonato)silver(I) (99.9%-Ag)** *(177279-28-6)* $Ag(CF_3COCHCOCF_3)(C_8H_{18}Si)$; FW: 456.45; yellow liq. *air sensitive, (store cold)*	1g 5g

Technical Note:

1. Precursor for the chemical vapor deposition of pure silver films.

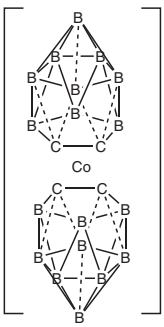
SODIUM (Elemental Forms)

19-1910	**Potassium sodium alloy 78:22 (99.95%)** *(11135-81-2)* *See* page 340	
10-1020 amp HAZ	**Sodium (99.95%) (breakseal ampoule)** *(7440-23-5)* Na; FW: 22.98; under argon; m.p. 97.8°; b.p. 892°; d. 0.97 *air sensitive, moisture sensitive*	1g 5g
93-1020 amp HAZ	**Sodium (99.95%) (prescored ampoule)** *(7440-23-5)* Na; FW: 22.98; under argon; m.p. 97.8°; b.p. 892°; d. 0.97 *air sensitive, moisture sensitive*	1g 5g 25g 50g
93-1079 HAZ	**Sodium dispersion** *(7440-23-5)* Na; FW: 22.98; gray suspension, 40% in mineral oil; m.p. 97.8°; b.p. 892°; d. 0.97 *air sensitive, moisture sensitive*	250g
93-1078 HAZ	**Sodium ingot (min. 99.8%)** *(7440-23-5)* Na; FW: 22.98; under oil; m.p. 97.8°; b.p. 892°; d. 0.97 *air sensitive, moisture sensitive*	500g 5 x 500g
11-1020 HAZ	**Sodium potassium (K_2Na)-silica gel, 35-40% alkali metal in silica gel (Stage I)** K_2Na/SiO_2; black pwdr. *moisture sensitive*	5g 25g 100g
11-1005 HAZ	**Sodium-silica gel, 35-40% alkali metal in silica gel (Stage I)** Na/SiO_2; black pwdr.; 35-60 mesh *moisture sensitive* **For detailed technical note visit strem.com.**	5g 25g 100g

SODIUM (Compounds)

15-1142	**2'-Dicyclohexylphosphino-2,6-dimethoxy-3-sulfonato-1,1'-biphenyl hydrate sodium salt (water soluble SPhos), min. 98%** *(1049726-96-6)* *See* page 292	
15-1827	**Diphenyl(m-sulfonatophenyl)phosphine dihydrate sodium salt, min. 90%** *(63995-75-5)* *See* page 309	
93-1010	**Perfluorooctanoic acid, sodium salt** *(335-95-5)* *See* page 65	
93-1105	**Sodium acetate, anhydrous, 99+% (ACS)** *(127-09-3)* $NaOOCCH_3$; FW: 82.03; white pwdr.; m.p. 324°; d. 1.528 *hygroscopic*	250g 1kg
93-1106	**Sodium acetylacetonate hydrate, min. 98%** *(15435-71-9)* $Na(CH_3COCHCOCH_3)\cdot XH_2O$; FW: 122.09; off-white pwdr.; m.p. 210° dec.	10g 50g
93-1021 HAZ	**Sodium acetylide (18% suspension in xylene)** *(1066-26-8)* NaC≡CH; FW: 48.02; gray suspension; f.p. 85°F (xylene) *air sensitive, moisture sensitive*	50g 250g
93-1108 HAZ	**Sodium aluminate, contains ~8% H_2O (99.9%-Al)** *(1302-42-7)* $NaAlO_2$; FW: 81.97; white pwdr.; m.p. 1800° *hygroscopic*	500g 2kg
93-1112 HAZ	**Sodium azide, 98%** *(26628-22-8)* NaN_3; FW: 65.01; white pwdr.; m.p. 300° dec.; d. 1.846	100g 500g
93-1117 HAZ	**Sodium borodeuteride, 96 atom% D** *(15681-89-7)* $NaBD_4$; FW: 41.88; white pwdr.; m.p. ~400° dec.; d. 1.074 *moisture sensitive*	1g 5g
93-1118 HAZ	**Sodium borohydride, 98%** *(16940-66-2)* $NaBH_4$; FW: 37.83; white pwdr.; m.p. ~400° dec.; d. 1.074 *moisture sensitive*	50g 250g
93-1120	**Sodium bromide, 99+% (ACS)** *(7647-15-6)* NaBr; FW: 102.90; white xtl.; m.p. 755°; b.p. 1390°; d. 3.203 *hygroscopic*	500g 2kg
93-1121	**Sodium bromide (99.999%-Na) PURATREM** *(7647-15-6)* NaBr; FW: 102.90; white xtl.; m.p. 755°; b.p. 1390°; d. 3.203 *hygroscopic*	10g 50g

SODIUM (Compounds)

93-1022 HAZ	**Sodium t-butoxide, min. 98%** *(865-48-5)* C_4H_9ONa; FW: 96.11; white to off-white pwdr. *moisture sensitive*	100g 500g
11-1000 HAZ	**Sodium cacodylate trihydrate, 98%** *(6131-99-3)* $(CH_3)_2As(O)ONa{\cdot}3H_2O$; FW: 159.91; white pwdr.	25g 100g
93-1125	**Sodium carbonate, anhydrous, 99.5+% (ACS)** *(497-19-8)* Na_2CO_3; FW: 105.99; white pwdr.; m.p. 851°; d. 2.532 *hygroscopic*	500g 2kg
93-1126 HAZ	**Sodium chlorate, 99%** *(7775-09-9)* $NaClO_3$; FW: 106.44; white pwdr.; m.p. 248-261° dec.; d. 2.490	1kg 5 x 1kg
93-1128	**Sodium chloride, 99+% (ACS)** *(7647-14-5)* NaCl; FW: 58.44; white xtl.; m.p. 801°; b.p. 1413°; d. 2.165 *hygroscopic*	1kg 5kg
11-1100	**Sodium chloride (99.999%-Na) PURATREM** *(7647-14-5)* NaCl; FW: 58.44; white xtl.; m.p. 801°; b.p. 1413°; d. 2.165	10g 50g 250g
93-1129 HAZ	**Sodium chromate tetrahydrate, 99+%** *(10034-82-9)* $Na_2CrO_4{\cdot}4H_2O$; FW: 161.97 (234.07); yellow xtl.	100g 500g
05-2500	**Sodium cobalticarborane** *(99492-72-5)* $NaCo(B_9C_2H_{11})_2$; FW: 346.74; yellow to orange pwdr.  	1g 5g 25g
93-1132 HAZ	**Sodium cyanide, min. 98%** *(143-33-9)* NaCN; FW: 49.01; white granules; m.p. 563.7°; b.p. 1496° *hygroscopic*	500g 2kg
11-2800 HAZ	**Sodium cyanoborohydride, 95%** *(25895-60-7)* $NaBH_3CN$; FW: 62.84; off-white pwdr.; m.p. > 242° (dec.) *moisture sensitive*	5g 25g
93-1075 HAZ	**Sodium cyclopentadienide, 2-3M in THF** *(4984-82-1)* C_5H_5Na; FW: 88.09; yellow to red solution; f.p. 1°F (THF); d. 0.939 *air sensitive, moisture sensitive, (store cold)* Note: Free rubber septum included.	0.1mole 0.5mole
93-1077 HAZ	**Sodium dihydrobis(2-methoxyethoxy)aluminate, 70% in toluene** *(22722-98-1)* $Na(CH_3OCH_2CH_2O)_2AlH_2$; FW: 202.16; colorless liq.; f.p. 40°F (toluene); d. 1.034 (20°) *air sensitive, moisture sensitive* Note: Free rubber septum included.	100g 500g
93-1174	**Sodium dihydrogen phosphate monohydrate (99.9%-Na)** *(10049-21-5)* $NaH_2PO_4{\cdot}H_2O$; FW: 120.05 (137.99); white pwdr.	250g 1kg
11-2750	**Sodium dioctylsulfosuccinate (AOT), min. 95%** *(577-11-7)* *See* page 168	
11-1140	**Sodium dodecylsulfate, 98+%** *(151-21-3)* *See* page 168	
11-1285	**Sodium dodecylsulfate, min. 99%** *(151-21-3)* *See* page 168	

SODIUM (Compounds)

93-1139 HAZ	**Sodium ethoxide, 96%** *(141-52-6)* $NaOC_2H_5$; FW: 68.05; white to yellow pwdr. *moisture sensitive*	50g 250g
93-1163	**Sodium 2-ethylhexanoate, min. 97%** *(19766-89-3)* $NaOOCCH(C_2H_5)C_4H_9$; FW: 166.20; white pwdr. *hygroscopic*	25g 100g
11-1230	**Sodium 2-ethylhexanoate, 60% in water** *(19766-89-3)* $NaOOCCH(C_2H_5)C_4H_9$; FW: 166.20; colorless liq.	50g 250g
93-1141 HAZ	**Sodium fluoride, 99% (ACS)** *(7681-49-4)* NaF; FW: 41.99; white pwdr.; m.p. 988°; b.p. 1695°; d. 2.558	100g 500g
11-2000 HAZ	**Sodium fluoride (99.99+%-Na) PURATREM** *(7681-49-4)* NaF; FW: 41.99; white pwdr.; m.p. 988°; b.p. 1695°; d. 2.558	25g 100g
93-1059	**Sodium fluorophosphate, 94%** *(10163-15-2)* Na_2PO_3F; FW: 143.95; white pwdr.; m.p. ~625°	250g 1kg
77-8890	**Sodium hexachloroiridate(IV) hexahydrate, 99%** *(19567-78-3)* $Na_2IrCl_6 \cdot 6H_2O$; FW: 450.91 (559.01); red to black pwdr.; m.p. 600° dec. *hygroscopic*	1g 5g
77-9000	**Sodium hexachloroiridate(III) hydrate** *(123334-23-6)* $Na_3IrCl_6 \cdot XH_2O$; FW: 473.91; greenish-brown solid *hygroscopic*	1g 5g
93-7612	**Sodium hexachloroosmate(IV) hydrate** *(1307-81-9)* $Na_2OsCl_6 \cdot XH_2O$; FW: 448.90; brown to black pwdr. *hygroscopic*	500mg 2g
76-3520	**Sodium hexachloroosmate((IV) hydrate (99.98+%-Os)** *(1307-81-9)* $Na_2OsCl_6 \cdot XH_2O$; FW: 448.90; brown to black pwdr. *hygroscopic*	500mg 2g
93-4612	**Sodium hexachloropalladate(IV), 98+%** *(53823-60-2)* Na_2PdCl_6; FW: 365.10; orange to red xtl. *hygroscopic*	1g 5g
78-1995	**Sodium hexachloroplatinate(IV) hexahydrate, 98+%** *(19583-77-8)* $Na_2PtCl_6 \cdot 6H_2O$; FW: 453.79 (561.89); orange pwdr. *hygroscopic*	1g 5g
45-2000	**Sodium hexachlororhodate(III) hydrate** *(14972-70-4)* $Na_3RhCl_6 \cdot XH_2O$; FW: 384.59; red xtl. *hygroscopic*	250mg 1g 5g
93-1140	**Sodium hexacyanoferrate(II) decahydrate** *(14434-22-1)* $Na_4Fe(CN)_6 \cdot 10H_2O$; FW: 303.88 (484.04); pale yellow xtl.; d. 1.458	500g 2kg
11-1450	**Sodium hexafluoroacetylacetonate, 97%** *(22466-49-5)* $Na(CF_3COCHCOCF_3)$; FW: 230.04; white pwdr. *hygroscopic*	1g 5g 25g
93-1399 HAZ	**Sodium hexafluoroaluminate (99.9+%-Al)** *(13775-53-6)* Na_3AlF_6; FW: 209.95; white pwdr.; m.p. 1000°; d. 2.90	2g 10g
93-1006	**Sodium hexafluoroantimonate(V), 99%** *(16925-25-0)* $NaSbF_6$; FW: 258.73; white pwdr.; d. 3.375	25g 100g
93-1145	**Sodium hexafluoroarsenate(V), 99%** *(12005-86-6)* $NaAsF_6$; FW: 211.90; white pwdr.	5g 25g
93-1146	**Sodium hexafluorophosphate, 99%** *(21324-39-0)* $NaPF_6$; FW: 167.95; white xtl.; d. 3.375 *hygroscopic*	10g 50g
11-1146 NEW	**Sodium hexafluorophosphate 99% (99.99%-Na) PURATREM** *(21324-39-0)* F_6NaP; FW: 167.95; white pwdr.; d. 2.37 *air sensitive, moisture sensitive, hygroscopic*	2g 10g
93-1147 HAZ	**Sodium hexafluorosilicate, 99%** *(16893-85-9)* Na_2SiF_6; FW: 188.05; white pwdr.; m.p. dec.; d. 2.679	100g 500g
93-1148	**Sodium hexafluorostannate(IV), 99%** *(16924-51-9)* Na_2SnF_6; FW: 278.66; white pwdr.	5g 25g

SODIUM (Compounds)

93-1007	**Sodium hexafluorotitanate(IV), 98%** *(17116-13-1)* Na_2TiF_6; FW: 207.87; white pwdr.	10g 50g
11-1500 HAZ	**Sodium hexamethyldisilazane, min. 95%** *(1070-89-9)* $[(CH_3)_3Si]_2NNa$; FW: 183.38; off-white pwdr. *moisture sensitive*	5g 25g
93-1056	**Sodium hexanitritocobaltate(III), (ACS)** *(13600-98-1)* $Na_3Co(NO_2)_6$; FW: 403.98; orange pwdr.	50g 250g
93-1151 HAZ	**Sodium hydride, 60% in oil** *(7646-69-7)* NaH; FW: 24.00; gray pwdr. *air sensitive, moisture sensitive*	250g 1kg
93-1053	**Sodium hydrogen carbonate, 99.7+% (ACS)** *(144-55-8)* $NaHCO_3$; FW: 84.01; white pwdr.	500g 2kg
93-1173	**Sodium hydrogen phosphate, 99+% (ACS)** *(7558-79-4)* Na_2HPO_4; FW: 141.96; white pwdr.; d. 1.679	500g 2kg
93-1061 HAZ	**Sodium hydrogen sulfide, anhydrous** *(16721-80-5)* NaHS; FW: 56.06; off-white pwdr.; m.p. 350° *hygroscopic*	1g 5g 25g
93-1064 HAZ	**Sodium hydroxide monohydrate (99.996%-Na) PURATREM** *(12179-02-1)* $NaOH{\cdot}H_2O$; FW: 40.00 (58.01); white xtl. *hygroscopic*	10g 50g
93-1063 HAZ	**Sodium hydroxide, pellets, 97+% (ACS)** *(1310-73-2)* NaOH; FW: 40.00; white pellets; m.p. 318.4°; b.p. 1390°; d. 2.130 *hygroscopic*	500g 2kg
93-1156	**Sodium iodide, anhydrous, 99% (H_2O < 1%)** *(7681-82-5)* NaI; FW: 149.89; white pwdr.; m.p. 651°; b.p. 1304°; d. 3.667 *hygroscopic*	100g 500g
93-1196 HAZ	**Sodium metasilicate, anhydrous, min. 95%** *(6834-92-0)* Na_2SiO_3; FW: 122.06; white pwdr.; m.p. 1088°; d. 2.4 *hygroscopic*	500g 2kg
93-1448 HAZ	**Sodium metasilicate pentahydrate, 99%** *(6834-92-0)* $Na_2SiO_3{\cdot}5H_2O$; FW: 122.06 (212.14); white pwdr.; m.p. 40-48°	500g 2kg
93-2303 HAZ	**Sodium metavanadate, min. 96%** *(13718-26-8)* $NaVO_3$; FW: 121.93; white pwdr.; m.p. 630°	100g 500g
93-1159 HAZ	**Sodium methoxide, 98+%** *(124-41-4)* $NaOCH_3$; FW: 54.02; white pwdr. *moisture sensitive*	500g 1kg
93-1160	**Sodium molybdate, anhydrous, 98+%** *(7631-95-0)* Na_2MoO_4; FW: 205.92; white to off-white pwdr.; m.p. 687°; d. 3.28	100g 500g
93-4234	**Sodium molybdate dihydrate, 99%** *(10102-40-6)* $Na_2MoO_4{\cdot}2H_2O$; FW: 205.92 (241.95); white pwdr.; d. 3.28	100g 500g
42-4234	**Sodium molybdate dihydrate, 99.5% (ACS)** *(10102-40-6)* $Na_2MoO_4{\cdot}2H_2O$; FW: 205.92 (241.95); white pwdr.; d. 3.28	100g 500g
93-1057	**Sodium niobate (99.9%-Nb)** *(12034-09-2)* $NaNbO_3$; FW: 163.89; white pwdr.	5g 25g
93-1161 HAZ	**Sodium nitrate, 99+% (ACS)** *(7631-99-4)* $NaNO_3$; FW: 84.99; white xtl.; m.p. 306.8°; d. 2.261 *hygroscopic*	500g 2kg
93-1162 HAZ	**Sodium nitrite, 97+% (ACS)** *(7632-00-0)* $NaNO_2$; FW: 69.00; white pwdr.; m.p. 271°; b.p. 320° dec.; d. 2.168 *hygroscopic*	500g 2kg
11-1280	**Sodium oleate, 99%** *(143-19-1)* *See* page 169	
93-1449 HAZ	**Sodium orthosilicate** *(13472-30-5)* Na_4SiO_4; FW: 184.04; white pwdr.; m.p. 1018°	1kg 5kg
93-1165 HAZ	**Sodium oxalate, 99+%** *(62-76-0)* $Na_2C_2O_4$; FW: 134.00; white pwdr.	100g 500g

SODIUM (Compounds)

11-1007 HAZ
Sodium oxide/sodium on alumina, Olefin Isomerization Catalyst
(Na_2O 11.5-13.5%, Na 1.8-3.0%)
Na_2O/Na; white solid
moisture sensitive
10g
50g

Catalyst benefits:
·Very active and highly selective olefin isomerization catalyst
·Highly resistant to catalyst poisons (tetrahydroindene, cyclopentadiene, etc.)

Uses:
·Diene monomer in the production of EPDM rubber.
·Scent carrier for flavors and fragrances.

93-1169 HAZ
Sodium perchlorate, anhydrous, 98% (ACS) *(7601-89-0)*
$NaClO_4$; FW: 122.44; white pwdr.; m.p. 482° dec.; d. 2.02
hygroscopic
100g
500g

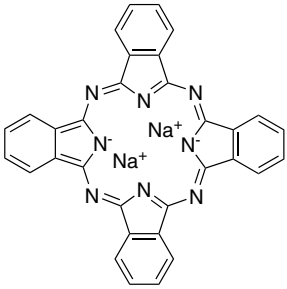
93-1170 HAZ
Sodium perchlorate monohydrate, 98% *(7791-07-3)*
$NaClO_4 \cdot H_2O$; FW: 122.44 (140.48); white pwdr.; m.p. 130°; d. 2.02
hygroscopic
100g
500g

93-1050 HAZ
Sodium peroxide, min. 93% (ACS) *(1313-60-6)*
Na_2O_2; FW: 77.98; yellow pwdr.; m.p. 460° dec.; d. 2.805
moisture sensitive
50g
250g

93-7508 HAZ
Sodium perrhenate (99.9%-Re) *(13472-33-8)*
$NaReO_4$; FW: 273.19; white pwdr.; m.p. 300° (in O_2); d. 5.39
hygroscopic
1g
5g

93-1175
Sodium phosphate dodecahydrate, 98+% (ACS) *(10101-89-0)*
$Na_3PO_4 \cdot 12H_2O$; FW: 163.94 (380.12); white pwdr.
250g
1kg

93-1176
Sodium phthalocyanine *(25476-27-1)*
$(C_{32}H_{16}N_8)Na_2$; FW: 558.51; purple pwdr.
5g



93-3414 HAZ
Sodium selenite, 99% *(10102-18-8)*
Na_2SeO_3; FW: 172.94; white pwdr.
50g
250g

93-1179
Sodium stannate trihydrate, min. 95% *(12209-98-2)*
$Na_2SnO_3 \cdot 3H_2O$; FW: 212.68 (266.71); white pwdr.
100g
500g

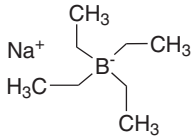
93-1180
Sodium stearate, tech. gr. *(822-16-2)*
$Na(OOCC_{17}H_{35})$; FW: 306.49; white pwdr.
1kg

93-1068
Sodium sulfate, anhydrous, 99+% (ACS) *(7757-82-6)*
Na_2SO_4; FW: 142.04; white pwdr.; m.p. 888°; d. 2.68
250g
1kg
5kg

93-1069
Sodium sulfate, anhydrous (99.999%-Na) PURATREM *(7757-82-6)*
Na_2SO_4; FW: 142.04; white pwdr.; m.p. 888°; d. 2.68
10g
50g

93-1182 HAZ
Sodium sulfide, anhydrous, min. 95% *(1313-82-2)*
Na_2S; FW: 78.04; off-white pwdr.; m.p. 950°; d. 1.856
hygroscopic
5g
25g

SODIUM (Compounds)

93-1183 HAZ	**Sodium sulfide nonahydrate, 98+% (ACS)** *(1313-84-4)* $Na_2S{\cdot}9H_2O$; FW: 78.04 (240.18); colorless to pale yellow solid *(store cold)*	100g 500g
93-1184	**Sodium sulfite, anhydrous, 98+% (ACS)** *(7757-83-7)* Na_2SO_3; FW: 126.04; white pwdr.; m.p. dec.; d. 2.633	250g 1kg
93-1186	**Sodium tellurate(VI) dihydrate, 99.5%** *(26006-71-3)* $Na_2TeO_4{\cdot}2H_2O$; FW: 237.58 (273.61); white pwdr.	5g 25g
93-1188	**Sodium tetraborate, anhydrous, 99+%** *(1330-43-4)* $Na_2B_4O_7$; FW: 201.22; white pwdr.; m.p. 741°; b.p. 1575° dec.; d. 2.367	500g 2kg
93-1072	**Sodium tetraborate, anhydrous (99.998%-B) (50 ppm K) PURATREM** *(1330-43-4)* $Na_2B_4O_7$; FW: 201.22; white pwdr.; m.p. 741°; b.p. 1575° dec.; d. 2.367	10g 50g
93-1070	**Sodium tetraborate decahydrate, 99.5+% (ACS)** *(1303-96-4)* $Na_2B_4O_7{\cdot}10H_2O$; FW: 201.22 (381.37); white xtl.; m.p. 75° dec.; d. 1.73	500g 2kg
79-3505	**Sodium tetrabromoaurate(III) hydrate (99.9+%-Au)** *(52495-41-7)* $NaAuBr_4{\cdot}XH_2O$; FW: 539.59; red to black xtl.	1g 5g
93-4613	**Sodium tetrachloropalladate(II) trihydrate, 99%** *(13820-53-6)* $Na_2PdCl_4{\cdot}3H_2O$; FW: 294.19 (348.22); reddish-brown pwdr.	2g 10g
93-7810	**Sodium tetrachloroplatinate(II) hydrate** *(207683-21-4)* $Na_2PtCl_4{\cdot}XH_2O$; FW: 382.92; reddish-brown pwdr.; m.p. 100°	1g 5g
11-0575 amp HAZ	**Sodium tetraethylborate, min. 98%** *(15523-24-7)* $NaB(C_2H_5)_4$; FW: 150.04; white pwdr.; m.p. dec. *moisture sensitive, pyrophoric* 	1g 5g 25g
93-1189 HAZ	**Sodium tetrafluoroborate, 98%** *(13755-29-8)* $NaBF_4$; FW: 109.79; white pwdr.; m.p. 384° dec.; d. 2.47	500g 2kg
11-0590	**Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, min. 98% NaBARF** *(79060-88-1)* $Na^+[B(C_6H_3(CF_3)_2)_4]^-$; FW: 886.20; tan pwdr. Note: Can contain <5 mole% water and <5 mole% residual ethers.	50mg 250mg 1g
11-1015	**Sodium tetrakis(4-fluorophenyl)borate dihydrate, 97%** *(207683-22-5)* $C_{24}H_{20}BF_4NaO_2$; FW: 414.18(450.21); white xtl.	250mg 1g 5g
11-1015 NEW	**Sodium tetrakis(4-fluorophenyl)borate dihydrate, 97%** *(207683-22-5)* $C_{24}H_{20}BF_4NaO_2$; FW: 414.18(450.21); white xtl.	250mg 1g 5g
93-0571	**Sodium tetraphenylborate, 99.5+% (ACS)** *(143-66-8)* $NaB(C_6H_5)_4$; FW: 342.23; white pwdr.	5g 25g 100g
11-0600	**Sodium tetraphenylborate, tech. gr. (min. 95%)** *(143-66-8)* $NaB(C_6H_5)_4$; FW: 342.23; off-white to pink pwdr.	25g 100g
93-1197	**Sodium titanate, 95%** *(12034-36-5)* $Na_2Ti_3O_7$; FW: 301.68; yellow pwdr.; m.p. 1128°; d. 3.35-3.50	100g 500g
11-0595 HAZ	**Sodium triacetoxyborohydride, min. 95%** *(56553-60-7)* $Na(OOCCH_3)_3BH$; FW: 211.94; white pwdr.; m.p. 106° *air sensitive, moisture sensitive, (store cold)*	25g 100g
93-1194	**Sodium trifluoroacetate, 97+%** *(2923-18-4)* $NaOOCCF_3$; FW: 136.01; white pwdr.; m.p. 207-209°	10g 50g
11-0560	**Sodium trifluoromethanesulfonimide, min. 97%** *(91742-21-1)* $Na(C_2F_6NO_4S_2)$; FW: 303.14; white pwdr. *hygroscopic*	250mg 1g 5g
93-1195	**Sodium tripolyphosphate, tech. gr., min. 85%** *(7758-29-4)* $Na_5P_3O_{10}$; FW: 367.86; white pwdr.	500g 2kg
93-7422	**Sodium tungstate dihydrate, 99+% (ACS)** *(10213-10-2)* $Na_2WO_4{\cdot}2H_2O$; FW: 293.83 (329.86); white xtl.; m.p. 692°; d. 3.24	100g 500g

SODIUM (Compounds)

11-2700	**Sodium(cyclopentadienyl)tris(dimethylphosphito)cobaltate(I), 98%** *(82149-18-6)* $Na(C_5H_5)Co[PO(OCH_3)_2]_3$; FW: 474.14; yellow to orange xtl.	1g 5g
11-1200 amp HAZ	**Sodium-i-propylcyclopentadienide** *(65090-77-9)* $(C_3H_7)C_5H_4Na$; FW: 130.17; white to off-white xtl. *air sensitive, moisture sensitive*	5g 25g

STRONTIUM (Elemental Forms)

93-3831 HAZ	**Strontium pieces (99%)** *(7440-24-6)* Sr; FW: 87.63; 20-30mm (packed in mineral oil); m.p. 769°; b.p. 1384°; d. 2.54 *air sensitive, moisture sensitive*	25g 100g
38-0074 amp HAZ	**Strontium pieces, dendritic (99.9%)** *(7440-24-6)* Sr; FW: 87.63; ampouled under argon; m.p. 769°; b.p. 1384°; d. 2.54 *air sensitive, moisture sensitive*	25g

STRONTIUM (Compounds)

38-8400	**Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)strontium hydrate [$Sr(FOD)_2$]** *(36885-30-0)* $Sr[C_3F_7COCHCOC(CH_3)_3]_2 \cdot XH_2O$; FW: 678.00; white pwdr.; b.p. dec. 230° (subl. 100°/0.1mm)	1g 5g 25g
38-1000	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)strontium hydrate [$Sr(TMHD)_2$]** *(199445-30-2)* $Sr(C_{11}H_{19}O_2)_2 \cdot XH_2O$; FW: 454.16; light yellow pwdr.; m.p. 200-203°; b.p. dec. 250° (subl. 230°/0.05mm)	1g 5g 25g
38-1010	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)strontium tetraglyme adduct (99.99%-Sr) PURATREM** *(150939-76-7)* $Sr(C_{11}H_{19}O_2)_2 \cdot CH_3(OCH_2CH_2)_4OCH_3$; FW: 454.16 (676.44); white xtl.; m.p. 75° Note: This compound is covered by U.S. Patent No. 5,225,561, and is manufactured and sold under license from Advanced Technology Materials, Inc., Danbury, CT.	1g 5g
38-1015	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)strontium triglyme adduct (99.99%-Sr) PURATREM** $Sr(C_{11}H_{19}O_2)_2 \cdot CH_3(OCH_2CH_2)_3OCH_3$; FW: 454.16 (632.39); white xtl.; m.p. 102° Note: This compound is covered by U.S. Patent No. 5,225,561, and is manufactured and sold under license from Advanced Technology Materials, Inc., Danbury, CT.	1g 5g
93-3801	**Strontium acetate, reagent** *(543-94-2)* $Sr(OOCCH_3)_2$; FW: 205.71; white pwdr.; d. 2.099	100g 500g
93-3847	**Strontium acetylacetonate hydrate, 99%** *(12193-47-4)* $Sr(CH_3COCHCOCH_3)_2 \cdot XH_2O$; FW: 285.84; white pwdr.; m.p. 220° dec.	25g 100g
38-3838	**Strontium bis(N,N,N',N',N''-pentamethyldiethylenetriamine)bis[BREW] (99.99+%-Sr) PURATREM** $Sr(C_9H_{23}N_3)_2[C \cdot HyC(O)CHC(O)C \cdot Hy]_2$ (x=3-4, y=2x +1); pale yellow liq. *moisture sensitive* Note: 9-11 wt% Sr, ***Limited quantities available. Will discontinue when stock is gone***	1g 5g

Technical Note:
1. See 56-5656 (page 11)

93-3802	**Strontium bromide, anhydrous, 99%** *(10476-81-0)* $SrBr_2$; FW: 247.44; white pwdr.; m.p. 643°; d. 4.216 *hygroscopic*	25g 100g
93-3804	**Strontium carbonate, min. 97% (contains ~1.0-2.5% barium carbonate)** *(1633-05-2)* $SrCO_3$; FW: 147.63; white pwdr.; m.p. 1497°; d. 3.70	250g 1kg
93-3803	**Strontium carbonate (low alkali and heavy metals) (99.9%-Sr)** *(1633-05-2)* $SrCO_3$; FW: 147.63; white pwdr.; m.p. 1497°; d. 3.70	50g 250g
38-1100	**Strontium carbonate (99.995%-Sr) PURATREM** *(1633-05-2)* $SrCO_3$; FW: 147.63; white pwdr.; m.p. 1497°; d. 3.70	10g 50g
93-3806	**Strontium chloride, anhydrous, min. 95%** *(10476-85-4)* $SrCl_2$; FW: 158.53; white pwdr.; m.p. 873°; b.p. 1250°; d. 3.052 *hygroscopic*	250g 1kg

STRONTIUM (Compounds)

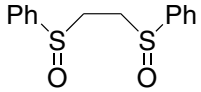
93-3807	**Strontium chloride hexahydrate, 99% (ACS)** *(10025-70-4)* $SrCl_2 \cdot 6H_2O$; FW: 158.53 (266.62); white xtl.; m.p. 115°; d. 1.93	100g 500g
38-2400	**Strontium 2-ethylhexanoate, ~40% in 2-ethylhexanoic acid (8-12% Sr)** *(2457-02-5)* $Sr[OOCCH(C_2H_5)C_4H_9]_2$; FW: 374.04; viscous liq.	25g 100g
93-3808	**Strontium fluoride, reagent, 99%** *(7783-48-4)* SrF_2; FW: 125.62; white pwdr.; m.p. > 1450°; b.p. 2489°; d. 4.24 *hygroscopic*	100g 500g
93-3843	**Strontium fluoride (99.99%-Sr) PURATREM** *(7783-48-4)* SrF_2; FW: 125.62; white pwdr.; m.p. > 1450°; b.p. 2489°; d. 4.24 *hygroscopic*	10g 50g
38-2000	**Strontium hexafluoroacetylacetonate** *(1245785-21-0)* $Sr(CF_3COCHCOCF_3)_2$; FW: 501.75; off-white pwdr.; m.p. dec. 260°; b.p. (subl. 220°/0.02mm)	1g 5g 25g
38-3840 HAZ	**Strontium hydride (99.5%-Sr)** *(13598-33-9)* SrH_2; FW: 89.64; -60 mesh gray pwdr. *moisture sensitive*	1g 5g
93-3810	**Strontium hydroxide octahydrate, tech. gr.** *(1311-10-0)* $Sr(OH_2) \cdot 8H_2O$; FW: 121.63 (265.76); white xtl.; d. 1.90 *hygroscopic*	500g 2kg
38-7000	**Strontium neodecanoate, superconductor grade (16-21% Sr)** *(106705-37-7)* $Sr(OOCC_9H_{19}\text{-neo})_2$; FW: 430.10; off-white pwdr.	10g 50g
93-3814 HAZ	**Strontium nitrate, 98+%** *(10042-76-9)* $Sr(NO_3)_2$; FW: 211.63; white xtl.; m.p. 570°; d. 2.990 *hygroscopic*	100g 500g
38-2100 HAZ	**Strontium nitrate, 99+% (ACS)** *(10042-76-9)* $Sr(NO_3)_2$; FW: 211.63; white xtl.; m.p. 570°; d. 2.990 *hygroscopic*	25g 250g 1kg
38-3860 HAZ	**Strontium nitride (99.5%-Sr)** *(12033-82-8)* Sr_3N_2; FW: 290.87; -60 mesh tan pwdr. *moisture sensitive*	1g 5g
93-3815	**Strontium oxalate, min. 95%** *(814-95-9)* SrC_2O_4; FW: 175.64; white pwdr.	100g 500g
38-2250	**Strontium oxide (99.9%-Sr)** *(1314-11-0)* SrO; FW: 103.62; white pwdr.; m.p. 2430°; d. 4.7 *moisture sensitive*	10g 50g
93-3817 HAZ	**Strontium perchlorate hydrate (99.9%-Sr)** *(13450-97-0)* $Sr(ClO_4)_2 \cdot xH_2O$; FW: 286.52; white xtl.; m.p. < 100° *hygroscopic*	100g 500g
38-2500 HAZ	**Strontium i-propoxide, min. 95%** *(88863-33-6)* $Sr(OC_3H_7)_2$; FW: 205.80; off-white pwdr. *moisture sensitive*	5g 25g
93-3821	**Strontium sulfide (99.9%-Sr)** *(1314-96-1)* SrS; FW: 119.68; -200 mesh pwdr.; m.p. > 2000°; d. 3.70 *air sensitive, moisture sensitive*	10g 50g
93-3823	**Strontium titanate, 99+%** *(12060-59-2)* $SrTiO_3$; FW: 183.51; white to off-white pwdr.	250g 1kg
93-3826	**Strontium zirconate, 95%** *(12036-39-4)* $SrZrO_3$; FW: 226.84; white pwdr.	250g 1kg

SULFUR (Elemental Forms)

93-1616 HAZ	**Sulfur (99.999%)** *(7704-34-9)* S; FW: 32.06; 6mm pieces and down; m.p. 112.8°; b.p. 444.67°; d. 2.07	25g 100g 500g
93-1617 HAZ	**Sulfur powder, precipitated, purified** *(7704-34-9)* S; FW: 32.06; -60 mesh pwdr.; m.p. 112.8°; b.p. 444.67°; f.p. 405°F; d. 2.07	250g 1kg
93-1618 HAZ	**Sulfur powder, sublimed (99+%)** *(7704-34-9)* S; FW: 32.06; -100 mesh pwdr.; m.p. 112.8°; b.p. 444.67°; f.p. 405°F; d. 2.07	250g 1kg

SULFUR (Compounds)

16-0350 **1,2-Bis(phenylsulfinyl)ethane, 98%** *(6099-21-4)*
$C_{14}H_{14}O_2S_2$; FW: 278.39; white to off-white pwdr.
(store cold)
250mg
1g



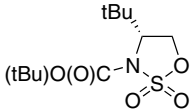
07-0215 **(2S)-(-)-2-{[[[3,5-Bis(tifluoromethyl)phenyl]amino]thioxomethyl]amino}-N-(diphenylmethyl)-N,3,3-trimethylbutanamide, 95%** *(1186602-28-7)*
See page 188

07-0283 **1-[3,5-Bis(trifluoromethyl)phenyl]-3-[(1R,2R)-(-)-2-(dimethylamino)cyclohexyl] thiourea (R,R-TUC)** *(620960-26-1)*
See page 188

07-0284 **1-[3,5-Bis(trifluoromethyl)phenyl]-3-[(1S,2S)-(+)-2-(dimethylamino)cyclohexyl] thiourea (S,S-TUC)** *(851477-20-8)*
See page 188

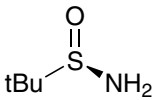
14-1015 **Bis(trimethylsilyl)sulfide, min. 98%** *(3385-94-2)*
See page 406

16-3007 **(4R)-4-t-Butyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1313705-92-8)*
$C_{11}H_{21}NO_5S$; FW: 279.35; white solid
air sensitive
250mg
1g



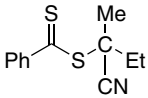
16-3008 **(4S)-4-t-Butyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1206227-45-3)*
$C_{11}H_{21}NO_5S$; FW: 279.35; white solid
air sensitive
250mg
1g

16-0380 **(R)-(+)-t-Butylsulfinamide, min. 97%** *(196929-78-9)*
$(C_4H_9)S(O)NH_2$; FW: 121.20; white pwdr.; m.p. 103-107°
(store cold)
For detailed technical note visit strem.com.
1g
5g
25g

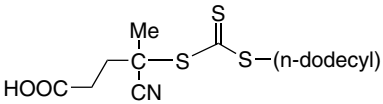


16-0381 **(S)-(-)-t-Butylsulfinamide, min. 97%** *(343338-28-3)*
$(C_4H_9)S(O)NH_2$; FW: 121.20; white pwdr.; m.p. 97-101°
(store cold)
For detailed technical note visit strem.com.
1g
5g
25g

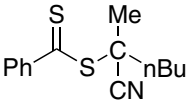
16-0517 **2-Cyano-2-butylbenzodithiolate** *(220182-83-2)*
$C_{12}H_{13}NS_2$; FW: 235.37; dark red liq.
light sensitive, (store cold)
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444.
Limited quantities available.
100mg



16-0415 **4-Cyano-4-(dodecylsulfanylthiocarbonyl) sulfanylpentanoic acid, min. 97%**
(870196-80-8)
$C_{19}H_{33}NO_2S_3$; FW: 403.67; pale yellow solid; m.p. 59-62°
light sensitive
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component.
For detailed technical note visit strem.com.
500mg
2g
10g



16-0516 **2-Cyano-2-hexylbenzodithiolate** *(1858249-76-9)*
$C_{14}H_{17}NS_2$; FW: 263.42; dark red liq.
light sensitive, (store cold)
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444.
Limited quantities available.
100mg

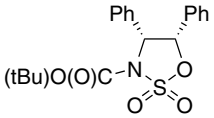


SULFUR (Compounds)

16-0528	**2-Cyano-3-methyl-2-butylbenzodithiolate** *(851729-55-0)* $C_{13}H_{15}NS_2$; FW: 249.40; dark red liq. *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. ***Limited quantities available.***	100mg
16-0425	**2-Cyanomethyl-S-dodecyltrithiocarbonate, min. 97%** *(796045-97-1)* $C_{15}H_{27}NS_3$; FW: 317.58; yellow-orange solid; m.p. 30-33° *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component. **For detailed technical note visit strem.com.**	500mg 2g 10g
16-0423	**2-Cyanomethyl-N-methyl-N-phenyldithiocarbamate, min. 97%** *(76926-16-4)* $C_{10}H_{10}N_2S_2$; FW: 222.33; pale yellow xtl. *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component. **For detailed technical note visit strem.com.**	500mg 2g 10g
16-0523	**2-Cyano-2-pentylbenzodithiolate** *(1823273-83-1)* $C_{13}H_{15}NS_2$; FW: 249.40; dark red liq. *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. ***Limited quantities available.***	100mg
16-0430	**2-Cyanoprop-2-yl-dithiobenzoate, min. 97%** *(201611-85-0)* $C_{11}H_{11}NS_2$; FW: 221.34; purple liq. *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component. **For detailed technical note visit strem.com.**	500mg 2g 10g
16-0610	**2-(2-Cyanoprop-2-yl)-S-dodecyltrithiocarbonate, min. 97%** *(870196-83-1)* $C_{17}H_{31}NS_3$; FW: 345.63; orange liq. *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component. **For detailed technical note visit strem.com.**	500mg 2g 10g
16-0422	**4-Cyano-4-(thiobenzoylthio)pentanoic acid, min. 97%** *(201611-92-9)* $C_{13}H_{13}NO_2S_2$; FW: 279.38; pink pwdr. *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component. **For detailed technical note visit strem.com.**	500mg 2g 10g
16-0617	**S,S-Dibenzyltrithiocarbonate, min. 97%** *(26504-29-0)* $C_{15}H_{14}S_3$; FW: 290.47; dark yellow liq. *moisture sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component. **For detailed technical note visit strem.com.**	500mg 2g 10g
16-0450	**1,2-Dimercapto-4-methylbenzene, min. 90% (Toluene-3,4-dithiol)** *(496-74-2)* $4\text{-}CH_3C_6H_3\text{-}1,2\text{-}(SH)_2$; FW: 156.26; yellow liq.; m.p. 35°; d. 1.179 *(store cold)*	1g 5g

SULFUR (Compounds)

16-3021 **(4R,5S)-4,5-Diphenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1293372-65-2)*
$C_{19}H_{21}NO_5S$; FW: 375.44; white solid
air sensitive

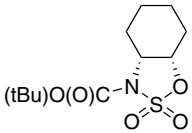


250mg
1g

16-3020 **(4S,5R)-4,5-Diphenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1091606-63-1)*
$C_{19}H_{21}NO_5S$; FW: 375.44; white solid
air sensitive

250mg
1g

16-3015 **(R,S)-Hexahydro-3H-1,2,3-benzoxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1206227-47-5)*
$C_{11}H_{19}NO_5S$; FW: 277.34; white solid
air sensitive

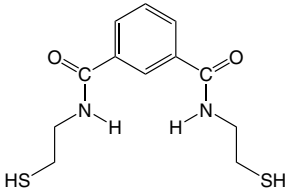


250mg
1g

16-3016 **(S,R)-Hexahydro-3H-1,2,3-benzoxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%**
$C_{11}H_{19}NO_5S$; FW: 277.34; white solid
air sensitive

250mg
1g

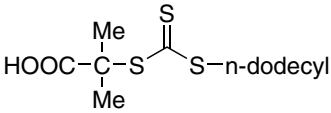
16-3025 **1,3-(N-Mercaptoethylcarboxamide)benzene, 99%**
BDET *(351994-94-0)*
$C_{12}H_{16}N_2O_2S_2$; FW: 286.42; white solid; m.p. 132-135°



1g
5g

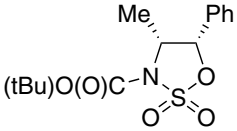
Technical Note:
1. Ligand used in a variety of applications involving heavy-metal chelation and amelioration of acute heavy-metal toxicity.

16-0460 **2-Methyl-2-[(dodecylsulfanylthiocarbonyl) sulfanyl]propanoic acid, min. 97%** *(461642-78-4)*
$C_{17}H_{32}O_2S_3$; FW: 364.63; pale yellow solid; m.p. 58-63°
light sensitive, (store cold)
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. RAFT Agent Kit component.
For detailed technical note visit strem.com.



500mg
2g
10g

16-3002 **(4R,5S)-4-Methyl-5-phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1380313-48-3)*
$C_{14}H_{19}NO_5S$; FW: 313.37; white solid
air sensitive

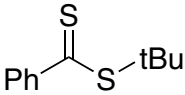


250mg
1g

16-3003 **(4S,5R)-4-Methyl-5-phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1091606-65-3)*
$C_{14}H_{19}NO_5S$; FW: 313.37; white solid
air sensitive

250mg
1g

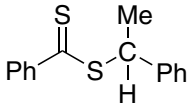
16-0521 **2-Methyl-2-propylbenzodithiolate** *(5925-55-3)*
$C_{11}H_{14}S_2$; FW: 210.36; red-orange liq.
light sensitive, (store cold)
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444.
Limited quantities available.



100mg

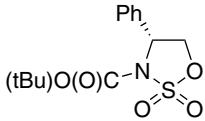
SULFUR (Compounds)

16-0526 **2-Phenylethylbenzodithiolate** *(37912-25-7)*
$C_{15}H_{14}S_2$; FW: 258.40; red-orange liq.
light sensitive, (store cold)
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. ***Limited quantities available.***



100mg

16-3030 **(4R)-4-Phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1209467-60-6)*
$C_{13}H_{17}NO_5S$; FW: 299.34; white solid
air sensitive, (store cold)

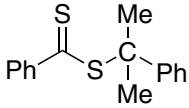


250mg
1g

16-3031 **(4S)-4-Phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(479687-23-5)*
$C_{13}H_{17}NO_5S$; FW: 299.34; white solid
air sensitive, (store cold)

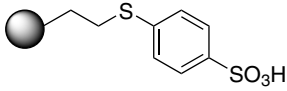
250mg
1g

16-0513 **2-Phenyl-2-propylbenzodithiolate, min. 97%** *(201611-77-0)*
$C_{16}H_{16}S_2$; FW: 272.43; dark red-purple liq.
light sensitive, (store cold)
Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. ***Limited quantities available.***



250mg

16-0760 **Phenyl sulfonic acid ethyl sulfide Silica (PhosphonicS SPhSA)**
white to cream solid; SA: 380 m^2/g
Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. Also see 15-0011 page 312



10g
50g

Technical Note:

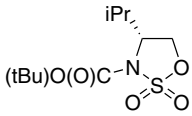
1. Applications include esterification, trans-esterification, hydrolysis, rearrangements, dehydration, protection and de-protection, cyclizations, etherifications. At the end of the reaction the solid silica catalyst can simply be filtered from the reaction mixture and reused.

Particle size range: 315-700 microns
Average pore size: 60Å
Functional group loading: 0.5 to 0.8 mmol/g

References:

1. *Manufacturing Chemist,* **2007**, *July/ August Ed. 27*

16-3010 **(4R)-4-i-Propyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%**
$C_{10}H_{19}NO_5S$; FW: 265.33; white solid
air sensitive



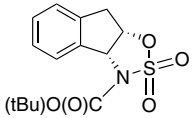
250mg
1g

16-3011 **(4S)-4-i-Propyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1206227-46-4)*
$C_{10}H_{19}NO_5S$; FW: 265.33; white solid
air sensitive

250mg
1g

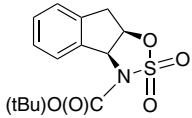
96-4700 **RAFT Agent Kit for controlling polymerizations at the molecular level**
See page 544

16-3006 **(4R,5S)-3,3a,8,8a-Tetrahydroindeno[1,2-d]-1,2,3-oxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1391532-95-8)*
$C_{14}H_{17}NO_5S$; FW: 311.35; white solid
air sensitive



250mg
1g

16-3005 **(4S,5R)-3,3a,8,8a-Tetrahydroindeno[1,2-d]-1,2,3-oxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%** *(1091606-66-4)*
$C_{14}H_{17}NO_5S$; FW: 311.35; white solid
air sensitive



250mg
1g

SULFUR (Compounds)

16-2250	**Tetrathiafulvalene, 98+% TTF** *(31366-25-3)* $C_6H_4S_4$; FW: 204.35; orange xtl.; m.p. 113-116° *light sensitive*	250mg 1g
16-0532	**2-(Thiobenzoylthio)propionic acid, min. 97%** *(78751-36-7)* $C_{10}H_{10}O_2S_2$; FW: 226.32 *light sensitive, (store cold)* Note: Sold for research purposes only. Not for use in humans or animals. Patents: WO98/01478, WO99/311444. ***Limited quantities available.***	100mg 500mg
16-2230	**3,4,5-Trimethylthiazolium iodide, 99%** *(62993-85-5)* $C_6H_{10}INS$; FW: 255.12; white solid *moisture sensitive* **For detailed technical note visit strem.com.**	1g 5g

TANTALUM (Elemental Forms)

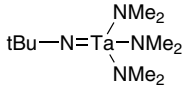
73-0040	**Tantalum foil (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 1mm thick (~10.4g/25 x 25mm); m.p. 2996°; b.p. 5425°; d. 16.6	25 x 25mm 50 x 50mm 100 x 100mm
73-0045	**Tantalum foil (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 0.5mm thick (~20.8g/50 x50mm); m.p. 2996°; b.p. 5425°; d. 16.6	50 x 50mm 100 x 100mm 200 x 200mm
73-0050	**Tantalum foil (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 0.127mm thick (~5.3g/50 x 50mm); m.p. 2996°; b.p. 5425°; d. 16.6	50 x 50mm 100 x 100mm 200 x 200mm
93-7332 HAZ	**Tantalum powder (99.98%, Nb-25ppm)** *(7440-25-7)* Ta; FW: 180.95; -325 mesh; m.p. 2996°; b.p. 5425°; d. 16.6	10g 50g
93-7330 HAZ	**Tantalum powder (99.98%, Nb-25ppm)** *(7440-25-7)* Ta; FW: 180.95; avg. particle size 5.7-9.5 micron; m.p. 2996°; b.p. 5425°; d. 16.6	10g 50g
73-0065	**Tantalum rod (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 12.5mm dia. (~20.4g/cm); m.p. 2996°; b.p. 5425°; d. 16.6	1cm 5cm 25cm
73-0070	**Tantalum rod (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 6.35mm dia. (~5.1g/cm); m.p. 2996°; b.p. 5425°; d. 16.6	5cm 25cm
73-0075	**Tantalum wire (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 1mm dia. (~13g/m); m.p. 2996°; b.p. 5425°; d. 16.6	1m 5m 25m
73-0080	**Tantalum wire (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 0.5mm dia. (~3.3g/m); m.p. 2996°; b.p. 5425°; d. 16.6	1m 5m 25m
73-0085	**Tantalum wire (99.95%)** *(7440-25-7)* Ta; FW: 180.95; 0.25mm dia. (~0.82g/m); m.p. 2996°; b.p. 5425°; d. 16.6	10m 50m

TANTALUM (Compounds)

73-0490	**t-Amylimidotris(dimethylamino)tantalum(V) TAIMATA** *(629654-53-1)* $C_{11}H_{29}N_4Ta$; FW: 398.32; colorless solid *air sensitive, moisture sensitive*	1g 5g
73-0723	**(t-Butylimido)tris(diethylamino)tantalum(V), min. 98% (99.99%-Ta) PURATREM TBTDET** *(169896-41-7)* $C_{16}H_{39}N_4Ta$; FW: 468.45; colorless to pale yellow liq.; d. 1.252 g/ml@25°C *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	250mg 1g 5g

TANTALUM (Compounds)

73-0700
t-Butylimidotris(dimethylamino) tantalum(V), min. 98% *(69039-11-8)*
$C_{10}H_{27}N_4Ta$; FW: 384.30; pale-yellow solid
air sensitive, moisture sensitive
Note: Available prepacked in ALD cylinder- see 98-4045.

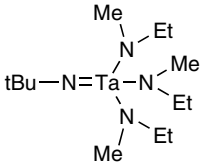


1g
5g

98-4045
t-Butylimidotris(dimethylamino)tantalum(V), min. 98%, 73-0700, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(69039-11-8)*
$C_{10}H_{27}N_4Ta$; FW: 384.30; colorless solid
air sensitive, moisture sensitive
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost.

10g
25g

73-0735
NEW
(t-Butylimido)tris(ethylmethylamino)tantalum(V) (99.99%-Ta) PURATREM *(511292-99-2)*
$C_{13}H_{33}N_4Ta$; FW: 426.38; yellow liq.
air sensitive, moisture sensitive



1g
5g
25g

73-0800
amp
HAZ
Pentakis(dimethylamino)tantalum(V), 99% *(19824-59-0)*
$Ta[N(CH_3)_2]_5$; FW: 401.33; orange xtl.; m.p. >100° (dec.); b.p. subl. 100°/0.1mm
moisture sensitive

1g
5g
25g

73-0900
amp
HAZ
Pentamethylcyclopentadienyltantalum tetrachloride, 98% *(71414-47-6)*
$[C_5(CH_3)_5]TaCl_4$; FW: 458.00; orange pwdr.; m.p. 220°
air sensitive, moisture sensitive

1g
5g

93-7305
HAZ
Tantalum(V) bromide (99.9%-Ta) *(13451-11-1)*
$TaBr_5$; FW: 580.49; yellow pwdr.; m.p. 265°; b.p. 348.8°; d. 4.67
moisture sensitive

5g
25g

73-0950
Tantalum(V) n-butoxide (99.99+%-Ta) PURATREM *(51094-78-1)*
$C_{20}H_{45}O_5Ta$; FW: 546.52; colorless to light yellow liq.; d. 1.31
air sensitive, moisture sensitive
For detailed technical note visit strem.com.

5g
25g

73-0750
Tantalum carbide (99.5%-Ta) *(12070-06-3)*
TaC; FW: 192.96; -325 mesh pwdr. (avg. 10 microns or less); m.p. 3880°

5g
25g
100g

73-1000
amp
HAZ
Tantalum(V) chloride, anhydrous (99.9%-Ta) *(7721-01-9)*
$TaCl_5$; FW: 358.21; white to yellow pwdr.; m.p. 216-220° (subl. 144°); b.p. 232-235°; d. 3.68
moisture sensitive

10g
50g

93-7324
amp
HAZ
Tantalum(V) chloride, resublimed (99.99+%-Ta) PURATREM *(7721-01-9)*
$TaCl_5$; FW: 358.21; white pwdr.; m.p. 216° (subl. 144°); b.p. 242°; d. 3.68
moisture sensitive

10g
50g

93-7303
amp
HAZ
Tantalum(V) ethoxide (99.99+%-Ta) PURATREM *(6074-84-6)*
$Ta(OC_2H_5)_5$; FW: 406.26; colorless to yellow liq.; m.p. 21°; b.p. 145°/0.1 mm; f.p. 87°F; d. 1.56
moisture sensitive

10g
50g
5 x 50g

73-1080
amp
HAZ
Tantalum(V) ethoxide (99.9999%-Ta) PURATREM *(6074-84-6)*
$Ta(OC_2H_5)_5$; FW: 406.26; yellow liq.; m.p. 21°; b.p. 145°/0.1mm; f.p. 87°F; d. 1.56
moisture sensitive
Note: Limited quantites available.

1g

93-7325
HAZ
Tantalum(V) fluoride, 99.5% *(7783-71-3)*
TaF_5; FW: 275.94; off-white pwdr.; m.p. 96.8°; b.p. 229.5°; d. 4.74
moisture sensitive
Note: Packaged in PFA/FET bottle.

5g
25g

93-7329
HAZ
Tantalum(V) methoxide (99.99+%-Ta) PURATREM *(865-35-0)*
$Ta(OCH_3)_5$; FW: 336.12; white pwdr.; m.p. 50°; b.p. 189°/10 mm
moisture sensitive

2g
10g

73-2000
Tantalum(V) oxide, 99.8% (99.95+%-Ta) *(1314-61-0)*
Ta_2O_5; FW: 441.89; white pwdr.; m.p. 1800°; d. 8.2

25g
100g

TANTALUM (Compounds)

93-7306	**Tantalum(V) oxide, 99.8% (99.99+%-Ta) PURATREM** *(1314-61-0)* Ta_2O_5; FW: 441.89; white pwdr.; m.p. 1800°; d. 8.2	10g 50g
93-7310	**Tantalum silicide (99.5%-Ta)** *(12039-79-1)* $TaSi_2$; FW: 237.12; -325 mesh gray pwdr. (avg. 10 microns or less); m.p. 2200°; d. 9.14	5g 25g
73-5000 HAZ	**Tantalum(V) (tetraethoxy)(acetylacetonate) (99.99+%-Ta) PURATREM** *(20219-33-4)* $Ta(OC_2H_5)_4(CH_3COCHCOCH_3)$; FW: 460.30; yellow solid; m.p. 45°; b.p. 95°/0.5mm; d. 1.5 *moisture sensitive*	10g 50g
73-7373	**Tantalum(V) (tetraethoxy)[BREW] (99.99+%-Ta) PURATREM** $Ta(C_2H_5O)_4[C{\cdot}HyC(O)CHC(O)C{\cdot}Hy]_2$ (x=3-4, y=2x+1); pale brown liq. *moisture sensitive* Note: ***Limited quantities available. Will discontinue when stock gone***	1g 5g

TELLURIUM (Elemental Forms)

93-5224 HAZ	**Tellurium broken ingot (99.99+%)** *(13494-80-9)* Te; FW: 127.60; m.p. 449.5°; b.p. 989.8°; d. 6.24	25g 100g
52-0070 HAZ	**Tellurium broken ingot (99.999%)** *(13494-80-9)* Te; FW: 127.60; 25mm and down; m.p. 449.5°; b.p. 989.8°; d. 6.24	25g 100g 500g
52-0030 HAZ	**Tellurium broken ingot (99.9999%)** *(13494-80-9)* Te; FW: 127.60; 2cm and down; m.p. 449.5°; b.p. 989.8°; d. 6.24	10g 50g
93-5222 HAZ	**Tellurium powder (99.8%)** *(13494-80-9)* Te; FW: 127.60; -100 mesh; m.p. 449.5°; b.p. 989.8°; d. 6.24	25g 100g 500g
52-5200 HAZ	**Tellurium powder (99.9%)** *(13494-80-9)* Te; FW: 127.60; -325 mesh	25g 100g 500g
93-5220 HAZ	**Tellurium powder (99.999%)** *(13494-80-9)* Te; FW: 127.60; 60 mesh; m.p. 449.5°; b.p. 989.8°; d. 6.24	10g 50g

TELLURIUM (Compounds)

93-1949	**Potassium tellurite(IV) hydrate, 97%** *(123333-66-4)* *See* page 344	
93-5203 HAZ	**Telluric acid (99.5%-Te)** *(13451-14-4)* $H_2TeO_4{\cdot}2H_2O$; FW: 193.61 (229.64); white pwdr.; m.p. 136°; b.p. 160° dec.; d. 3.071	5g 25g
52-7000 HAZ	**Tellurium(IV) bromide (99.9%-Te)** *(10031-27-3)* $TeBr_4$; FW: 447.22; -4 mesh pwdr.; m.p. 363° *moisture sensitive*	10g 50g
93-5205 HAZ	**Tellurium(IV) chloride (99.9%-Te)** *(10026-07-0)* $TeCl_4$; FW: 269.41; off-white pwdr.; m.p. 224°; b.p. 380°; d. 3.26 *moisture sensitive*	10g 50g
93-5215	**Tellurium(IV) iodide (99.9%-Te)** *(7790-48-9)* TeI_4; FW: 635.22; -4 mesh gran.; m.p. 280°; d. 5.403 *moisture sensitive*	2g 10g
93-5204	**Tellurium(IV) oxide, 99+%** *(7446-07-3)* TeO_2; FW: 159.60; off-white pwdr.; m.p. 733°; b.p. 450° subl.	50g 250g
93-5216	**Tellurium(IV) oxide (99.999%-Te) PURATREM** *(7446-07-3)* TeO_2; FW: 159.60; off-white pwdr.; m.p. 733°; b.p. 450° subl.	10g 50g

TERBIUM (Elemental Forms)

93-6516	**Terbium chips (99.9% REO)** *(7440-27-9)* Tb; FW: 158.92; 12mm and down; m.p. 1360°; b.p. 3041°; d. 8.234 *air sensitive, moisture sensitive*	1g 5g
93-6520	**Terbium foil (99.9% REO)** *(7440-27-9)* Tb; FW: 158.92; 0.62 mm thick (~3.2g/25 x 25 mm); m.p. 1360°; b.p. 3041°; d. 8.234 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm

TERBIUM (Elemental Forms)

93-6519	**Terbium foil (99.9% REO)** *(7440-27-9)* Tb; FW: 158.92; 0.25 mm thick (~1.30g/25x 25 mm); m.p. 1360°; b.p. 3041°; d. 8.234 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-6517	**Terbium ingot (99.9% REO)** *(7440-27-9)* Tb; FW: 158.92; metal piece; m.p. 1360°; b.p. 3041°; d. 8.234 *air sensitive, moisture sensitive*	2g 10g
93-6515 HAZ	**Terbium powder (99.9% REO)** *(7440-27-9)* Tb; FW: 158.92; -40 mesh; m.p. 1360°; b.p. 3041°; d. 8.234 *air sensitive, moisture sensitive*	1g 5g

TERBIUM (Compounds)

93-6501	**Terbium(III) acetylacetonate trihydrate (99.9%-Tb) (REO)** *(14284-95-8)* $Tb(CH_3COCHCOCH_3)_3 \cdot 3H_2O$; FW: 456.26 (510.31); white pwdr.; m.p. 168-170° *hygroscopic*	1g 5g
93-6511	**Terbium(III) carbonate hydrate (99.9%-Tb) (REO)** *(100587-96-0)* $Tb_2(CO_3)_3 \cdot XH_2O$; FW: 497.88; white pwdr.	2g 10g
93-6507	**Terbium(III) chloride, anhydrous (99.9%-Tb) (REO)** *(10042-88-3)* $TbCl_3$; FW: 265.29; off-white pwdr.; m.p. 588° *hygroscopic*	2g 10g
93-6502	**Terbium(III) chloride hexahydrate (99.9%-Tb) (REO)** *(13798-24-8)* $TbCl_3 \cdot 6H_2O$; FW: 265.29 (373.38); white xtl.	5g 25g
65-6502	**Terbium(III) chloride hydrate (99.995%-Tb) (REO) PURATREM** *(13798-24-8)* $TbCl_3 \cdot XH_2O$; FW: 265.29; white xtl.	5g 25g
93-6508 HAZ	**Terbium(III) nitrate hexahydrate (99.9%-Tb) (REO)** *(13451-19-9)* $Tb(NO_3)_3 \cdot 6H_2O$; FW: 344.94 (453.04); white xtl.	5g 25g
93-6505	**Terbium(III,IV) oxide (99.9%-Tb) (REO)** *(12037-01-3)* Tb_4O_7; FW: 747.69; brown to black pwdr.	5g 25g
93-6512 HAZ	**Terbium(III) perchlorate, 50% aqueous solution (99.9%-Tb) (REO)** *(14014-09-6)* $Tb(ClO_4)_3$; FW: 457.28; colorless liq.	2g 10g
65-6000	**Terbium(III) trifluoromethanesulfonate, min. 98% (Terbium triflate)** *(148980-31-8)* $Tb(CF_3SO_3)_3$; FW: 606.14; white pwdr. *hygroscopic*	1g 5g
65-7000 amp	**Tris(i-propylcyclopentadienyl)terbium (99.9%-Tb) (REO)** *(312696-25-6)* $(C_3H_7C_5H_4)_3Tb$; FW: 480.45; yellow solid *air sensitive*	1g 5g
65-8000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)terbium(III), 99% (99.9%-Tb) (REO) [Tb(TMHD)$_3$]** *(15492-51-0)* $Tb(C_{11}H_{19}O_2)_3$; FW: 708.74; off-white xtl.; m.p. 155-156°; b.p. dec. 275°	1g 5g

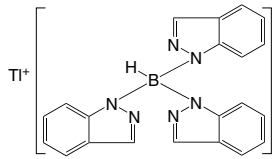
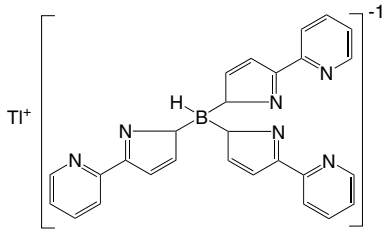
THALLIUM (Elemental Forms)

81-0054 HAZ	**Thallium granules (99.9%)** *(7440-28-0)* Tl; FW: 204.37; 6mm and down (under water); m.p. 303.5°; b.p. 1457°; d. 11.85	25g 100g

THALLIUM (Compounds)

81-0300 HAZ	**Cyclopentadienylthallium, 95%** *(34822-90-7)* C_5H_5Tl; FW: 269.47; light brown xtl.; m.p. subl. 75°/0.1mm *air sensitive, (store cold)*	10g 50g
81-0305 HAZ	**Cyclopentadienylthallium, 99% (99.9%-Tl) sublimed** *(34822-90-7)* C_5H_5Tl; FW: 269.47; yellow xtl.; m.p. subl. 75°/0.1mm *air sensitive, (store cold)*	1g 5g 25g
81-1000 HAZ	**2,2,6,6-Tetramethyl-3,5-heptanedionatothallium(I), 99% [Tl(TMHD)]** *(56713-38-3)* $Tl(C_{11}H_{19}O_2)$; FW: 387.62; white to off-white pwdr.; m.p. 159-164°; b.p. dec. 260° (subl. 110°/0.1mm)	1g 5g
93-8136 HAZ	**Thallium(I) acetate (99.9985%-Tl) PURATREM** *(563-68-8)* $TlOOCCH_3$; FW: 263.42; white pwdr.; m.p. 131° *hygroscopic*	10g 50g

THALLIUM (Compounds)

93-8101 HAZ	**Thallium(III) acetate hydrate** *(62811-75-0)* $Tl(OOCCH_3)_3 \cdot XH_2O$; FW: 381.52; white xtl. *light sensitive*	10g 50g
93-8115 HAZ	**Thallium(I) acetylacetonate, 99%** *(25955-51-5)* $Tl(CH_3COCHCOCH_3)$; FW: 303.50; white pwdr.	5g 25g
93-8103 HAZ	**Thallium(I) bromide (99.999%-Tl) PURATREM** *(7789-40-4)* TlBr; FW: 284.28; yellow pwdr.; m.p. 480°; b.p. 815°; d. 7.557	10g 50g
93-8105 HAZ	**Thallium(I) ethoxide, min. 95%** *(20398-06-5)* $Tl(OC_2H_5)$; FW: 249.43; cloudy, dense liq.; m.p. -3°; b.p. 130° dec.; d. 3.493 (20°) *moisture sensitive* Note: May contain a precipitate.	5g 25g
81-2400 HAZ	**Thallium(I) 2-ethylhexanoate, superconductor grade (56-59% Tl)** $Tl[OOCCH(C_2H_5)C_4H_9]$; FW: 347.59; waxy solid	25g 100g
93-8106 HAZ	**Thallium(I) fluoride, 99%** *(7789-27-7)* TlF; FW: 223.37; white pwdr.; m.p. 327°; b.p. 655°; d. 8.23	10g 50g
81-2500 HAZ	**Thallium(I) hexafluoroacetylacetonate, 99% (99.9%-Tl)** *(15444-43-6)* $TlCF_3COCHCOCF_3$; FW: 411.42; yellow xtl.; m.p. 126-128°; b.p. dec. 220° (subl. 140°/0.1mm)	1g 5g
81-3000 HAZ	**Thallium(I) hexafluorophosphate, min. 97%** *(60969-19-9)* $TlPF_6$; FW: 349.34; white xtl.	1g 5g 25g
81-4500 HAZ	**Thallium hydrotris(indazol-2-yl)borate, min. 98%** *(162978-03-2)* $[C_{21}H_{16}BN_6]Tl$; FW: 567.60; white pwdr.; m.p. 254-256° 	250mg 1g
81-5000 HAZ	**Thallium hydrotris[3-(2-pyridyl)pyrazol-1-yl]borate, min. 98%** *(165257-90-9)* $[C_{24}H_{19}BN_9]Tl$; FW: 648.66; white pwdr.; m.p. 283-285° 	250mg 1g
93-8108 HAZ	**Thallium(I) iodide (99.999%-Tl) PURATREM** *(7790-30-9)* TlI; FW: 331.27; yellow pwdr.; m.p. 440°; b.p. 823°; d. 7.09	5g 25g
93-8109 HAZ	**Thallium(I) nitrate (99.5%-Tl)** *(10102-45-1)* $TlNO_3$; FW: 266.37; white xtl.; m.p. 206°; b.p. 430°	25g 100g
81-6750 HAZ	**Thallium(I) nitrate (99.99%-Tl) PURATREM** *(10102-45-1)* $TlNO_3$; FW: 266.37; white xtl.; m.p. 206°; b.p. 430°	10g 50g 250g
93-8117 HAZ	**Thallium(III) oxide (99.5%-Tl)** *(1314-32-5)* Tl_2O_3; FW: 456.74; black pwdr.; m.p. ~717°	25g 100g
81-8100 HAZ	**Thallium(III) oxide (99.99%-Tl) PURATREM** *(1314-32-5)* Tl_2O_3; FW: 456.74; black pwdr.; m.p. ~717°	10g 50g
93-8121 HAZ	**Thallium(I) sulfate (99.5%-Tl)** *(7446-18-6)* Tl_2SO_4; FW: 504.80; white pwdr.; m.p. 632°; b.p. dec.; d. 6.77	25g 100g
81-8200 HAZ	**Thallium(I) sulfate (99.999%-Tl) PURATREM** *(7446-18-6)* Tl_2SO_4; FW: 504.80; white xtl.; m.p. 632°; b.p. dec.; d. 6.77	5g 25g
93-8137 HAZ	**Thallium(III) trifluoroacetate, tech. gr.** *(23586-53-0)* $Tl(OOCCF_3)_3$; FW: 543.45; white pwdr.; m.p. 169° *heat sensitive, hygroscopic, (store cold)*	5g 25g

THALLIUM (Compounds)

81-8500 HAZ	**Thallium(I) trifluoromethanesulfonate, 99% (Thallium triflate)** *(73491-36-8)* $TlSO_3CF_3$; FW: 353.45; white pwdr. *hygroscopic*	1g 5g 25g

THORIUM (Compounds)

93-9002 amp HAZ	**Thorium(IV) fluoride, anhydrous (99.9%-Th)** *(13709-59-6)* ThF_4; FW: 308.03; white pwdr.; m.p. > 900°; d. 6.32 *hygroscopic*	10g 2 x 25g
93-9006 HAZ	**Thorium(IV) nitrate hydrate (99.8%-Th)** *(61443-54-7)* $Th(NO_3)_4 \cdot XH_2O$; FW: 480.06; white xtl. *hygroscopic*	25g 4 x 25g

THULIUM (Elemental Forms)

93-6918	**Thulium foil (99.9% REO)** *(7440-30-4)* Tm; FW: 168.93; 0.25 mm thick (~1.5g/25 x 25 mm); m.p. 1545°; b.p. 1727°; d. 9.332 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-6917	**Thulium pieces (99.9% REO)** *(7440-30-4)* Tm; FW: 168.93; broken crystals; m.p. 1545°; b.p. 1727°; d. 9.332 *air sensitive, moisture sensitive*	1g 5g
93-6915 HAZ	**Thulium powder (99.9% REO)** *(7440-30-4)* Tm; FW: 168.93; -40 mesh; m.p. 1545°; b.p. 1727°; d. 9.332 *air sensitive, moisture sensitive*	1g 5g

THULIUM (Compounds)

93-6911	**Thulium(III) acetate tetrahydrate (99.9%-Tm) (REO)** *(34431-47-5)* $Tm(OOCCH_3)_3 \cdot 4H_2O$; FW: 346.07 (418.13); white pwdr.	1g 5g
93-6910	**Thulium(III) acetylacetonate trihydrate (99.9%-Tm) (REO)** *(14589-44-7)* $Tm(CH_3COCHCOCH_3)_3 \cdot 3H_2O$; FW: 466.27 (520.32); white pwdr.	1g 5g
93-6901	**Thulium(III) chloride, anhydrous (99.9%-Tm) (REO)** *(13537-18-3)* $TmCl_3$; FW: 275.29; off-white pwdr.; m.p. 821° *hygroscopic*	1g 5g
93-6902	**Thulium(III) chloride hydrate (99.9%-Tm) (REO)** *(19423-86-0)* $TmCl_3 \cdot XH_2O$; FW: 275.29; light green xtl.; m.p. 821° (anhydrous)	1g 5g
93-6913 HAZ	**Thulium(III) nitrate hexahydrate (99.9%-Tm) (REO)** *(36548-87-5)* $Tm(NO_3)_3 \cdot 6H_2O$; FW: 354.95 (463.04); off-white xtl.	1g 5g
93-6912	**Thulium(III) oxalate hydrate (99.9%-Tm) (REO)** *(26677-68-9)* $Tm_2(C_2O_4)_3 \cdot XH_2O$; FW: 601.93; white pwdr.	1g 5g
93-6904	**Thulium(III) oxide (99.9%-Tm) (REO)** *(12036-44-1)* Tm_2O_3; FW: 385.87; white pwdr.	1g 5g
69-5000	**Thulium(III) trifluoromethanesulfonate, min. 98% (Thulium triflate)** *(141478-68-4)* $Tm(CF_3SO_3)_3$; FW: 616.14; white pwdr. *hygroscopic*	500mg 2g
69-6000 amp	**Tris(cyclopentadienyl)thulium (99.9%-Tm) (REO)** *(1272-26-0)* $(C_5H_5)_3Tm$; FW: 364.22; greenish yellow xtls. *air sensitive, moisture sensitive*	1g 5g
69-7000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)thulium(III), 98% (99.9%-Tm) (REO) [Tm(TMHD)$_3$]** *(15631-58-0)* $Tm(C_{11}H_{19}O_2)_3$; FW: 718.75; off-white xtl.; m.p. 169-172°; b.p. dec. 280°	1g 5g

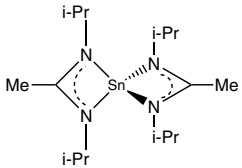
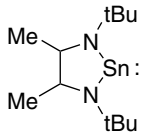
TIN (Elemental Forms)

93-5091	**Tin foil (99.99%)** *(7440-31-5)* Sn; FW: 118.70; 0.127 mm thick x 25 mm wide; m.p. 231.9°; b.p. 2260°; d. 7.31	100 x 25mm 500 x 25mm
50-0250	**Tin foil (99.998%)** *(7440-31-5)* Sn; FW: 118.70; 0.25mm thick (~4.6g/50 x50mm); m.p. 231.9°; b.p. 2260°; d. 7.31	50 x 50mm 100 x 100mm
93-5089	**Tin powder (99.5%)** *(7440-31-5)* Sn; FW: 118.70; -100 mesh; m.p. 231.9°; b.p. 2260°; d. 7.31	100g 500g

TIN (Elemental Forms)

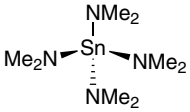
93-5086	**Tin powder (99.8%)** *(7440-31-5)* Sn; FW: 118.70; -325 mesh; m.p. 231.9°; b.p. 2260°; d. 7.31	50g 250g
93-5090	**Tin powder (99.995%)** *(7440-31-5)* Sn; FW: 118.70; -100 mesh; m.p. 231.9°; b.p. 2260°; d. 7.31	10g 50g
93-5088	**Tin shot (99.8%)** *(7440-31-5)* Sn; FW: 118.70; 8-20 mesh; m.p. 231.9°; b.p. 2260°; d. 7.31	50g 250g
50-0070	**Tin shot (99.999%)** *(7440-31-5)* Sn; FW: 118.70; 1-3 mm; m.p. 231.9°; b.p. 2260°; d. 7.31	5g 25g
50-0080	**Tin shot (99.9999%)** *(7440-31-5)* Sn; FW: 118.70; 3 mm; m.p. 231.9°; b.p. 2260°; d. 7.31	5g 25g 100g

TIN (Compounds)

50-1170 amp	**Bis(N,N'-di-i-propylacetamidinato)tin(II), 99%** *(1421599-46-3)* $Sn(C_8H_{17}N_2)_2$; FW: 401.18; white xtls. *air sensitive, moisture sensitive* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2. **For detailed technical note visit strem.com.** 	250mg 1g 5g
50-0700 HAZ	**Bis(tri-n-butyltin)oxide, 96%** *(56-35-9)* $[(n\text{-}C_4H_9)_3Sn]_2O$; FW: 596.07; colorless liq.; b.p. 254°/50 mm; f.p. >230°F; d. 1.17 (25°) *moisture sensitive*	100g 500g
93-5058	**Bis(tri-n-butyltin)sulfate, min. 97%** *(26377-04-8)* $[(C_4H_9)_3Sn]_2SO_4$; FW: 676.14; white pwdr.	25g 100g
93-5002 HAZ	**Bis(tri-n-butyltin)sulfide, 97%** *(4808-30-4)* $[(C_4H_9)_3Sn]_2S$; FW: 612.14; colorless liq.; d. 1.197 g/cm³ at 20°C	5g 25g 100g
50-0900 HAZ	**Bis(trimethyltin)acetylene, 99%** *(2117-50-2)* $(CH_3)_3SnC{\equiv}CSn(CH_3)_3$; FW: 351.61; white xtl.; m.p. 56° *air sensitive*	1g 5g
93-5078	**n-Butyltin hydroxide oxide hydrate, 97%** *(336879-56-2)* $C_4H_9SnOOH{\cdot}XH_2O$; FW: 208.81; white pwdr.	50g 250g
93-5004 HAZ	**n-Butyltin trichloride, min. 95%** *(1118-46-3)* $C_4H_9SnCl_3$; FW: 282.17; colorless to yellow liq.; m.p. -63°; b.p. 98°/10 mm; f.p. 178°F; d. 1.693 *moisture sensitive*	50g 250g
50-1150 amp	**N,N'-Di-t-butyl-2,3-diamidobutanetin(II), 98%** *(1268357-44-3)* $C_{12}H_{26}N_2Sn$; FW: 317.06; orange pwdr. *moisture sensitive, (store cold)* Note: ALD Precursor. US Patent Application 61/320,069 filed April 1, 2010. Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard3. Available prepacked in ALD cylinder- see 98-4052 page 434 **For detailed technical note visit strem.com.** 	250mg 1g 5g
98-4052	**N,N'-Di-t-butyl-2,3-diamidobutanetin(II), 98%, 50-1150, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(1268357-44-3)* $C_{12}N_{26}N_2Sn$; FW: 317.06; white to off-white pwdr. *air sensitive, moisture sensitive, (store cold)* Note: ALD Precursor. US Patent Application 61/320,069 filed April 1, 2010. Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard3.	5g
50-1050	**Di-n-butyltinbis(acetylacetonate)** *(22673-19-4)* $(C_4H_9)_2Sn(CH_3COCHCOCH_3)_2$; FW: 431.16; pale yellow to amber liq.; m.p. 26°; b.p. 150°/3mm; d. 1.21	100g 500g
93-5007 HAZ	**Di-n-butyltin diacetate, min. 96%** *(1067-33-0)* $(C_4H_9)_2Sn(OOCCH_3)_2$; FW: 351.01; colorless liq.; m.p. 10°; f.p. >230°F; d. 1.32	100g 500g

TIN (Compounds)

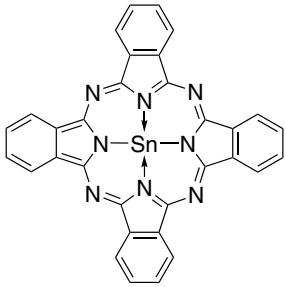
50-1130 HAZ	**Di-n-butyltin dichloride, min. 95%** *(683-18-1)* $(n\text{-}C_4H_9)_2SnCl_2$; FW: 303.83; white xtl.; m.p. 39-41°; d. 1.36 *air sensitive, moisture sensitive*	50g 250g 1kg
50-1140 HAZ	**Di-t-butyltin dichloride, 98%** *(19429-30-2)* $(t\text{-}C_4H_9)_2SnCl_2$; FW: 303.83; white xtl.; m.p. 42-43°; b.p. 66°/3 mm *moisture sensitive*	1g 5g
93-5009 HAZ	**Di-n-butyltin dilaurate, 98%** *(77-58-7)* $(C_4H_9)_2Sn(OOCC_{11}H_{23})_2$; FW: 631.55; yellow liq.; m.p. 24°; f.p. >230°F; d. 1.066	250g 1kg
93-5010 HAZ	**Di-n-butyltin oxide, 98%** *(818-08-6)* $(C_4H_9)_2SnO$; FW: 248.92; white pwdr.; m.p. dec.	100g 500g
93-5015	**Dimethyldiphenyltin** *(1080-43-9)* $(CH_3)_2Sn(C_6H_5)_2$; FW: 302.97; colorless liq.	5g 25g
50-1160 HAZ	**Dimethyltin dichloride, min. 95%** *(753-73-1)* $(CH_3)_2SnCl_2$; FW: 219.67; white xtl.; m.p. 107-108°; b.p. 188-190° *moisture sensitive*	5g 25g
93-5014	**Dimethyltin oxide, min. 97%** *(2273-45-2)* $(CH_3)_2SnO$; FW: 164.78; white pwdr.; m.p. dec.	5g 25g
93-5016	**Diphenyltin dichloride, 96%** *(1135-99-5)* $(C_6H_5)_2SnCl_2$; FW: 343.81; white xtl.; m.p. 41-43°; b.p. 333-337° dec. *moisture sensitive*	10g 50g
93-5017	**Diphenyltin oxide, 98%** *(2273-51-0)* $(C_6H_5)_2SnO$; FW: 288.90; white pwdr.	5g 25g
93-5018	**Diphenyltin sulfide, 99%** *(20332-10-9)* $(C_6H_5)_2SnS$; FW: 304.97; white pwdr.	1g 5g
50-1250 HAZ	**Divinyltin dichloride, 98%** *(7532-85-6)* $(CH_2{=}CH)_2SnCl_2$; FW: 243.69; colorless liq.; b.p. 54-56°/3 mm *moisture sensitive*	10g 50g
93-5019 HAZ	**Hexa-n-butylditin, min. 95%** *(813-19-4)* $(C_4H_9)_3SnSn(C_4H_9)_3$; FW: 580.08; colorless to yellow liq.; b.p. 198°/10 mm; f.p. >230°F; d. 1.1480 *air sensitive*	10g 50g
50-1500 HAZ	**Hexamethylditin, 99%** *(661-69-8)* $(CH_3)_3SnSn(CH_3)_3$; FW: 327.59; colorless, low-melting solid; m.p. 23°; b.p. 85-88°/45 mm; f.p. 142°F; d. 1.58 *air sensitive, moisture sensitive, (store cold)*	1g 5g 25g
93-5079	**Hexaphenylditin, 99+%** *(1064-10-4)* $(C_6H_5)_3SnSn(C_6H_5)_3$; FW: 700.02; white pwdr.; m.p. 232.5°; b.p. 280° dec.	2g 10g
50-1600 HAZ	**Methyltin trichloride, 98+%** *(993-16-8)* CH_3SnCl_3; FW: 240.08; white xtl.; m.p. 43° *moisture sensitive*	2g 10g
50-1780 HAZ	**Phenyltin trichloride, min. 98%** *(1124-19-2)* $C_6H_5SnCl_3$; FW: 302.16; colorless liq.; b.p. 130-132°/12 mm; f.p. >230°F; d. 1.839 *moisture sensitive*	2g 10g
93-5080 HAZ	**Tetraallyltin, min. 95%** *(7393-43-3)* $Sn(CH_2CH{=}CH_2)_4$; FW: 282.98; light yellow liq.; f.p. 167°F; d. 1.179	2g 10g
93-5049 HAZ	**Tetra-n-butyltin, min. 94%** *(1461-25-2)* $Sn(C_4H_9)_4$; FW: 347.16; colorless liq.; m.p. -97°; b.p. 145°/10 mm; f.p. 225°F; d. 1.0572	50g 250g
50-1800	**Tetracyclohexyltin, 99%** *(1449-55-4)* $Sn(C_6H_{11})_4$; FW: 451.32; white solid	1g 5g
50-1815 amp HAZ	**Tetrakis(dimethylamino)tin(IV), 99% (99.99%-Sn)** **TDMASn PURATREM** *(1066-77-9)* $Sn[N(CH_3)_2]_4$; FW: 295.01; colorless to pale-yellow liq.; b.p. 51° (15mm); d. 1.169 g/cm³ *moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4050. **For detailed technical note visit strem.com.**	1g 5g 25g



TIN (Compounds)

98-4050 HAZ	**Tetrakis(dimethylamino)tin(IV), 99% (99.99%-Sn) TDMASn PURATREM, 50-1815, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(1066-77-9)* $Sn[N(CH_3)_2]_4$; FW: 295.01; colorless to pale-yellow liq.; b.p. 51° (15mm); d. 1.169g/cm^3 *moisture sensitive*	10g 25g
50-1850	**Tetramethyldiacetoxystannoxane** *(5926-79-4)* $[(CH_3)_2(CH_3CO_2)Sn]_2O$; FW: 431.61; white pwdr.; m.p. 240° *moisture sensitive*	1g 5g
50-1900 HAZ	**Tetramethyltin, 98%** *(594-27-4)* $Sn(CH_3)_4$; FW: 178.83; colorless liq.; m.p. -54.8°; b.p. 76-78°; f.p. 9°F; d. 1.3149	5g 25g
93-5052	**Tetraphenyltin, min. 95%** *(595-90-4)* $Sn(C_6H_5)_4$; FW: 427.12; white pwdr.; m.p. 226°; b.p. > 420°; d. 1.490	100g 500g
50-1950	**Tetra-i-propyltin, min. 98%** *(2949-42-0)* $Sn(C_3H_7)_4$; FW: 291.05; colorless liq.; b.p. 112-114°/18 mm; d. 1.124	2g 10g
93-5053	**Tetra-n-propyltin, min. 97%** *(2176-98-9)* $Sn(C_3H_7)_4$; FW: 291.05; colorless liq.; b.p. 222°; d. 1.1065 (20°)	1g 5g
50-1975	**Tin(II) acetate, 99%** *(638-39-1)* $Sn(OOCCH_3)_2$; FW: 236.78; off-white pwdr.; m.p. 180°; b.p. subl. 155°/0.1mm	5g 25g
50-1977	**Tin(II) acetylacetonate, min. 98%** *(16009-86-2)* $Sn(CH_3COCHCOCH_3)_2$; FW: 316.93; yellow liq.; b.p. 110°/0.1mm; d. 1.45 *moisture sensitive*	2g 10g 50g
93-5028 HAZ	**Tin(II) bromide, 99%** *(10031-24-0)* $SnBr_2$; FW: 278.51; gray pwdr.; m.p. 232°; b.p. 620°; d. 5.12 *moisture sensitive*	10g 50g
93-5021 HAZ	**Tin(IV) bromide, 99%** *(7789-67-5)* $SnBr_4$; FW: 438.33; colorless to yellow xtl.; m.p. 31°; b.p. 202°/734 mm; d. 3.34 *moisture sensitive*	25g 100g
50-2100	**Tin(IV) t-butoxide (99.99%-Sn) PURATREM** *(36809-75-3)* $Sn(OC_4H_9)_4$; FW: 411.17; white solid to turbid colorless liq.; m.p. 45°; b.p. 65°/0.3mm; d. 1.06 *moisture sensitive*	1g 5g 25g
93-5030 HAZ	**Tin(II) chloride, anhydrous, 98%** *(7772-99-8)* $SnCl_2$; FW: 189.60; white xtl.; m.p. 246.8°; b.p. 623° *hygroscopic*	100g 500g
93-5031 HAZ	**Tin(II) chloride dihydrate, 98%** *(10025-69-1)* $SnCl_2{\cdot}2H_2O$; FW: 189.60 (225.63); white xtl.; m.p. 37.7°; b.p. dec.; d. 2.710	100g 500g
93-5022 HAZ	**Tin(IV) chloride, anhydrous, 98%** *(7646-78-8)* $SnCl_4$; FW: 260.50; colorless liq.; m.p. -33°; b.p. 114.1°; d. 2.226 *moisture sensitive*	250g 1kg
50-5022 NEW HAZ	**Tin(IV) chloride, anhydrous (99.99-Sn%) PURATREM** *(7646-78-8)* $SnCl_4$; FW: 260.50; colorless liq.; m.p. -33°; b.p. 114.1°C; d. 2.226 *air sensitive, moisture sensitive*	5g 25g
93-5023 HAZ	**Tin(IV) chloride pentahydrate, 98%** *(10026-06-9)* $SnCl_4{\cdot}5H_2O$; FW: 260.50 (350.61); off-white lumps	100g 500g
50-2200 amp	**Tin(II) ethoxide, min. 99%** *(14791-99-2)* $[Sn(C_2H_5O)_2]_n$; FW: 208.83; white to off-white pwdr.; m.p. 200° dec. *moisture sensitive*	2g 10g 50g
93-5037	**Tin(II) 2-ethylhexanoate, ~90% in 2-ethylhexanoic acid (~28% Sn)** *(301-10-0)* $Sn[OOCCH(C_2H_5)C_4H_9]_2$; FW: 405.11; viscous liq.; f.p. >287°F	250g 1kg
93-5033 HAZ	**Tin(II) fluoride, 97.5%** *(7783-47-3)* SnF_2; FW: 156.69; -40 mesh white pwdr.; m.p. 219°; b.p. 850° *hygroscopic*	50g 250g
93-5024 HAZ	**Tin(IV) fluoride, 98.5%** *(7783-62-2)* SnF_4; FW: 194.68; white pwdr.; m.p. 705° subl.; d. 4.780 *moisture sensitive*	1g 5g
50-1980	**Tin(II) hexafluoroacetylacetonate (99.9%-Sn)** *(51319-99-4)* $Sn(CF_3COCHCOCF_3)_2$; FW: 532.81; yellow solid; m.p. 72°; b.p. 125°/2mm	5g 25g

TIN (Compounds)

93-5077	**Tin(II) iodide, 99%** *(10294-70-9)* SnI_2; FW: 372.50; -6 mesh orange to red pwdr.; m.p. 320°; b.p. 720°; d. 5.21 *moisture sensitive*	5g 25g
93-5025 HAZ	**Tin(IV) iodide, 95%** *(7790-47-8)* SnI_4; FW: 626.31; orange xtl.; m.p. 144.5°; b.p. 364.5°; d. 4.473 *moisture sensitive*	10g 50g
93-5038	**Tin(II) oxalate** *(814-94-8)* SnC_2O_4; FW: 206.72; white pwdr.; m.p. 280° dec.; d. 3.56	50g 250g
93-5039	**Tin(II) oxide, 98% (99+%-Sn)** *(21651-19-4)* SnO; FW: 134.69; gray pwdr.; m.p. dec.; d. 6.95	50g 250g
93-5026	**Tin(IV) oxide (99.9%-Sn)** *(18282-10-5)* SnO_2; FW: 150.69; white pwdr.; m.p. 1630°; d. 7.0	100g 500g
50-2500	**Tin(IV) oxide (99.998%-Sn) PURATREM** *(18282-10-5)* SnO_2; FW: 150.69; -22 mesh off-white pwdr.; m.p. 1630°; d. 7.0	5g 25g
50-0518	**Tin(IV) oxide, nanoparticle (30-60 nm), (99.7%-Sn)** *(18282-10-5)* *See* page 166	
93-5072	**Tin(II) phthalocyanine** *(15304-57-1)* $(C_{32}H_{16}N_8)Sn$; FW: 631.24; purple pwdr. 	250mg 1g
93-5012	**Tin(IV) phthalocyanine dichloride** *(18253-54-8)* $(C_{32}H_{16}N_8)SnCl_2$; FW: 702.15; purple pwdr. *moisture sensitive*	1g 5g
93-5044	**Tin(II) sulfate, 95+%** *(7488-55-3)* $SnSO_4$; FW: 214.75; white pwdr.; m.p. > 360°	100g 500g
93-5046	**Tin(II) tartrate hydrate, min. 95%** *(815-85-0)* $SnC_4H_4O_6 \cdot XH_2O$; FW: 266.76; off-white pwdr.	5g 25g
50-2750	**Tin(II) trifluoromethanesulfonate, 99% (Tin triflate)** *(62086-04-8)* $Sn(CF_3SO_3)_2$; FW: 416.82; white pwdr.; m.p. dec. *hygroscopic*	2g 10g
50-3015 HAZ	**Tributyl(1-ethoxyvinyl)tin, 97%** *(97674-02-7)* $(C_4H_9)_3Sn(C_4H_7O)$; FW: 361.16; colorless liq. **For detailed technical note visit strem.com.**	1g 5g 25g
93-5054 HAZ	**Tri-n-butyltin acetate, 98%** *(56-36-0)* $(C_4H_9)_3SnOOCCH_3$; FW: 349.08; white pwdr.; m.p. 87°; d. 1.27 *moisture sensitive*	100g 500g
93-5056 HAZ	**Tri-n-butyltin chloride, 96%** *(1461-22-9)* $(C_4H_9)_3SnCl$; FW: 325.49; colorless liq.; b.p. 172°/5 mm; f.p. 210°F; d. 1.207 (20°) *moisture sensitive*	50g 250g
93-5081 HAZ	**Tri-n-butyltin hydride, min. 95%** *(688-73-3)* $(C_4H_9)_3SnH$; FW: 291.04; colorless liq.; b.p. 78°/0.8 mm; f.p. 104°F; d. 1.103 (20°) *air sensitive, (store cold)*	25g 100g
50-3000 HAZ	**Triethyltin bromide, min. 97%** *(2767-54-6)* $(C_2H_5)_3SnBr$; FW: 285.78; colorless liq.; m.p. -13.5°; b.p. 73-74°/2.9 mm; f.p. 211°F; d. 1.630 *moisture sensitive*	1g 5g
50-3008 HAZ	**Triethyltin chloride, 98%** *(994-31-0)* $(C_2H_5)_3SnCl$; FW: 241.33; colorless liq.; m.p. 15.5°; b.p. 206°; d. 1.429 *moisture sensitive*	5g 25g

TIN (Compounds)

50-3500 HAZ	**Trimethyltin bromide, min. 97%** *(1066-44-0)* $(CH_3)_3SnBr$; FW: 243.70; white xtl.; m.p. 27°; b.p. 61°/13 mm *moisture sensitive*	2g 10g
93-5084 HAZ	**Trimethyltin chloride, min. 98%** *(1066-45-1)* $(CH_3)_3SnCl$; FW: 199.25; white xtl.; m.p. 37°; b.p. 154°; f.p. 207°F *moisture sensitive, (store cold)*	5g 25g
93-5085	**Trimethyltin hydroxide, 98%** *(56-24-6)* $(CH_3)_3SnOH$; FW: 180.80; white pwdr.; m.p. 118°; b.p. 80° subl. *air sensitive*	2g 10g 50g
93-5059 HAZ	**Triphenyltin acetate, 97%** *(900-95-8)* $(C_6H_5)_3SnOOCCH_3$; FW: 409.05; white pwdr.; m.p. 123°	25g 100g
93-5060 HAZ	**Triphenyltin chloride, min. 95%** *(639-58-7)* $(C_6H_5)_3SnCl$; FW: 385.46; white pwdr.; m.p. 106°; b.p. 249°/13.5 mm *moisture sensitive*	50g 250g
93-5061	**Triphenyltin fluoride, min. 97%** *(379-52-2)* $(C_6H_5)_3SnF$; FW: 368.99; white pwdr. *moisture sensitive*	5g 25g
50-4200 HAZ	**Tri-i-propyltin chloride, min. 98%** *(14101-95-2)* $(C_3H_7)_3SnCl$; FW: 283.43; colorless liq.	1g 5g
93-5063 HAZ	**Tri-n-propyltin chloride, 98+%** *(2279-76-7)* $(C_3H_7)_3SnCl$; FW: 283.41; colorless liq.; m.p. -23.5°; b.p. 123°/13 mm; d. 1.2678 (28°) *moisture sensitive*	5g 25g

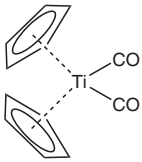
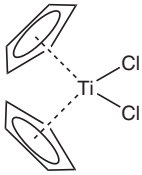
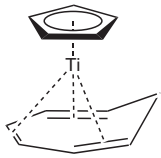
TITANIUM (Elemental Forms)

22-0175	**Titanium crystals (99.99+%)** *(7440-32-6)* Ti; FW: 47.90; irregular needles; m.p. 1660°; d. 4.5	10g 50g
93-2244	**Titanium foil (99.6+%)** *(7440-32-6)* Ti; FW: 47.90; 0.025 mm thick x 100 mm wide; d. 4.5	100 x 100mm 500 x 100mm
22-0151	**Titanium foil (99.7%)** *(7440-32-6)* Ti; FW: 47.90; 0.127mm thick x 170mm wide; m.p. 1660°; d. 4.5	170 x 170mm 500 x 170mm
	Titanium nanoparticles - surfactant and reactant-free (pure), manufactured via laser ablation *(7440-32-6)* *See* page 167	
93-2267 HAZ	**Titanium powder (99%)** *(7440-32-6)* Ti; FW: 47.90; -325 mesh; d. 4.5 *pyrophoric*	50g 250g
22-0160 HAZ	**Titanium powder (99.4%)** *(7440-32-6)* Ti; FW: 47.90; -150 mesh; m.p. 1660°; d. 4.5 *pyrophoric*	50g 250g
93-2260 HAZ	**Titanium powder (99.7%)** *(7440-32-6)* Ti; FW: 47.90; -100 mesh; d. 4.5 *pyrophoric*	25g 100g 500g
93-2269	**Titanium rod (99.5%)** *(7440-32-6)* Ti; FW: 47.90; 6.4 mm dia (~1.5g/cm); d. 4.5	10cm 50cm
93-2270	**Titanium rod (99.5%)** *(7440-32-6)* Ti; FW: 47.90; 3.2 mm dia. (~0.4g/cm); d. 4.5	10cm 50cm
93-2243 HAZ	**Titanium sponge (99.5%)** *(7440-32-6)* Ti; FW: 47.90; random pieces; d. 4.5	100g 500g
93-2268 HAZ	**Titanium sponge, crystals (99.8%)** *(7440-32-6)* Ti; FW: 47.90; 5-10mm pieces; d. 4.5	100g 500g
93-2254	**Titanium wire (99.7%)** *(7440-32-6)* Ti; FW: 47.90; 0.65 mm dia.; d. 4.5	2.5m 10m
93-2253	**Titanium wire (99.7%)** *(7440-32-6)* Ti; FW: 47.90; 0.5 mm dia.; d. 4.5	2.5m 10m
93-2252	**Titanium wire (99.7%)** *(7440-32-6)* Ti; FW: 47.90; 0.37 mm dia.; d. 4.5	10m 50m
93-2256	**Titanium wire (99.97%)** *(7440-32-6)* Ti; FW: 47.90; 0.75 mm dia.; d. 4.5	25cm 100cm

TITANIUM (Elemental Forms)

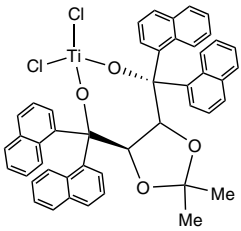
93-2250	**Titanium wire (99.97%)** *(7440-32-6)* Ti; FW: 47.90; 0.25 mm dia.; d. 4.5	50cm 250cm
93-2249	**Titanium wire (99.97%)** *(7440-32-6)* Ti; FW: 47.90; 0.127 mm dia.; d. 4.5	1m 5m
93-2255	**Titanium wire (99.99%)** *(7440-32-6)* Ti; FW: 47.90; 0.5 mm dia. (~0.45g/50 cm); d. 4.5	50cm 250cm

TITANIUM (Compounds)

22-0170	**Bis(t-butylcyclopentadienyl)titanium dichloride, min. 98%** *(79269-71-9)* $[(C_4H_9)C_5H_4]_2TiCl_2$; FW: 361.19; red xtl. *moisture sensitive*	1g 5g 25g
22-0180 amp HAZ	**Bis(cyclopentadienyl)dicarbonyl titanium(II), min. 98%** *(12129-51-0)* $(C_5H_5)_2Ti(CO)_2$; FW: 234.09; red xtl. *air sensitive* **For detailed technical note visit strem.com.** 	1g 5g
22-0200	**Bis(cyclopentadienyl)titanium dichloride, 99+% (Titanocene dichloride)** *(1271-19-8)* $(C_5H_5)_2TiCl_2$; FW: 249.00; red xtl.; m.p. 289-291° *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.** 	25g 100g
22-0250	**Bis(ethylcyclopentadienyl)titanium(IV) dichloride, min. 98%** *(35625-75-3)* $[(C_2H_5)C_5H_4]_2TiCl_2$; FW: 305.08; red-brown xtl. *moisture sensitive*	1g 5g
22-0300	**Bis(pentamethylcyclopentadienyl)titanium dichloride, 99%** *(11136-36-0)* $[(CH_3)_5C_5]_2TiCl_2$; FW: 389.23; red-brown xtl. *moisture sensitive*	1g 5g
22-0320	**Bis(i-propylcyclopentadienyl)titanium dichloride, min. 98%** *(12130-65-3)* $[(C_3H_7)C_5H_4]_2TiCl_2$; FW: 333.14; red xtl. *moisture sensitive*	1g 5g
22-0340	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)oxotitanium(IV), min. 95% [OTi(TMHD)$_2$]** *(152248-67-4)* $OTi(C_{11}H_{19}O_2)_2$; FW: 430.42; off-white pwdr.; m.p. 120° dec.	500mg 2g 10g
22-0380 HAZ	**Chlorotitanium triisopropoxide, 97%** *(20717-86-6)* $TiCl(OC_3H_7)_3$; FW: 260.62; fused solid to pale yellow liq.; m.p. 35-40°; f.p. 72°F; d. 1.091 *moisture sensitive*	25g 100g
22-0450 HAZ	**Cyclopentadienyl(cycloheptatrienyl)titanium(II), 99%** *(51203-49-7)* $Ti(C_5H_5)(C_7H_7)$; FW: 204.09; blue xtl. *air sensitive* Note: CVD Precursor. 	500mg 2g
22-0400 HAZ	**Cyclopentadienyltitanium trichloride, 99%** *(1270-98-0)* $C_5H_5TiCl_3$; FW: 219.35; yellow xtl.; m.p. 198-200° *moisture sensitive*	1g 5g 25g
22-0600	**Dichlorobis(2,2,6,6-tetramethyl-3,5-heptanedionato)titanium(IV), 99%** *(53293-32-6)* $(C_{11}H_{19}O_2)_2TiCl_2$; FW: 485.33; orange xtl.; m.p. 127-129°; b.p. dec. 215° *moisture sensitive*	1g 5g 25g
22-0700	**Dimethylbis(t-butylcyclopentadienyl)titanium(IV), min. 98%** *(79376-38-8)* $[(C_4H_9)C_5H_4]_2Ti(CH_3)_2$; FW: 320.35; yellow-orange pwdr. *air sensitive, moisture sensitive*	1g 5g 25g

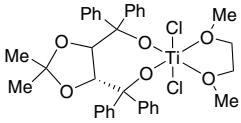
TITANIUM (Compounds)

22-0761 **(4R,5R)-(-)-2,2-Dimethyl-α,α,α',α'-tetra(1-naphthyl)-1,3-dioxolane-4,5-dimethanolatotitanium(IV) dichloride acetonitrile adduct** *(197389-47-2)*
$[C_{47}H_{36}O_4]TiCl_2 \cdot CH_3CN$; FW: 783.58 (824.63); yellow pwdr.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



250mg
1g

22-0780 **(4R,5R)-(-)-2,2-Dimethyl-α,α,α',α'-tetraphenyl-1,3-dioxolane-4,5-dimethanolato[1,2-bis(dimethoxy) ethane]titanium(IV) dichloride acetonitrile adduct** *(328123-04-2)*
$[C_{31}H_{28}O_4][C_4H_{10}O_2]TiCl_2 \cdot CH_3CN$; FW: 673.45 (714.50); white xtl.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



250mg
1g

22-0800 **Di(i-propoxide)bis(2,2,6,6-tetramethyl-3,5-heptanedionato)titanium(IV), min. 98%** *(144665-26-9)*
$(C_{11}H_{19}O_2)_2(C_3H_7O)_2Ti$; FW: 532.60; white pwdr.
moisture sensitive
1g
5g
25g

93-2230 HAZ **Hexafluorotitanic acid, 60% aqueous solution** *(17439-11-1)*
H_2TiF_6; FW: 163.91; colorless liq.
500g
2 x 1kg

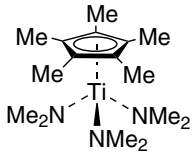
22-0900 HAZ **Hydrotris(pyrazol-1-ylborato)trichlorotitanium(IV), min. 95%** *(58097-69-1)*
$C_9H_{10}BCl_3N_6Ti$; FW: 367.27; yellow to orange pwdr.
moisture sensitive
250mg
1g

22-0950 amp HAZ **Indenyltitanium trichloride, 99%** *(84365-55-9)*
$C_9H_7TiCl_3$; FW: 269.39; purple xtl.
air sensitive, moisture sensitive
1g
5g
25g

22-1075 HAZ **Pentamethylcyclopentadienyltitanium trichloride, 98%** *(12129-06-5)*
$(C_5(CH_3)_5)TiCl_3$; FW: 289.47; red xtl.; m.p. 225°
moisture sensitive
1g
5g

22-1078 amp **Pentamethylcyclopentadienyltitanium trimethoxide, min. 97%** *(123927-75-3)*
$[C_5(CH_3)_5]Ti(OCH_3)_3$; FW: 276.21; yellow liq.; d. 1.081
moisture sensitive
1g
5g

22-6015 HAZ **Pentamethylcyclopentadienyltris (dimethylamino) titanium(IV), 99%** *(154940-96-2)*
$[(CH_3)_5C_5]Ti[N(CH_3)_2]_3$; FW: 315.32; red xtl.
moisture sensitive
For detailed technical note visit strem.com.



250mg
1g
5g

22-1080 HAZ **Tetrachlorobis(tetrahydrofuran)titanium(IV), min. 97%** *(31011-57-1)*
$TiCl_4(C_4H_8O)_2$; FW: 333.91; yellow xtl.; m.p. 126-128°
moisture sensitive
5g
25g
100g

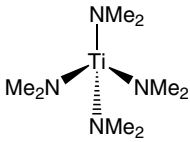
22-1050 amp HAZ **Tetrakis(diethylamino)titanium(IV), 99%** *(4419-47-0)*
$Ti[N(C_2H_5)_2]_4$; FW: 336.40; yellow to orange liq.; b.p. 133°/1.2mm; f.p. -18°F; d. 0.938
moisture sensitive
Note: Available prepacked in ALD cylinder- see 98-4043.
5g
25g

98-4043 HAZ **Tetrakis(diethylamino)titanium(IV), 99%, 22-1050, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(4419-47-0)*
$Ti[N(C_2H_5)_2]_4$; FW: 336.40; yellow to orange liq.; b.p. 133°/1.2mm; f.p. -18°F; d. 0.938
moisture sensitive
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost.
10g
25g

TITANIUM (Compounds)

93-2240
amp
HAZ

Tetrakis(dimethylamino)titanium(IV), 99% TDMAT
(3275-24-9)
$Ti[N(CH_3)_2]_4$; FW: 224.20; yellow to orange liq.; b.p. 50°/0.5 mm; f.p. -22°F; d. 0.96
moisture sensitive
Note: Available prepacked in ALD cylinder- see 98-4015, 98-4016.



1g
5g
25g

22-2240
NEW
HAZ

Tetrakis(dimethylamino)titanium(IV), 99% TDMAT (99.99%-Ti) PURATREM
(3275-24-9)
$Ti[N(CH_3)_2]_4$; FW: 224.20; yellow to orange liq.; f.p. -22°F
air sensitive, moisture sensitive

1g
5g
25g

98-4015
HAZ

Tetrakis(dimethylamino)titanium(IV), 99% TDMAT, 93-2240, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(3275-24-9)*
$Ti[N(CH_3)_2]_4$; FW: 224.20; yellow to orange liq.; b.p. 50°/0.5 mm; f.p. -22°F; d. 0.96
moisture sensitive
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4016.

25g

98-4016
HAZ

Tetrakis(dimethylamino)titanium(IV), 99% TDMAT, 93-2240, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD *(3275-24-9)*
$Ti[N(CH_3)_2]_4$; FW: 224.20; yellow to orange liq.; b.p. 50°/0.5 mm; f.p. -22°F; d. 0.96
moisture sensitive

25g

22-1060
NEW
amp
HAZ

Tetrakis(ethylmethylamino)titanium, 99% (99.99%-Ti) PURATREM
(308103-54-0)
$C_{12}H_{32}N_4Ti$; FW: 280.28; yellow to orange liq.
moisture sensitive

2g
10g

93-2242

Titanium boride, 99% *(12045-63-5)*
TiB_2; FW: 69.52; gray pwdr.; m.p. 2900°; d. 4.50

25g
100g

22-1175
NEW

Titanium boride, hexagonal crystalline solid, 0.7-10.0 microns, 99%
(12045-63-5)
TiB_2; FW: 69.52; dark-gray solid

50g
250g

93-2221
HAZ

Titanium(IV) bromide, min. 98% *(7789-68-6)*
$TiBr_4$; FW: 367.54; orange xtl.; m.p. 39°; b.p. 230°; d. 2.6
moisture sensitive

5g
25g
100g

93-2204

Titanium(IV) n-butoxide, 98+% *(5593-70-4)*
$Ti(OC_4H_9)_4$; FW: 340.35; colorless liq.; m.p. -55°; b.p. 312° (206°/10mm); f.p. 170°F; d. 0.994 (25°)
moisture sensitive

500g
2kg

22-1170

Titanium(IV) t-butoxide (99.95%-Ti) *(3087-39-6)*
$Ti(OC_4H_9)_4$; FW: 340.35; colorless liq.; b.p. 70°/0.2mm; d. 0.89
moisture sensitive

5g
25g

93-2205

Titanium carbide, 99% *(12070-08-5)*
TiC; FW: 59.91; 2 micron gray pwdr.; m.p. ~3140°; b.p. 4820°; d. 4.93

100g
500g

22-1180
HAZ

Titanium(III) chloride, Al reduced, 98+% *(12003-13-3)*
$TiCl_3 \cdot 1/3AlCl_3$; FW: 198.72; purple xtl.
air sensitive, moisture sensitive

100g
500g

22-1150
HAZ

Titanium(IV) chloride, 99% *(7550-45-0)*
$TiCl_4$; FW: 189.73; pale yellow liq.; m.p. -25°; b.p. 136°; d. 1.726
moisture sensitive
Note: Available prepacked in ALD cylinder- see 98-4033.

250g
1kg

98-4033
HAZ

Titanium(IV) chloride, 99%, 22-1150, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(7550-45-0)*
$TiCl_4$; FW: 189.73; pale yellow liq.; m.p. -25°; b.p. 136°; d. 1.726
moisture sensitive
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost.

25g

93-2203
HAZ

Titanium (di-i-propoxide)bis(acetylacetonate) (75% in isopropanol) *(17927-72-9)*
$Ti(OC_3H_7)_2(CH_3COCHCOCH_3)_2$; FW: 364.27; orange liq.; f.p. 72°F (isopropanol); d. 0.995
moisture sensitive

500g

TITANIUM (Compounds)

22-2222	**Titanium(IV) (di-i-propoxide)bis[BREW] (99.99+%-Ti) PURATREM** $Ti(OC_3H_7)_2[C{\cdot}HyC(O)CHC(O)C{\cdot}Hy]_2$ (x=3-4, y=2x + 1); red-orange liq. *moisture sensitive* Note: 8-11 wt% Ti, ***Limited quantities available. Will discontinue when stock gone***	1g 5g
93-2209 HAZ	**Titanium(IV) ethoxide (contains 5-15% isopropanol)** *(3087-36-3)* $Ti(OC_2H_5)_4$; FW: 228.14; colorless liq.; b.p. 122°/1 mm; f.p. 84°F; d. 1.107 (20°) *moisture sensitive*	25g 100g 500g
22-2209 amp HAZ	**Titanium(IV) ethoxide (99.99%-Ti) PURATREM** *(3087-36-3)* $Ti(OC_2H_5)_4$; FW: 228.14; xtl. to pale orange liq.; m.p. 54°; b.p. 138°/5mm; f.p. 84°F; d. 1.088 *moisture sensitive*	5g 25g
93-2224 HAZ	**Titanium(III) fluoride, min. 98%** *(13470-08-1)* TiF_3; FW: 104.90; purplish-brown pwdr.; m.p. 1200°; b.p. 1400°; d. 3.40 *moisture sensitive*	5g 25g
93-2222 HAZ	**Titanium(IV) fluoride, 98%** *(7783-63-3)* TiF_4; FW: 123.89; white pwdr.; m.p. > 400°; b.p. 284° subl.; d. 2.798 *moisture sensitive*	10g 50g
93-2211 HAZ	**Titanium(II) hydride, min. 95% (99+%-Ti)** *(7704-98-5)* TiH_2; FW: 49.92; -325 mesh gray pwdr.; m.p. 450° (dec.); d. 3.9 *air sensitive, moisture sensitive*	25g 100g 500g
93-2223 HAZ	**Titanium(IV) iodide (99.99%-Ti) PURATREM** *(7720-83-4)* TiI_4; FW: 555.52; black xtl.; m.p. 150°; b.p. 377.1°; d. 4.3 *moisture sensitive*	1g 5g
93-2213	**Titanium nitride (99+%-Ti)** *(25583-20-4)* TiN; FW: 61.91; -325 mesh gray pwdr.; m.p. 2930°; d. 5.22	25g 100g
22-1190 NEW	**Titanium nitride, 1.3-1.9 microns (99+%-Ti)** *(25583-20-4)* TiN; FW: 61.91; gray pwdr.; m.p. 2930°; d. 5.22	100g 500g
93-2212	**Titanium(II) oxide, optical grade, pellets (99.9+%-Ti)** *(12137-20-1)* TiO; FW: 63.90; bronze pellets (~1g/pellet); m.p. 1700°; b.p. > 3000°; d. 4.95	5g 25g 100g
93-2206	**Titanium(IV) oxide, 99+%** *(13463-67-7)* TiO_2; FW: 79.90; 1.0-1.3 micron white pwdr.; m.p. 1830-1850°; b.p. 2500-3000°; d. 4.26	250g 1kg
93-2207	**Titanium(IV) oxide (99.99+%-Ti) PURATREM** *(13463-67-7)* TiO_2; FW: 79.90; white pwdr.; m.p. 1830-1850°; b.p. 2500-3000°; d. 4.26	25g 100g
93-2225	**Titanium(IV) oxide bis(acetylacetonate), min. 95%** *(14024-64-7)* $TiO(CH_3COCHCOCH_3)_2$; FW: 262.12; yellow pwdr.; m.p. 184° dec.	5g 25g 100g
22-1400	**Titanium(IV) oxide nanopowder Anatase** *(1317-80-2)* *See* page 167	
93-2208	**Titanium(IV) oxide, sintered lumps, 99.5%** *(13463-67-7)* TiO_2; FW: 79.90; white lump; m.p. 1830-1850°; b.p. 2500-3000°; d. 4.26	25g 100g
93-2216 HAZ	**Titanium(IV) i-propoxide, min. 98%** *(546-68-9)* $Ti[OCH(CH_3)_2]_4$; FW: 284.25; colorless to pale yellow liq.; m.p. 20°; b.p. 58°/1 mm; f.p. 81°F; d. 0.9550 *moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4030. **For detailed technical note visit strem.com.**	250g 1kg
98-4030 HAZ	**Titanium(IV) i-propoxide, min. 98%, 93-2216, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(546-68-9)* $Ti[OCH(CH_3)_2]_4$; FW: 284.25; colorless liq.; m.p. 20°; b.p. 58°/1mm; f.p. 81°F; d. 0.9550 *moisture sensitive* Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost.	25g
93-2218	**Titanium silicide (99+%-Ti)** *(12039-83-7)* $TiSi_2$; FW: 104.03; -325 mesh gray to black pwdr.; m.p. 1540°; d. 4.39	25g 100g
93-2220 HAZ	**Titanium(IV) sulfide (99.8%-Ti)** *(12039-13-3)* TiS_2; FW: 112.03; -200 mesh yellow to brown pwdr.; d. 3.22 *moisture sensitive*	1g 5g 25g

TITANIUM (Compounds)

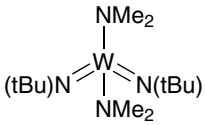
22-3500	**Trichlorotris(tetrahydrofuran)titanium(III), min. 97%** *(18039-90-2)*	5g
amp	$TiCl_3(C_4H_8O)_3$; FW: 370.56; pale blue xtl.	25g
HAZ	*air sensitive, moisture sensitive*	100g
22-5500	**(Trimethyl)pentamethylcyclopentadienyltitanium(IV), min. 97%** *(107333-47-1)*	250mg
amp	$(CH_3)_5C_5Ti(CH_3)_3$; FW: 228.22; yellow xtl.	1g
HAZ	*air sensitive, light sensitive, moisture sensitive, (store cold)*	5g
22-6000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)titanium(III), min. 97% [Ti(TMHD)$_3$]**	1g
amp	*(181418-64-4)*	5g
	$Ti(C_{11}H_{19}O_2)_3$; FW: 597.70; purple xtl.; b.p. subl. 75°/0.1mm	25g
	air sensitive, moisture sensitive	

TUNGSTEN (Elemental Forms)

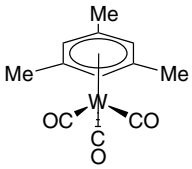
93-7456	**Tungsten powder (99.9%)** *(7440-33-7)*	50g
HAZ	W; FW: 183.85; 12 micron; m.p. 3410°; b.p. 5660°; d. 19.3	250g
93-7455	**Tungsten powder (99.9+%)** *(7440-33-7)*	50g
HAZ	W; FW: 183.85; -100 mesh; m.p. 3410°; b.p. 5660°; d. 19.3	250g
93-7437	**Tungsten powder (99.95%)** *(7440-33-7)*	50g
HAZ	W; FW: 183.85; 0.6-0.9 microns; m.p. 3410°; b.p. 5660°; d. 19.3	250g
74-0075	**Tungsten rod annealed (99.98%)** *(7440-33-7)*	25cm
	W; FW: 183.85; 3.175mm dia. (~1.53g/cm); m.p. 3410°; b.p. 5660°; d. 19.3	100cm
		5 x 100cm
93-7450	**Tungsten wire (99.95%)** *(7440-33-7)*	5m
	W; FW: 183.85; 0.5 mm dia.; m.p. 3410°; b.p. 5660°; d. 19.3	25m
93-7452	**Tungsten wire (99.95%)** *(7440-33-7)*	20m
	W; FW: 183.85; 0.2 mm dia.; m.p. 3410°; b.p. 5660°; d. 19.3	100m
93-7438	**Tungsten wire (99.95%)** *(7440-33-7)*	50m
	W; FW: 183.85; 0.127 mm dia.; m.p. 3410°; b.p. 5660°; d. 19.3	250m
93-7439	**Tungsten wire (99.95%)** *(7440-33-7)*	100m
	W; FW: 183.85; 0.05 mm dia.; m.p. 3410°; b.p. 5660°; d. 19.3	
93-7451	**Tungsten wire (99.95%)** *(7440-33-7)*	100m
	W; FW: 183.85; 0.025 mm dia.; m.p. 3410°; b.p. 5660°; d. 19.3	500m

TUNGSTEN (Compounds)

74-1000	**Ammonium tetrathiotungstate(VI), 99% (99.9+%-W)** *(13862-78-7)*	
	See page 7	
74-1910	**Bis(acetonitrile)tetracarbonyltungsten(0)** *(16800-45-6)*	1g
NEW	$C_8H_6N_2O_4W$; FW: 377.98; yellow solid	5g
	air sensitive	
74-1225	**Bis(t-butylimido)bis(dimethylamino)tungsten(VI), min. 97% BTBMW** *(406462-43-9)*	1g
	$C_{12}H_{30}N_4W$; FW: 414.23; yellow liq.; b.p. 81°C (0.02mm); d. 1.305	5g
	air sensitive, moisture sensitive	
	For detailed technical note visit strem.com.	



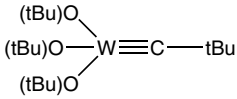
74-1200	**Bis(cyclopentadienyl)tungsten dichloride, 99%** *(12184-26-8)*	1g
amp	$(C_5H_5)_2WCl_2$; FW: 384.94; green pwdr.	5g
	moisture sensitive	
74-1350	**Mesitylene tungsten tricarbonyl, 98%** *(12129-69-0)*	1g
	$C_9H_{12}W(CO)_3$; FW: 388.08; yellow xtl.; m.p. 165° dec.	5g



93-7422	**Sodium tungstate dihydrate, 99+% (ACS)** *(10213-10-2)*	
	See page 421	

TUNGSTEN (Compounds)

74-1800 amp	**Tris(t-butoxy)(2,2-dimethylpropylidyne)tungsten(VI), 98% Schrock Alkyne Metathesis Catalyst** *(78234-36-3)* $(C_4H_9O)_3W{\equiv}CC(CH_3)_3$; FW: 472.31; off-white to tan pwdr. *air sensitive, moisture sensitive, (store cold)* **For detailed technical note visit strem.com.**	100mg 500mg

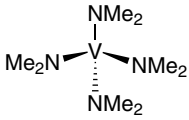
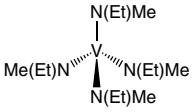


74-2000	**Tungsten boride (99.5%-W) (WB)** *(12007-09-9)* WB; FW: 194.66; -325 mesh black pwdr. (10 micron or less avg. particle size)	10g 50g
93-7431	**Tungsten carbide (99.5%-W)** *(12070-12-1)* WC; FW: 195.86; <1 micron gray pwdr.; m.p. ~2870°; b.p. 6000°; d. 15.63	50g 250g
74-2201	**Tungsten carbonyl, 99% (<0.1%-Mo)** *(14040-11-0)* $W(CO)_6$; FW: 351.92; white to off-white pwdr.; m.p. 169-170° dec.	5g 25g
74-2200	**Tungsten carbonyl, 99% (<0.3%-Mo)** *(14040-11-0)* $W(CO)_6$; FW: 351.92; white xtl.; m.p. 169-170° dec. **For detailed technical note visit strem.com.**	5g 25g 100g
74-2202	**Tungsten carbonyl, 99% (99.9+%-W) sublimed** *(14040-11-0)* $W(CO)_6$; FW: 351.92; white xtl.; m.p. 169-170° dec.	5g 25g
74-2348 amp HAZ	**Tungsten(IV) chloride, 97%** *(13470-13-8)* WCl_4; FW: 325.66; gray pwdr.; d. 4.624 *moisture sensitive*	5g 25g
74-2350 amp HAZ	**Tungsten(VI) chloride (99.9%-W)** *(13283-01-7)* WCl_6; FW: 396.57; purple xtl.; m.p. 275°; b.p. 346.7° *moisture sensitive*	25g 100g 5 x 100g
74-7430	**Tungsten(IV) oxide (99.9%-W)** *(12036-22-5)* WO_2; FW: 215.85; brown pwdr.; m.p. 1500-1600°; d. 12.11	10g 50g
74-7435	**Tungsten(IV) oxide (99.9+%-W) (WO2.9 Blue Sub-oxide)** *(12037-58-0)* $WO_{2\cdot75\text{-}2\cdot90}$; FW: 215.85; blue pwdr.	10g 50g
93-7427	**Tungsten(VI) oxide (min. 99.8%-W)** *(1314-35-8)* WO_3; FW: 231.85; yellowish-green pwdr.; m.p. 1473°; d. 7.16	100g 500g
74-3105	**Tungsten(VI) oxide (99.995%-W) PURATREM** *(1314-35-8)* WO_3; FW: 231.85; yellow pwdr.; m.p. 1473°; d. 7.16	10g 50g
93-7411	**Tungsten(VI) oxide, sintered lumps (99.99%-W) PURATREM** *(1314-35-8)* WO_3; FW: 231.85; yellowish-green pieces; m.p. 1473°; d. 7.16	10g 50g
74-3180 NEW	**Tungsten(VI) oxychloride, 98%** *(13520-78-0)* $WOCl_4$; FW: 341.65; orange needles *air sensitive, moisture sensitive*	1g 5g 25g
93-7424	**Tungsten(IV) sulfide (99.5%-W)** *(12138-09-9)* WS_2; FW: 247.98; black pwdr.; m.p. 1250° dec.; d. 7.5	50g 250g
93-7410	**Tungstic acid, 99%** *(7783-03-1)* H_2WO_4; FW: 249.86; yellow pwdr.; m.p. 100° dec.; d. 5.5	50g 250g
93-7402 HAZ	**12-Tungstophosphoric acid hydrate, 99+%** *(12501-23-4)* $H_3[PW_{12}O_{40}]\cdot XH_2O$; FW: 2880.20; white xtl. *hygroscopic*	25g 100g 500g

VANADIUM (Elemental Forms)

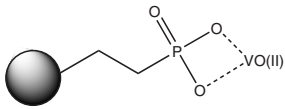
23-0050	**Vanadium foil (99.5%)** *(7440-62-2)* V; FW: 50.94; 0.127mm thick (~3.87g/50x 100mm); m.p. 1717°; b.p. 3000°; d. 6.11	50 x 100mm 100 x 200mm
93-2340	**Vanadium powder (99.5%)** *(7440-62-2)* V; FW: 50.94; -20 mesh; m.p. 1717°; b.p. 3000°; d. 6.11	5g 25g
93-2341	**Vanadium powder (99.5%)** *(7440-62-2)* V; FW: 50.94; -325 mesh; m.p. 1717°; b.p. 3000°; d. 6.11	5g 25g
23-0080	**Vanadium rod (99.5%)** *(7440-62-2)* V; FW: 50.94; 12.7mm dia. (~7.74g/cm); m.p. 1717°; b.p. 3000°; d. 6.11	2cm 10cm
93-2343	**Vanadium slugs (99.9%)** *(7440-62-2)* V; FW: 50.94; 6.35 mm x 12.7 mm; m.p. 1717°; b.p. 3000°; d. 6.11	5g 25g
93-2344	**Vanadium turnings (99.7%)** *(7440-62-2)* V; FW: 50.94; 2.54 cm and down; m.p. 1717°; b.p. 3000°; d. 6.11	5g 25g

VANADIUM (Compounds)

23-0200 HAZ	**Bis(cyclopentadienyl)vanadium dichloride (Vanadocene dichloride), 95%** *(12083-48-6)* $(C_5H_5)_2VCl_2$; FW: 252.04; green xtl.; m.p. 250° dec.; d. 1.60 *moisture sensitive, (store cold)*	1g 5g 25g
23-0180 amp HAZ	**Bis(cyclopentadienyl)vanadium, sublimed, 95% (Vanadocene)** *(1277-47-0)* $(C_5H_5)_2V$; FW: 181.13; purple xtl.; b.p. (subl. 200°/0.1mm) *air sensitive, moisture sensitive*	1g 5g
23-0350 amp	**Cyclopentadienylvanadium tetracarbonyl, min. 97%** *(12108-04-2)* $C_5H_5V(CO)_4$; FW: 228.08; orange to red xtl.; m.p. 138°; b.p. (subl. 80-110°/0.1mm) *air sensitive, (store cold)*	1g 5g
96-6770	**PhosphonicS Metal Oxidation Catalyst Kit** *See* page 488	
23-0515 NEW HAZ	**Tetrakis(diethylamino)vanadium(IV), min. 95% TDEAV** *(219852-96-7)* $V[N(CH_2CH_3)_2]_4$; FW: 339.46; green liq. *air sensitive, moisture sensitive, (store cold)*	250mg 1g 5g
23-0500 HAZ	**Tetrakis(dimethylamino)vanadium(IV), min. 95%** **TDMAV** *(19824-56-7)* $V[N(CH_3)_2]_4$; FW: 227.25; dark solid; m.p. 55-60° *air sensitive, moisture sensitive, (store cold)* **For detailed technical note visit strem.com.** 	250mg 1g 5g
23-0365 NEW	**Tetrakis(ethylmethylamino)vanadium(IV), 98%** **TEMAV** *(791114-66-4)* $C_{12}H_{32}N_4V$; FW: 283.35; dark green liq. *air sensitive, moisture sensitive* 	250mg 1g 5g
23-2250 HAZ	**Vanadium(III) acetylacetonate, 98%** *(13476-99-8)* $V(CH_3COCHCOCH_3)_3$; FW: 348.27; brown xtl.; m.p. 178°; b.p. subl. (170°/0.05mm) *air sensitive, moisture sensitive*	25g 100g
23-2202	**Vanadium(IV) bis(acetylacetonato)oxide, 98% (Vanadyl acetylacetonate)** *(3153-26-2)* $VO(C_5H_7O_2)_2$; FW: 265.16; bluish green pwdr.; m.p. 250° dec. **For detailed technical note visit strem.com.**	50g 250g
93-2335 HAZ	**Vanadium(III) bromide (99.7%-V)** *(13470-26-3)* VBr_3; FW: 290.67; -20 mesh black pwdr.; d. 4.00 *moisture sensitive*	1g 5g 25g
23-4300 HAZ	**Vanadium(III) chloride, anhydrous, min. 95%** *(7718-98-1)* VCl_3; FW: 157.30; purple pwdr.; d. 3.00 *moisture sensitive*	10g 50g
23-4350 HAZ	**Vanadium(III) chloride tetrahydrofuran adduct** *(19559-06-9)* $VCl_3(C_4H_8O)_3$; FW: 373.61; red xtl. *moisture sensitive, (store cold)* **For detailed technical note visit strem.com.**	5g 25g
93-2320	**Vanadium nitride (99%-V)** *(24646-85-3)* VN; FW: 64.95; black pwdr.; m.p. 2320°; d. 6.13	2g 10g
93-2312 HAZ	**Vanadium(III) oxide, 95%** *(1314-34-7)* V_2O_3; FW: 149.88; black pwdr.; m.p. 1970°; d. 4.87	50g 250g
93-2309	**Vanadium(IV) oxide, 99+%** *(12036-21-4)* VO_2; FW: 82.94; black pwdr.; m.p. 1967°; d. 4.339	2g 10g 50g
93-2306 HAZ	**Vanadium(V) oxide, 98%** *(1314-62-1)* V_2O_5; FW: 181.88; orange to brown pwdr.; m.p. 690°; b.p. 1750° dec.; d. 3.357	100g 500g
93-2321 HAZ	**Vanadium(V) oxide, 99.5%** *(1314-62-1)* V_2O_5; FW: 181.88; -60 mesh orange to brown pwdr.; m.p. 690°; b.p. 1750° dec.; d. 3.357	100g 500g
93-2337 HAZ	**Vanadium(V) oxide (99.99%-V) PURATREM** *(1314-62-1)* V_2O_5; FW: 181.88; -22 mesh orange pwdr.; m.p. 690°; b.p. 1750° dec.; d. 3.357	5g 25g

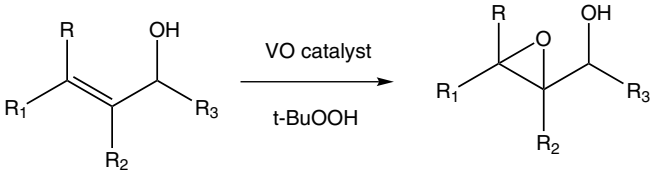
VANADIUM (Compounds)

93-2334 HAZ	**Vanadium(IV) sulfate oxide hydrate** *(123334-20-3)* $VOSO_4 \cdot XH_2O$; FW: 163.00; blue lumps	25g 100g
93-2305 HAZ	**Vanadium(V) trichloride oxide, min. 99%** *(7727-18-6)* $VOCl_3$; FW: 173.30; orange liq.; m.p. -77°; b.p. 126.7°; d. 1.829 *moisture sensitive*	100g 500g
93-2332 HAZ	**Vanadium(V) trifluoride oxide, 98+%** *(13709-31-4)* VOF_3; FW: 123.94; yellow to orange pwdr.; m.p. 300°; b.p. 480°; d. 2.459 *moisture sensitive*	5g 25g
23-5000 HAZ	**Vanadium(V) tri-i-propoxy oxide, 98+% VTIP** *(5588-84-1)* $VO(OC_3H_7)_3$; FW: 244.20; light yellow to light green liq.; b.p. 60-61°/0.5mm; f.p. 113°F; d. 1.035 *moisture sensitive*	5g 25g 100g
23-4380	**Vanadyl(II) ethyl/butyl phosphonate Silica (PhosphonicS POVO)** blue-green solid; SA: >350 m^2/g Note: Sold in collaboration with PhosphonicS Ltd. for research purposes only. PhosphonicS Metal Oxidation Catalyst Kit component.	5g 25g



Technical Note:
1. Catalyst used for oxidation of a wide variety allylic alcohols.

Particle size range: 70-200 microns
Average pore size: 60Å
Effective loadings: 0.3 to 0.5 mmol/g



References:
1. *Tetrahedron Lett.,* **2004**, *45*, 4465

23-6000	**Vanadyl meso-tetraphenylporphine** *(14705-63-6)* $(C_{44}H_{28}N_4)VO$; FW: 679.67; purple xtl.	500mg 2g
23-4400	**Vanadyl naphthenate, 35% in naphthenic acid (2.8-3.2% V)** *(68553-60-6)* viscous liq.; f.p. > 350°F; d. 1.04	100g 500g 2.5kg
23-5841	**Vanadyl octaethylporphine** *(27860-55-5)* $(C_{36}H_{44}N_4)VO$; FW: 599.71; red to purple xtl.	250mg 1g

XENON (Compounds)

54-1500 HAZ	**Xenon(II) fluoride, 99.5%** *(13709-36-9)* XeF_2; FW: 169.30; white xtl.; m.p. 128-130°; d. 4.32 *moisture sensitive, (store cold)* Note: Packaged in PFA/FET bottle.	2g 10g

Technical Note:
1. Xenon difluoride is a powerful fluorinating and oxidizing agent. Useful in the direct fluorination of alkenes and aromatics. Commercial uses include an etchant for silicon.

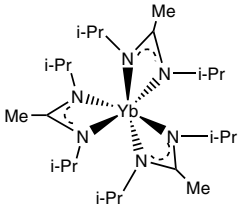
YTTERBIUM (Elemental Forms)

93-7031	**Ytterbium chips (99.9% REO)** *(7440-64-4)* Yb; FW: 173.04; chips; b.p. 1427° *air sensitive, moisture sensitive*	5g 25g
93-7035	**Ytterbium foil (99.9% REO)** *(7440-64-4)* Yb; FW: 173.04; 0.64 mm thick (~2.8g/25 x 25 mm); m.p. 824°; b.p. 1427°; d. 6.97 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm

YTTERBIUM (Elemental Forms)

93-7033	**Ytterbium foil (99.9% REO)** *(7440-64-4)* Yb; FW: 173.04; 0.127 mm thick (~0.55g/25 x 25 mm); m.p. 824°; b.p. 1427°; d. 6.97 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-7032	**Ytterbium ingot (99.9% REO)** *(7440-64-4)* Yb; FW: 173.04; ingot; m.p. 824°; b.p. 1427°; d. 6.97 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	5g 25g
93-7030 HAZ	**Ytterbium powder (99.9% REO)** *(7440-64-4)* Yb; FW: 173.04; -20 to -40 mesh; m.p. 824°; b.p. 1427°; d. 6.97 *air sensitive, moisture sensitive*	2g 10g

YTTERBIUM (Compounds)

70-0075 amp HAZ	**Tris(cyclopentadienyl)ytterbium (99.9%-Yb) (REO)** *(1295-20-1)* $(C_5H_5)_3Yb$; FW: 368.33; green xtl.; m.p. 273°; b.p. subl. 150° (vac.) *air sensitive, moisture sensitive*	1g 5g
70-1000	**Tris(N,N'-di-i-propylacetamidinato)ytterbium(III), 99%** $Yb(C_8H_{17}N_2)_3$; FW: 596.74; white to off-white pwdr. *air sensitive, moisture sensitive* Note: ALD precursor. Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2. 	250mg 1g 5g
70-0200	**Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)ytterbium(III), 99% (99.9%-Yb) (REO) [Yb(FOD)$_3$]** *(18323-96-1)* $Yb[C_3F_7COCHCOC(CH_3)_3]_3$; FW: 1058.59; off-white pwdr. *hygroscopic*	1g 5g
70-0100	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) ytterbium(III), 99% (99.9%-Yb) (REO) [Yb(TMHD)$_3$]** *(15492-52-1)* $Yb(C_{11}H_{19}O_2)_3$; FW: 722.86; off-white xtl.; m.p. 167-169°; b.p. dec. 300° Note: Volatile precursor for the ALD, CVD and MOCVD deposition of ytterbium oxide.	1g 5g
93-7001	**Ytterbium(III) acetate hydrate (99.9%-Yb) (REO)** *(15280-58-7)* $Yb(OOCCH_3)_3 \cdot XH_2O$; FW: 350.24; white pwdr.; d. 2.09	10g 50g
70-2202	**Ytterbium(III) acetylacetonate hydrate (99.9%-Yb) (REO)** *(14284-98-1)* $Yb(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 470.37; pwdr.	5g 25g
93-7025	**Ytterbium(III) chloride, anhydrous (99.9%-Yb) (REO)** *(10361-91-8)* $YbCl_3$; FW: 279.40; white pwdr.; m.p. 854° *hygroscopic*	1g 5g 25g
93-7003	**Ytterbium(III) chloride hexahydrate (99.9%-Yb) (REO)** *(10035-01-5)* $YbCl_3 \cdot 6H_2O$; FW: 279.40 (387.49); white xtl.; d. 2.575	10g 50g
70-7003	**Ytterbium(III) chloride hydrate (99.99+%-Yb) (REO) PURATREM** *(19423-87-1)* $YbCl_3 \cdot XH_2O$; FW: 279.40; white xtl.; d. 2.575	5g 25g
93-7004	**Ytterbium(III) fluoride (99.9%-Yb) (REO)** *(13760-80-0)* YbF_3; FW: 230.04; white pwdr.; m.p. 1157°; b.p. 2200°; d. 8.168 *hygroscopic*	5g 25g
70-7004	**Ytterbium(III) fluoride (99.99%-Yb) (REO) PURATREM** *(13760-80-0)* YbF_3; FW: 230.04; white pwdr.; m.p. 1157°; b.p. 2200°; d. 8.168 *hygroscopic*	5g 25g
70-2500	**Ytterbium(III) hexafluoroacetylacetonate dihydrate (99.9%-Yb) (REO)** *(81849-60-7)* $Yb(CF_3COCHCOCF_3)_3 \cdot 2H_2O$; FW: 794.19 (830.22); white to off-white solid	1g 5g
93-7006 HAZ	**Ytterbium(III) nitrate pentahydrate (99.9%-Yb) (REO)** *(35725-34-9)* $Yb(NO_3)_3 \cdot 5H_2O$; FW: 359.07 (449.15); white xtl.	5g 25g
93-7008	**Ytterbium(III) oxide (99.9%-Yb) (REO)** *(1314-37-0)* Yb_2O_3; FW: 394.09; white pwdr.; m.p. 2227°; d. 9.17	25g 100g

YTTERBIUM (Compounds)

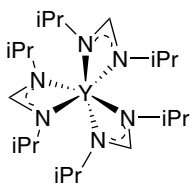
93-7010 HAZ	**Ytterbium(III) perchlorate, 50% aqueous solution (99.9%-Yb) (REO)** *(13498-08-3)* $Yb(ClO_4)_3$; FW: 471.39; colorless liq.	2g 10g
70-5000 amp HAZ	**Ytterbium(III) i-propoxide (99.9%-Yb) (REO)** *(6742-69-4)* $Yb(OC_3H_7)_3$; FW: 350.31; off-white pwdr.; m.p. 200° dec.; b.p. subl. 190-200°/0.2mm *moisture sensitive*	1g 5g
93-7027	**Ytterbium(III) sulfate octahydrate (99.9%-Yb) (REO)** *(10034-98-7)* $Yb_2(SO_4)_3 \cdot 8H_2O$; FW: 634.26 (778.39); white xtl.; d. 3.286	5g 25g
70-6000	**Ytterbium(III) trifluoromethanesulfonate hydrate (Ytterbium triflate)** *(252976-51-5)* $Yb(SO_3CF_3)_3 \cdot XH_2O$; FW: 620.25; white pwdr. *hygroscopic*	1g 5g 25g

YTTRIUM (Elemental Forms)

93-3941	**Yttrium chips (99.9% REO)** *(7440-65-5)* Y; FW: 88.90; chips; m.p. 1522°; b.p. 3380°; d. 4.47 *air sensitive, moisture sensitive*	5g 25g
93-3945	**Yttrium foil (99.9% REO)** *(7440-65-5)* Y; FW: 88.90; 0.64 mm thick (~1.8g/25 x 25mm); m.p. 1522°; b.p. 3380°; d. 4.47 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-3944	**Yttrium foil (99.9% REO)** *(7440-65-5)* Y; FW: 88.90; 0.25 mm thick (~0.7g/25 x 25mm); m.p. 1522°; b.p. 3380°; d. 4.47 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-3943	**Yttrium foil (99.9% REO)** *(7440-65-5)* Y; FW: 88.90; 0.127 mm thick (~0.36g/25 x 25mm); m.p. 1522°; b.p. 3380°; d. 4.47 *air sensitive, moisture sensitive*	25 x 25mm 50 x 50mm
93-3942	**Yttrium ingot (99.9% REO)** *(7440-65-5)* Y; FW: 88.90; ingot; m.p. 1522°; b.p. 3380°; d. 4.47 *air sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	10g 50g
93-3940 HAZ	**Yttrium powder (99.9% REO)** *(7440-65-5)* Y; FW: 88.90; -40 mesh; m.p. 1522°; b.p. 3380°; d. 4.47 *air sensitive, moisture sensitive*	5g 25g

YTTRIUM (Compounds)

03-2010	**Lithium tris(S-(-)-1,1'-binaphthyl-2,2'-diolato)yttrate(III) tetrahydrofuran adduct, min. 97%** *(500995-67-5)* *See* page 119	
39-1500 amp	**Tris[N,N-bis(trimethylsilyl)amide]yttrium(III), min. 98% (99.9%-Y) (REO)** *(41836-28-6)* $\{[(CH_3)_3Si]_2N\}_3Y$; FW: 570.06; white to off-white pwdr.; m.p. 180-184°; b.p. subl. 105°/10^{-4}mm *air sensitive, moisture sensitive* Note: Available prepacked in ALD cylinder- see 98-4018. **For detailed technical note visit strem.com.**	1g 5g 25g
98-4018	**Tris[N,N-bis(trimethylsilyl)amide]yttrium(III), min. 98% (99.9%-Y) (REO), 39-1500, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(41836-28-6)* $\{[(CH_3)_3Si]_2N\}_3Y$; FW: 570.06; white to off-white pwdr.; m.p. 180-184°; b.p. subl. 105°/10^{-4}mm *air sensitive, moisture sensitive*	10g
39-4950 amp	**Tris(butylcyclopentadienyl)yttrium (99.9%-Y) (REO)** *(312739-77-8)* $(C_4H_9C_5H_4)_3Y$; FW: 452.52; yellow liq. *air sensitive*	1g 5g
39-5000 amp HAZ	**Tris(cyclopentadienyl)yttrium (99.9%-Y) (REO)** *(1294-07-1)* $(C_5H_5)_3Y$; FW: 284.20; off-white pwdr.; m.p. 295°; b.p. subl. 200° (vac.) *air sensitive, moisture sensitive*	1g 5g
39-1550 NEW amp	**Tris(N,N'-di-i-propylformamidinato)yttrium(III), 97%** $C_{21}H_{45}N_6Y$; FW: 470.53; light beige-yellow solid *air sensitive, moisture sensitive* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard2	250mg 1g 5g



YTTRIUM (Compounds)

39-5100 amp HAZ	**Tris(n-propylcyclopentadienyl)yttrium (99.9%-Y) (REO)** *(329735-73-1)* $(C_3H_7C_5H_4)_3Y$; FW: 410.44; yellow solid *air sensitive, moisture sensitive*	1g 5g
39-1000	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)yttrium(III), 98+% (99.9%-Y) (REO) [Y(TMHD)$_3$]** *(15632-39-0)* $Y(C_{11}H_{19}O_2)_3$; FW: 638.72; white to off-white xtl.; m.p. 170-173°; b.p. dec. 290° (subl. 95°/0.05mm)	1g 5g 25g
39-1015	**Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)yttrium(III) triglyme adduct (99.9%-Y) (REO)** $Y(C_{11}H_{19}O_2)_3 \cdot CH_3(OCH_2CH_2)_3OCH_3$; FW: 638.72 (816.94); white xtl.; m.p. 77°; b.p. 100°/0.1mm	1g 5g
93-3930	**Yttrium(III) acetate hydrate (99.9%-Y) (REO)** *(23363-14-6)* $Y(OOCCH_3)_3 \cdot XH_2O$; FW: 266.06; white xtl.	25g 100g
93-3901	**Yttrium(III) acetylacetonate hydrate (99.9%-Y) (REO)** *(207801-29-4)* $Y(CH_3COCHCOCH_3)_3 \cdot XH_2O$; FW: 386.24; white to yellow xtl.	5g 25g 100g
93-3934	**Yttrium(III) carbonate trihydrate (99.9%-Y) (REO)** *(5970-44-5)* $Y_2(CO_3)_3 \cdot 3H_2O$; FW: 357.83 (411.88); white pwdr.	25g 100g
93-3935	**Yttrium(III) chloride, anhydrous (99.9%-Y) (REO)** *(10361-92-9)* YCl_3; FW: 195.26; white pwdr.; m.p. 721°; d. 2.67 *hygroscopic*	10g 50g
93-3903	**Yttrium(III) chloride hexahydrate (99.9%-Y) (REO)** *(10025-94-2)* $YCl_3 \cdot 6H_2O$; FW: 195.26 (303.26); white xtl.; d. 2.18	25g 100g
39-2400	**Yttrium(III) 2-ethylhexanoate (15-17% Y), superconductor grade (99.9%-Y) (REO)** *(103470-68-4)* $Y[OOCCH(C_2H_5)C_4H_9]_3$; FW: 518.16; white pwdr.	10g 50g
93-3936	**Yttrium(III) fluoride (99.9%-Y) (REO)** *(13709-49-4)* YF_3; FW: 145.90; white pwdr.; m.p. 1152°; d. 4.01 *hygroscopic*	10g 50g
39-2500	**Yttrium(III) hexafluoroacetylacetonate, hydrate (99.9%-Y) (REO)** *(18911-76-7)* $Y(CF_3COCHCOCF_3)_3 \cdot XH_2O$; FW: 710.10; white xtl.; m.p. 166-170°; b.p. dec. 240° (subl. 100°/0.2mm)	1g 5g 25g
93-3908	**Yttrium(III) naphthenate, ~60% in toluene (7-13% Y) (99.9%-Y) (REO)** *(61790-20-3)* viscous liq.	5g 25g
39-7000	**Yttrium(III) neodecanoate, superconductor grade (12-16% Y) (99.9%-Y) (REO)** *(68683-17-0)* $Y(OOC_{10}H_{19})_3$; FW: 602.63; off-white pwdr.	10g 50g 250g
93-3937 HAZ	**Yttrium(III) nitrate hexahydrate (99.9%-Y) (REO)** *(13494-98-9)* $Y(NO_3)_3 \cdot 6H_2O$; FW: 274.92 (383.01); white xtl.	50g 250g
39-2940 HAZ	**Yttrium(III) nitrate hexahydrate (99.999%-Y) (REO) PURATREM** *(13494-98-9)* $Y(NO_3)_3 \cdot 6H_2O$; FW: 274.92 (383.01); white xtl.	25g 100g
93-3931	**Yttrium(III) oxalate hydrate (99.9%-Y) (REO)** *(13266-82-5)* $Y_2(C_2O_4)_3 \cdot XH_2O$; FW: 441.87; white xtl.	25g 100g
93-3911	**Yttrium(III) oxide (99.9%-Y) (REO)** *(1314-36-9)* Y_2O_3; FW: 225.81; white pwdr.; m.p. 2410°; d. 5.01	25g 100g 500g
93-3910	**Yttrium(III) oxide (99.99%-Y) (REO) PURATREM** *(1314-36-9)* Y_2O_3; FW: 225.81; white pwdr.; m.p. 2410°; d. 5.01	50g 250g
93-3925	**Yttrium(III) oxide (99.999%-Y) (REO) PURATREM** *(1314-36-9)* Y_2O_3; FW: 225.81; white pwdr.; m.p. 2410°; d. 5.01	10g 50g 1kg
39-2990 NEW	**Yttrium(III) oxide, 0.5-2.0 microns (99.95%- Y)** *(1314-36-9)* Y_2O_3; FW: 225.81; white pwdr.; m.p. 2410°; d. 5.01	50g 250g
93-3913 HAZ	**Yttrium(III) perchlorate, 50% aqueous solution (99.9%-Y) (REO)** *(14017-56-2)* $Y(ClO_4)_3$; FW: 387.26; colorless liq.	10g 50g
39-2980	**Yttrium(III) phosphate hydrate (99.99%-Y) (REO) PURATREM** *(34054-55-2)* $YPO_4 \cdot XH_2O$; FW: 183.88; white pwdr.	5g 25g

YTTRIUM (Compounds)

93-3932 HAZ	**Yttrium(III) i-propoxide** *(2172-12-5)* $Y[OCH(CH_3)_2]_3$; FW: 266.17; off-white pwdr. *moisture sensitive*	1g 5g 25g
39-3000 HAZ	**Yttrium(III) i-propoxide (20-25% in toluene)** *(2172-12-5)* $Y[OCH(CH_3)_2]_3$; FW: 266.17; yellowish-brown liq.; f.p. 40°F (toluene) *moisture sensitive*	5g 25g 100g
93-3916	**Yttrium(III) sulfate octahydrate (99.9%-Y) (REO)** *(7446-33-5)* $Y_2(SO_4)_3 \cdot 8H_2O$; FW: 465.99 (610.12); white xtl.; d. 2.558	25g 100g
39-4050	**Yttrium(III) trifluoromethanesulfonate, min. 98% (Yttrium triflate)** *(52093-30-8)* $Y(CF_3SO_3)_3$; FW: 536.12; white pwdr. *hygroscopic*	5g 25g

ZINC (Elemental Forms)

30-1500	**Nano Zinc Metallic Powder** *(7440-66-6)* *See* page 167	
93-3056 HAZ	**Zinc dust (97.5%)** *(7440-66-6)* Zn; FW: 65.38; -325 mesh; m.p. 419.58°; b.p. 907°; d. 7.14 *moisture sensitive*	250g 1kg 5kg
30-0045	**Zinc foil (99.9%)** *(7440-66-6)* Zn; FW: 65.38; 0.62mm thick x 15cm wide (~66g/10cm x 15cm); m.p. 419.58°; b.p. 907°; d. 7.14	10 x 15cm 50 x 15cm 250 x 15cm
30-0040	**Zinc foil (99.9+%)** *(7440-66-6)* Zn; FW: 65.38; 1.6mm thick, 15cm x 15cm (~225g/pc); m.p. 419.58°; b.p. 907°; d. 7.14	1pc 5pcs
30-0047	**Zinc foil (99.98%)** *(7440-66-6)* Zn; FW: 65.38; 0.25 mm thick x 30 cm wide (~265g/50cm x 30cm); m.p. 419.58°; b.p. 907°; d. 7.14	50 x 30cm 250 x 30cm
93-3060 HAZ	**Zinc powder (99.9%)** *(7440-66-6)* Zn; FW: 65.38; -325 mesh; m.p. 419.58°; b.p. 907°; d. 7.14 *moisture sensitive*	500g 4 x 500g
30-0050 HAZ	**Zinc powder (99.999%)** *(7440-66-6)* Zn; FW: 65.38; -40 mesh; m.p. 419.58°; b.p. 907°; d. 7.14 *moisture sensitive*	5g 25g
93-3055	**Zinc rod (99.99+%)** *(7440-66-6)* Zn; FW: 65.38; 1.27 cm dia. (~9g/cm); m.p. 419.58°; b.p. 907°; d. 7.14	100g 500g
30-0060	**Zinc rod (99.9999%)** *(7440-66-6)* Zn; FW: 65.38; 10 mm dia. (~5.6g/cm); m.p. 419.58°; b.p. 907°; d. 7.14	50mm 250mm
30-0080	**Zinc shot (99.99%)** *(7440-66-6)* Zn; FW: 65.38; 2-14 mesh; m.p. 419.58°; b.p. 907°; d. 7.14	250g 1kg
30-0070	**Zinc shot (99.999%)** *(7440-66-6)* Zn; FW: 65.38; 1-5 mm; m.p. 419.58°; b.p. 907°; d. 7.14	50g 250g 1kg
30-0090	**Zinc wire (99.9999%)** *(7440-66-6)* Zn; FW: 65.38; 1.0 mm dia. (~5.6g/m); m.p. 419.58°; b.p. 907°; d. 7.14	1m 5m

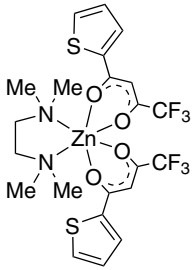
ZINC (Compounds)

30-0500	**Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)zinc, 99% [Zn(TMHD)$_2$]** *(14363-14-5)* $Zn(C_{11}H_{19}O_2)_2$; FW: 431.93; white xtl.; m.p. 144°; b.p. dec. 250°	1g 5g 25g
30-3020 HAZ	**2,2,6,6-Bis(tetramethylpiperidine)zinc, magnesium chloride, lithium chloride complex 0.35M (12wt% ±2wt%) in toluene/tetrahydrofura** *(207788-38-3)* $C_{18}H_{36}Zn$; FW: 317.87; amber to brown liq. *air sensitive, moisture sensitive* Note: A product of Rockwood Lithium. Sold for R&D purposes only.	.025mole

ZINC (Elemental Forms)

30-3055 — **Bis[4,4,4-trifluoro-1-(2-thienyl-1,3-butanedionato]zinc TMEDA adduct, 99%** *(873585-38-7)* — 1g, 5g

$C_{22}H_{24}F_6N_2O_4S_2Zn$; FW: 623.95; white pwdr.
hygroscopic
Note: Useful reagent for the MOCVD of zinc oxide.



93-3030 — **Diethylzinc, min. 95%** *(557-20-0)* — 100g
HAZ
$Zn(C_2H_5)_2$; FW: 123.49; colorless liq.; m.p. -28°; b.p. 124°; f.p. -1°F; d. 1.18
moisture sensitive, pyrophoric
Note: Available prepacked in ALD cylinder- see 98-4000, 98-4005.

98-4000 — **Diethylzinc, min. 95%, 93-3030, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(557-20-0)* — 25g
HAZ
$Zn(C_2H_5)_2$; FW: 123.49; colorless liq.; m.p. -28°; b.p. 124°; f.p. -1°F; d. 1.18
moisture sensitive, pyrophoric
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. See 98-4005.

98-4005 — **Diethylzinc, min. 95%, 93-3030, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD** *(557-20-0)* — 25g
HAZ
$Zn(C_2H_5)_2$; FW: 123.49; colorless liq.
moisture sensitive, pyrophoric

30-3029 — **Diethylzinc, min. 95% (10 wt% in hexanes) (Sure/Seal™ Bottle)** *(557-20-0)* — 50g, 250g
HAZ
$Zn(C_2H_5)_2$; FW: 123.49; colorless liq.
air sensitive, moisture sensitive

97-4525 — **Diethylzinc, elec. gr. (99.9998%-Zn) PURATREM** *(557-20-0)* — 100g
HAZ
$Zn(C_2H_5)_2$; FW: 123.49; colorless liq.; m.p. -28°; b.p. 124°; f.p. -1°F; d. 1.18
moisture sensitive, pyrophoric

97-5061 — **Dimethylzinc, 99%** *(544-97-8)* — 5g, 25g, 100g
HAZ
$Zn(CH_3)_2$; FW: 95.44; colorless liq.; m.p. -42°; b.p. 46°; f.p. -1°F; d. 1.386 (20°)
moisture sensitive, pyrophoric
Note: Available prepacked in ALD cylinder- see 98-4001.

98-4001 — **Dimethylzinc, 99%, 97-5061, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(544-97-8)* — 25g
HAZ
$Zn(CH_3)_2$; FW: 95.44; colorless liq.; m.p. -42°; b.p. 46°; f.p. -1°F; d. 1.386 (20°)
moisture sensitive, pyrophoric

30-5062 — **Dimethylzinc, min. 99% (10 wt% in hexanes) (Sure/Seal™ bottle)** *(544-97-8)* — 50g, 250g
HAZ
$Zn(CH_3)_2$; FW: 95.44; colorless liq.
air sensitive, moisture sensitive

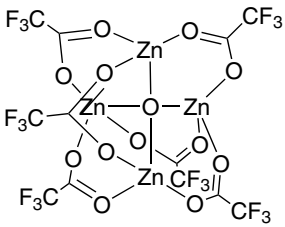
97-5060 — **Dimethylzinc, elec. gr. (99.999%-Zn) PURATREM** *(544-97-8)* — 50g, 100g
HAZ
$Zn(CH_3)_2$; FW: 95.44; colorless liq.; m.p. -42°; b.p. 46°; f.p. -1°F; d. 1.386 (20°)
moisture sensitive, pyrophoric
Note: Available prepacked in ALD cylinder- see 98-4002.

98-4002 — **Dimethylzinc, elec. gr. (99.999%-Zn) PURATREM, 97-5060, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD** *(544-97-8)* — 10g
HAZ
$Zn(CH_3)_2$; FW: 95.44; colorless liq.; m.p. -42°; b.p. 46°; f.p. -1°F; d. 1.386 (20°)
moisture sensitive, pyrophoric

30-0600 — **Diphenylzinc, 99%** *(1078-58-6)* — 1g, 5g
amp
HAZ
$Zn(C_6H_5)_2$; FW: 219.58; white xtl.; m.p. 107°; b.p. 280-285°/760 mm
air sensitive, moisture sensitive

ZINC (Compounds)

30-4050 **Oxo[hexa(trifluoroacetato)]tetrazinc trifluoroacetic acid adduct ZnTAC$_{24}$™** *(1299489-47-6)* — 5g, 25g
$Zn_4(CF_3COO)_6(O)(CF_3COOH)\cdot$; FW: 955.65; white solid
moisture sensitive
Note: Manufactured under license of Takasago patent.
For detailed technical note visit strem.com.

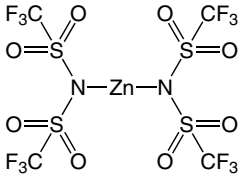


93-3001 **Zinc acetate dihydrate, 98+% (ACS)** *(5970-45-6)* — 250g, 1kg
$Zn(OOCCH_3)_2\cdot 2H_2O$; FW: 186.46 (219.50); white xtl.

93-3031 **Zinc acetylacetonate hydrate, 98%** *(108503-47-5)* — 50g, 250g
$Zn(CH_3COCHCOCH_3)_2\cdot XH_2O$; FW: 263.59; white pwdr.

30-3050 **Zinc arsenide (99.5%-Zn)** *(12006-40-5)* — 5g, 25g
Zn_3As_2; FW: 346.01; 1/8” gray pieces

30-1350 **Zinc bis(trifluoromethylsulfonyl)imide, min. 97%** *(168106-25-0)* — 1g, 5g
$Zn[(CF_3SO_2)_2N]_2$; FW: 625.69; white pwdr.
hygroscopic
For detailed technical note visit strem.com.



93-3032 HAZ **Zinc bromide, 98+%** *(7699-45-8)* — 100g, 500g
$ZnBr_2$; FW: 225.19; white pwdr.; m.p. 394°; b.p. 650°; d. 4.201
hygroscopic

30-3032 HAZ **Zinc bromide (99.9%-Zn)** *(7699-45-8)* — 50g, 250g
$ZnBr_2$; FW: 225.19; white pwdr.; m.p. 394°; b.p. 650°; d. 4.201
hygroscopic

30-3033 HAZ **Zinc bromide (99.999%-Zn) PURATREM** *(7699-45-8)* — 5g, 25g
$ZnBr_2$; FW: 225.19; white pwdr.; m.p. 394°; b.p. 650°; d. 4.201
hygroscopic

93-3005 **Zinc carbonate hydroxide** *(5263-02-5)* — 100g, 500g
$3Zn(OH)_2\cdot 2ZnCO_3$; FW: 548.92; white pwdr.; d. 4.398

93-3052 amp HAZ **Zinc chloride (99.99%-Zn) PURATREM** *(7646-85-7)* — 10g, 50g
$ZnCl_2$; FW: 136.28; -10 mesh spheres; m.p. 283°; b.p. 732°; d. 2.91

30-3012 HAZ **Zinc chloride 2.2M (25wt% ±1wt%) in 2-methyltetrahydrofuran** *(7646-85-7)* — 0.25mole, 1mole
$ZnCl_2$; FW: 136.28; liq.
air sensitive, moisture sensitive
Note: A product of Rockwood Lithium. Sold for R&D purposes only.

30-3006 HAZ **Zinc chloride, anhydrous, min. 97% (ACS)** *(7646-85-7)* — 100g, 500g
$ZnCl_2$; FW: 136.28; white pwdr.; m.p. 283°; b.p. 732°; d. 2.91
hygroscopic

93-3033 **Zinc cyclohexanebutyrate dihydrate (AAS)** *(38582-18-2)* — 5g
$Zn[OOC(CH_2)_3C_6H_{11}]_2\cdot 2H_2O$; FW: 403.87 (439.90); white pwdr.

93-3038 **Zinc 2-ethylhexanoate, ~80% in mineral spirits (14-15% Zn)** *(136-53-8)* — 100g, 500g
$Zn[OOCCH(C_2H_5)C_4H_9]_2$; FW: 351.79; off-white, viscous liq.; f.p. 104°F; d. 1.07

30-3038 **Zinc 2-ethylhexanoate, 99% (~18% Zn, 1% Diethylene glycol monomethyl ether)** *(136-53-8)* — 100g, 500g
$Zn[OOCCH(C_2H_5)C_4H_9]_2$; FW: 351.79; slightly yellow viscous liq.; f.p. 260°F

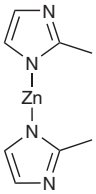
93-3011 **Zinc fluoride, anhydrous, 99%** *(7783-49-5)* — 25g, 100g
ZnF_2; FW: 103.37; white xtl.; m.p. 872°; b.p. ~1500°; d. 4.95
hygroscopic

93-3012 **Zinc fluoride tetrahydrate, 98%** *(13986-18-0)* — 50g, 250g
$ZnF_2\cdot 4H_2O$; FW: 103.37 (175.43); white xtl.; d. 2.255

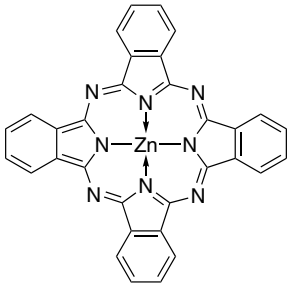
93-3035 **Zinc hexafluoroacetylacetonate hydrate, min. 98%** *(16743-33-2)* — 1g, 5g
$Zn(CF_3COCHCOCF_3)_2\cdot XH_2O$; FW: 479.47; white pwdr.; m.p. 157-158°

ZINC (Compounds)

93-3014 HAZ	**Zinc iodide, 98+%** *(10139-47-6)* ZnI_2; FW: 319.18; white to pale yellow pwdr.; m.p. 445°; b.p. 624° dec.	50g 250g
30-3500	**Zinc meso-tetraphenylporphine** *(14074-80-7)* $(C_{44}H_{28}N_4)Zn$; FW: 678.10; purple xtl.	250mg 1g 5g
30-4015 HAZ	**Zinc 2-methylimidazole MOF (ZIF-8)** *(59061-53-9)* $C_8H_{10}N_4Zn$; FW: 227.58; white solid **For detailed technical note visit strem.com.**	1g 5g



93-3036	**Zinc molybdate, 98+%** *(13767-32-3)* $ZnMoO_4$; FW: 225.32; off-white pwdr.	2g 10g
93-3037 HAZ	**Zinc naphthenate, 65% in mineral spirits (10% Zn)** *(12001-85-3)* viscous liq.; f.p. >100°F; d. 1.01	500g 2kg
93-3015 HAZ	**Zinc nitrate hexahydrate, min. 98%** *(10196-18-6)* $Zn(NO_3)_2{\cdot}6H_2O$; FW: 189.41 (297.47); white xtl.; m.p. 36.4°; d. 2.065	100g 500g 2kg
93-3017	**Zinc oxide, 99.7%** *(1314-13-2)* ZnO; FW: 81.37; white pwdr. (mean partical size 0.31 microns); m.p. 1975°; d. 5.606	500g 2kg
93-3016	**Zinc oxide (99.999%-Zn) PURATREM** *(1314-13-2)* ZnO; FW: 81.37; white pwdr.; m.p. 1975°; d. 5.606	10g 50g
30-2700	**Zinc oxide, catalyst (85-95% ZnO, 3-7% Al_2O_3, 0.5-3% CaO)** *(1314-13-2)* ZnO; FW: 81.37; 3/16'' extrusions; SA: ~35 m^2/g	100g 500g
30-1405	**Zinc oxide nanopowder** *(1314-13-2)* *See* page 167	
93-3039	**Zinc oxide, sintered tablets (99.9%-Zn)** *(1314-13-2)* ZnO; FW: 81.37; ~10-12mm dia. x 4-5mm thick (~2.3g ea.); m.p. 1975°; d. 5.606	25g 100g
93-3018 HAZ	**Zinc perchlorate hexahydrate, 99%** *(10025-64-6)* $Zn(ClO_4)_2{\cdot}6H_2O$; FW: 264.27 (372.36); white xtl.; m.p. 106°; b.p. 200° dec.; d. 2.252	100g 500g
93-3020	**Zinc phosphate hydrate** *(7543-51-3)* $Zn_3(PO_4)_2{\cdot}XH_2O$; FW: 386.05; white pwdr.; d. 3.04	500g 2kg
30-3000	**Zinc phthalocyanine, min. 95%** *(14320-04-8)* $(C_{32}H_{16}N_8)Zn$; FW: 577.91; purple pwdr.	2g 10g



30-3095	**Zinc i-propoxide, 99%** *(13282-39-8)* $Zn(OC_3H_7)_2$; FW: 183.56; white pwdr. *moisture sensitive*	1g 5g
30-3090	**Zinc protoporphyrin** *(15442-64-5)* $(C_{34}H_{32}N_4O_4)Zn$; FW: 626.03; purple xtl.	10mg 50mg
93-3041	**Zinc selenide (99.99%-Zn) PURATREM** *(1315-09-9)* ZnSe; FW: 144.33; yellow, granular solid; m.p. > 1100°; d. 5.42	5g 25g 100g
93-3023	**Zinc selenide (99.999%-Zn) PURATREM** *(1315-09-9)* ZnSe; FW: 144.33; yellow pwdr.; m.p. > 1100°; d. 5.42	10g 50g

ZINC (Compounds)

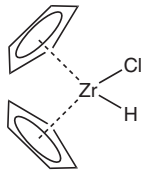
93-3045	**Zinc sulfate monohydrate, 99%** *(7446-19-7)* $ZnSO_4 \cdot H_2O$; FW: 161.43 (179.45); white pwdr.	250g 1kg
93-3025	**Zinc sulfide (99.9%-Zn)** *(1314-98-3)* ZnS; FW: 97.43; white pwdr.; m.p. 1700°; d. 4.10	25g 100g
30-3024	**Zinc sulfide (99.99%-Zn) (fused granules) PURATREM** *(1314-98-3)* ZnS; FW: 97.43; 2.5-5.0mm granules; m.p. 1700°; d. 4.10	5g 25g 100g
93-3046	**Zinc telluride (99.99%-Zn) PURATREM** *(1315-11-3)* ZnTe; FW: 192.97; gray pwdr.; m.p. 1240°; d. 6.34	10g 50g
93-3010	**Zinc tetrafluoroborate hydrate, 98%** *(13826-88-5)* $Zn(BF_4)_2 \cdot XH_2O$; FW: 238.98; white xtl.	25g 100g
30-4000 HAZ	**Zinc trifluoromethanesulfonate, min. 98% (Zinc triflate)** *(54010-75-2)* $Zn(SO_3CF_3)_2$; FW: 363.54; white pwdr. *hygroscopic* **For detailed technical note visit strem.com.**	5g 25g

ZIRCONIUM (Elemental Forms)

40-0055	**Zirconium crystal bar turnings (99.5%)** *(7440-67-7)* Zr; FW: 91.22; 1.0mm thick x 7mm wide; m.p. 1852°; b.p. 3577°; d. 6.506	10g 50g
93-4046 HAZ	**Zirconium foil (99.5%)** *(7440-67-7)* Zr; FW: 91.22; 0.025 mm thick x 300 mm wide; m.p. 1852°; b.p. 3577°; d. 6.506	100 x 300mm 400 x 300mm
40-0070	**Zirconium foil (99.8%)** *(7440-67-7)* Zr; FW: 91.22; 1.0mm thick (~16.3g/50 x50mm); m.p. 1852°; b.p. 3577°; d. 6.506	50 x 50mm 100 x 100mm 100 x 425mm
40-0075	**Zirconium foil (99.8%)** *(7440-67-7)* Zr; FW: 91.22; 0.25mm thick x 125mm wide (20.6g/100 x 125mm); m.p. 1852°; b.p. 3577°; d. 6.506	100 x 125mm 500 x 125mm 2000 x 125mm
93-4047 HAZ	**Zirconium powder (99.5%)** *(7440-67-7)* Zr; FW: 91.22; -50 mesh pwdr.; m.p. 1852°; b.p. 3577°; d. 6.506 *air sensitive*	100g 500g
93-4049	**Zirconium rod (99.2+%)** *(7440-67-7)* Zr; FW: 91.22; 12.7 mm dia. (~8.2g/cm); m.p. 1852°; b.p. 3577°; d. 6.506	5cm 30cm
40-0080	**Zirconium rod (99.8%)** *(7440-67-7)* Zr; FW: 91.22; 6.2 mm dia. (2g/cm); m.p. 1852°; b.p. 3577°; d. 6.506	5cm 30cm

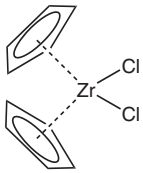
ZIRCONIUM (Compounds)

40-0900 amp	**Bis(n-butylcyclopentadienyl)zirconium dichloride, min. 98%** *(73364-10-0)* $[(C_4H_9)C_5H_4]_2ZrCl_2$; FW: 404.53; off-white pwdr. *moisture sensitive*	1g 5g
40-0750	**Bis(t-butylcyclopentadienyl)zirconium dichloride, min. 98%** *(32876-92-9)* $[(C_4H_9)C_5H_4]_2ZrCl_2$; FW: 404.53 *moisture sensitive*	1g 5g
40-1000	**Bis(cyclopentadienyl)dimethylzirconium, min. 97%** *(12636-72-5)* $(C_5H_5)_2Zr(CH_3)_2$; FW: 251.48; white xtl. *air sensitive, (store cold)*	1g 5g
40-1040	**Bis(cyclopentadienyl)zirconium chloride hydride (Schwartz's Reagent), 95%** *(37342-97-5)* $(C_5H_5)_2ZrClH$; FW: 257.87; off-white pwdr.; m.p. > 300° *light sensitive, moisture sensitive* **For detailed technical note visit strem.com.**	1g 5g 25g



ZIRCONIUM (Compounds)

93-4002 **Bis(cyclopentadienyl)zirconium dichloride, 99% (Zirconocene dichloride)** *(1291-32-3)*
$(C_5H_5)_2ZrCl_2$; FW: 292.32; white to off-white pwdr.
moisture sensitive
For detailed technical note visit strem.com.



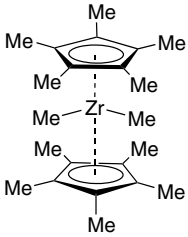
5g
25g
100g

40-1030 amp **Bis(ethylcyclopentadienyl)zirconium dichloride, min. 97%** *(73364-08-6)*
$[(C_2H_5)C_5H_4]_2ZrCl_2$; FW: 348.43; pale yellow pwdr.
moisture sensitive
1g 5g 25g

40-1041 amp HAZ **Bis(indenyl)zirconium dichloride, min. 98%** *(12148-49-1)*
$(C_9H_7)_2ZrCl_2$; FW: 392.44; yellow pwdr.
moisture sensitive
1g 5g 25g

40-1042 amp HAZ **Bis(2-methylindenyl)zirconium dichloride, 98%** *(165688-64-2)*
$[(CH_3)C_9H_6]_2ZrCl_2$; FW: 420.49; yellow pwdr.
moisture sensitive
1g 5g

40-1054 NEW **Bis(pentamethylcyclopentadienyl)dimethylzirconium(IV), 99%** *(67108-80-9)*
$[(CH_3)_5C_5]_2Zr(CH_3)_2$; FW: 391.75; white to off-white xtl.
air sensitive, moisture sensitive
For detailed technical note visit strem.com.



250mg
1g
5g

40-1044 **Bis(pentamethylcyclopentadienyl)zirconium dichloride, 99%** *(54039-38-2)*
$[(CH_3)_5C_5]_2ZrCl_2$; FW: 432.56; pale yellow xtl.
moisture sensitive
1g 5g

40-1050 amp **Bis(i-propylcyclopentadienyl)zirconium dichloride, 98%** *(58628-40-3)*
$[(C_3H_7)C_5H_4]_2ZrCl_2$; FW: 376.48; off-white pwdr.
moisture sensitive
1g 5g

40-1056 **(+)-Bis[1-{(1'R,2'R,5'R)-2'-i-propyl-5'-methylcyclohexyl}indenyl]zirconium(IV) dichloride** *(148347-90-4)*
$(C_{19}H_{25})_2ZrCl_2$; FW: 668.93; orange pwdr.
moisture sensitive
For detailed technical note visit strem.com.
100mg 500mg

40-1060 amp **Bis(tetramethylcyclopentadienyl)zirconium dichloride, min. 97%** *(119445-90-8)*
$[(CH_3)_4C_5H]_2ZrCl_2$; FW: 404.53; off-white pwdr.
moisture sensitive
1g 5g 25g

40-1080 **n-Butylcyclopentadienylzirconium trichloride** *(329735-75-3)*
$[(C_4H_9)C_5H_4]ZrCl_3$; FW: 318.78; dark orange solid
moisture sensitive, (store cold)
1g 5g

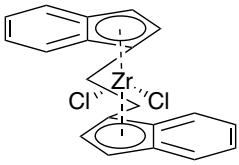
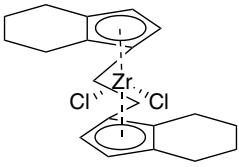
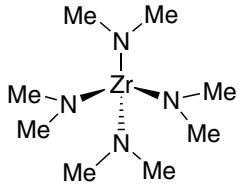
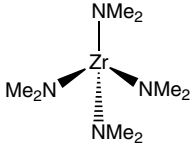
40-1100 amp **Cyclopentadienylzirconium trichloride, min. 98%** *(34767-44-7)*
$(C_5H_5)ZrCl_3$; FW: 262.67; off-white to tan pwdr.; m.p. 237° dec.
moisture sensitive
1g 5g

40-1110 **Dimethylbis(t-butylcyclopentadienyl)zirconium, min. 98%** *(68193-40-8)*
$[(C_4H_9)C_5H_4]_2Zr(CH_3)_2$; FW: 363.70; pale yellow pwdr.
air sensitive, moisture sensitive
250mg 1g 5g

40-1115 **[Dimethylbis(cyclopentadienyl)silyl]zirconium dichloride, min. 98%** *(86050-32-0)*
$[(CH_3)_2Si(C_5H_4)_2]ZrCl_2$; FW: 348.46; yellow xtl.
moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.
1g 5g

40-1120 **Dimethylbis(indenyl)zirconium, min. 98%** *(49596-04-5)*
$(C_9H_7)_2Zr(CH_3)_2$; FW: 351.60; off-white pwdr.
air sensitive, moisture sensitive
1g 5g

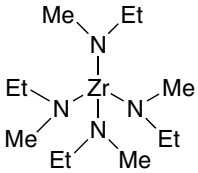
ZIRCONIUM (Compounds)

40-1142	**rac-Dimethylsilylbis(1-indenyl)zirconium dichloride, min. 97%** *(121009-93-6)* $(CH_3)_2Si(C_9H_6)_2ZrCl_2$; FW: 448.53; orange pwdr. *moisture sensitive* **For detailed technical note visit strem.com.**	100mg 500mg
40-1150	**rac-Ethylenebis(indenyl)zirconium(IV) dichloride** *(100080-82-8)* $C_{20}H_{16}ZrCl_2$; FW: 418.48; yellow to orange pwdr. *moisture sensitive* 	1g 5g
40-1400	**rac-Ethylenebis(4,5,6,7-tetrahydro-1-indenyl) zirconium dichloride** *(100163-29-9)* $C_2H_4(C_9H_{10})_2ZrCl_2$; FW: 426.54; white to pale yellow pwdr. *moisture sensitive* **For detailed technical note visit strem.com.** 	100mg 500mg
40-1500 amp	**Pentamethylcyclopentadienylzirconium trichloride, 99%** *(75181-07-6)* $(CH_3)_5C_5ZrCl_3$; FW: 332.81; pale yellow xtl. *moisture sensitive*	1g 5g
40-1650 amp HAZ	**Tetrabenzylzirconium, min. 95%** *(24356-01-2)* $(C_6H_5CH_2)_4Zr$; FW: 455.75; yellow to orange solid *air sensitive, heat sensitive, moisture sensitive, (store cold)*	250mg 1g 5g
40-1700 HAZ	**Tetrachlorobis(tetrahydrofuran)zirconium** *(21959-01-3)* $ZrCl_4 \cdot 2C_4H_8O$; FW: 377.25; white xtl. *moisture sensitive*	10g 50g
93-4040 amp HAZ	**Tetrakis(diethylamino)zirconium, 99%** *(13801-49-5)* $Zr[N(CH_2CH_3)_2]_4$; FW: 379.74; yellow liq.; b.p. 112°/0.1mm; d. 1.026 *moisture sensitive, (store cold)*	5g 25g
40-4100 HAZ	**Tetrakis(dimethylamino)zirconium, 99% TDMAZ** *(19756-04-8)* $Zr[N(CH_3)_2]_4$; FW: 267.53; light yellow xtl.; m.p. 57-60°; b.p. 80°/0.1mm *moisture sensitive, (store cold)* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1. Available prepacked in ALD cylinder- see 98-4012 page 456. 	1g 5g 25g
98-4012 HAZ	**Tetrakis(dimethylamino)zirconium, 99% TDMAZ, 40-4100, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD** *(19756-04-8)* $Zr[N(CH_3)_2]_4$; FW: 267.53; light yellow xtl.; m.p. 57-60°; b.p. 80°/.01mm *moisture sensitive, (store cold)* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.	25g
40-4115 NEW amp HAZ	**Tetrakis(dimethylamino)zirconium(IV), 99% (99.99%-Zr) PURATREM TDMAZ** *(19756-04-8)* $Zr[N(CH_3)_2]_4$; FW: 267.53; light-yellow xtl.; m.p. 57-60°; b.p. 80° (0.1mm) *moisture sensitive, (store cold)* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1. 	1g 5g 25g
98-4042 NEW HAZ	**Tetrakis(dimethylamino)zirconium(IV), 99% (99.99%-Zr) TDMAZ, 40-4115, contained in 50ml Swagelok® cylinder (96-1070) for CVD/ALD** *(19756-04-8)* $Zr[N(CH_3)_2]_4$; FW: 267.53; light yellow xtl. *moisture sensitive, (store cold)* Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1	25g

ZIRCONIUM (Compounds)

40-1710
amp
HAZ

Tetrakis(ethylmethylamino)zirconium(IV), 99% TEMAZ
(175923-04-3)
$Zr[N(CH_3)(CH_2CH_3)]_4$; FW: 323.63; light yellow liq.;
d. 1.0499
moisture sensitive
Note: Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1.
Available prepacked in ALD cylinder- see 98-4039.



1g
5g
25g

98-4039
HAZ

Tetrakis(ethylmethylamino)zirconium(IV) 99% TEMAZ, 40-1710, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD *(175923-04-3)*
$Zr[N(CH_3)(CH_2CH_3)]_4$; FW: 323.63; light yellow liq.
moisture sensitive
Note: High temperature Swagelok® cylinder assembly 96-1071 available at extra cost. Product sold under, use subject to, terms and conditions of label license at www.strem.com/harvard1

10g
25g

40-5000

Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato) zirconium(IV), 99% [Zr(TMHD)$_4$] *(18865-74-2)*
$Zr(C_{11}H_{19}O_2)_4$; FW: 824.30; white xtl.; m.p. 318-320°; b.p. subl. 180°/0.1mm

1g
5g
25g

93-4005

Zirconium(IV) acetylacetonate, min. 98% *(17501-44-9)*
$Zr(CH_3COCHCOCH_3)_4$; FW: 487.66; white pwdr.; m.p. 190°

25g
100g

93-4021
HAZ

Zirconium(IV) bromide, 98% (99+%-Zr) *(13777-25-8)*
$ZrBr_4$; FW: 410.86; off-white pwdr.; m.p. 450° (15 atm); d. 4.201
moisture sensitive

5g
25g

40-1749
amp

Zirconium(IV) t-butoxide, 99% *(2081-12-1)*
$Zr(OC_4H_9)_4$; FW: 383.68; slightly yellow liq.; b.p. 90°/5mm; f.p. 185°F; d. 0.96
moisture sensitive, (store cold)

5g
25g
4 x 25g

40-1750
amp

Zirconium(IV) t-butoxide (99.99%-Zr) PURATREM *(2081-12-1)*
$Zr(OC_4H_9)_4$; FW: 383.68; slightly yellow liq.; b.p. 90°/5mm; f.p. 185°F; d. 0.96
moisture sensitive, (store cold)

2g
10g
2 x 25g

93-4003
HAZ

Zirconium(IV) n-butoxide (76-80% in n-butanol) *(1071-76-7)*
$Zr(OC_4H_9)_4$; FW: 383.68; orange liq.; f.p. 101°F; d. 1.063
moisture sensitive

50g
250g
1kg

93-4006
HAZ

Zirconium carbide (99+%-Zr) *(12070-14-3)*
ZrC; FW: 103.23; 3 micron black pwdr.; m.p. 3540°; b.p. 5100°; d. 6.73

25g
100g

93-4007

Zirconium(IV) carbonate, basic hydrate *(12671-00-0)*
$[Zr_3(CO_3)O_5]H_2O$; FW: 431.68; white pwdr.

500g
2kg

93-4045
HAZ

Zirconium(IV) chloride (99.5+%-Zr) *(10026-11-6)*
$ZrCl_4$; FW: 233.03; white pwdr.; m.p. 437° (25 atm); b.p. 331° subl.; d. 2.803
moisture sensitive

50g
250g

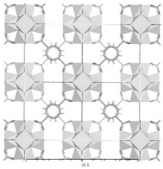
40-4046
HAZ

Zirconium(IV) chloride, sublimed grade (99.95+%-Zr) *(10026-11-6)*
$ZrCl_4$; FW: 233.03; white pwdr.; m.p. 437° (25 atm); b.p. 331° subl.; d. 2.803
moisture sensitive

50g
250g
1kg

40-1105

Zirconium 1,4-dicarboxybenzene MOF (UiO-66)
(1072413-89-8)
$C_{48}H_{28}O_{32}Zr_6$; FW: 1664.06; white pwdr.; SA: > 1100m^{2}g
Note: Sold under license from Inven2 AS for research purposes only. EP 09738396 and US 12/989,641.
For detailed technical note visit strem.com.



500mg
2g

93-4036
HAZ

Zirconium(IV) dichloride oxide hydrate (99.9%-Zr) *(15461-27-5)*
$ZrOCl_2 \cdot XH_2O$; FW: 178.13; white pwdr.; d. 1.910

25g
100g

40-2500
HAZ

Zirconium(IV) dichloride oxide hydrate (99.99+%-Zr) PURATREM *(15461-27-5)*
$ZrOCl_2 \cdot XH_2O$; FW: 178.13; white xtl.

25g
100g

93-4042
HAZ

Zirconium(IV) dinitrate oxide hydrate *(14985-18-3)*
$ZrO(NO_3)_2 \cdot XH_2O$; FW: 231.23; white pwdr.

50g
250g

93-4043
HAZ

Zirconium(IV) ethoxide, 99+% *(18267-08-8)*
$Zr(OC_2H_5)_4$; FW: 271.47; white pwdr.; m.p. 171-173°
moisture sensitive

5g
25g

ZIRCONIUM (Compounds)

93-4023	**Zirconium(IV) fluoride, 98%** *(7783-64-4)* ZrF_4; FW: 167.21; white pwdr.; m.p. ~600° subl.; d. 4.43 *moisture sensitive*	25g 100g
93-4024	**Zirconium(IV) fluoride (99.9%-Zr)** *(7783-64-4)* ZrF_4; FW: 167.21; -4 mesh white pwdr.; m.p. ~600° subl.; d. 4.43 *moisture sensitive*	10g 50g
40-3000	**Zirconium(IV) hexafluoroacetylacetonate** *(19530-02-0)* $Zr(CF_3COCHCOCF_3)_4$; FW: 919.47; white to off-white xtl.; m.p. 41-43°; b.p. 225° *hygroscopic*	5g 25g
93-4025	**Zirconium(IV) iodide (99.5%-Zr)** *(13986-26-0)* ZrI_4; FW: 598.84; reddish-brown pwdr.; m.p. 499° (6.3 atm) *moisture sensitive*	1g 5g
93-4034	**Zirconium nitride, 98%** *(25658-42-8)* ZrN; FW: 105.23; brown pwdr.; m.p. 2980°; d. 7.09	10g 50g
93-4013	**Zirconium(IV) oxide, 99+%** *(1314-23-4)* ZrO_2; FW: 123.22; white pwdr.; m.p. 2715°; d. 5.6	250g 1kg
40-4000	**Zirconium(IV) oxide-yttria stabilized, 99%** *(64417-98-7)* ZrO_2/10-15% Y_2O_3; -325 mesh (44 microns or less) pwdr.	100g 500g
40-4002	**Zirconium(IV) oxide-yttria stabilized, 99%** *(64417-98-7)* ZrO_2/10-15% Y_2O_3; -150 + 325 mesh pwdr.	100g 500g
40-4003	**Zirconium(IV) oxide-yttria stabilized (99.95%-Zr)** *(64417-98-7)* ZrO_2/5.2% Y_2O_3; < 3 micron pwdr. (precipitated)	100g 500g
93-4017 HAZ	**Zirconium(IV) n-propoxide (23-28% free alcohol)** *(23519-77-9)* $Zr(OC_3H_7)_4$; FW: 327.56; yellow liq.; f.p. 83°F; d. 1.05 *moisture sensitive*	250g 1kg
40-4016 HAZ	**Zirconium(IV) i-propoxide (isopropanol adduct) (99.9%-Zr)** *(14717-56-7)* $Zr(OC_3H_7)_4 \cdot C_3H_7OH$; FW: 327.56 (387.67); white xtl.; b.p. dec. *moisture sensitive*	10g 50g
93-4019	**Zirconium silicate, 98%** *(10101-52-7)* $ZrSiO_4$; FW: 183.30; white to off-white pwdr.; m.p. 2550°; d. 4.56	250g 1kg
93-4020	**Zirconium(IV) sulfate oxide hydrate** *(62010-10-0)* $ZrO(OH)_{0 \cdot 8}(SO_4)_{0 \cdot 6} \cdot XH_2$; FW: ~178.0; white pwdr.	500g 2kg
40-4750	**Zirconium(IV) sulfate tetrahydrate (99.99+%-Zr) PURATREM** *(7446-31-3)* $Zr(SO_4)_2 \cdot 4H_2O$; FW: 283.33 (355.39); white xtl.; m.p. 100° (-$3H_2O$)	25g 100g
93-4033	**Zirconium(IV) sulfide, 99%** *(12039-15-5)* ZrS_2; FW: 155.35; -200 mesh reddish-brown pwdr.; m.p. 1550°; d. 3.87	2g 10g
93-4026	**Zirconium(IV) trifluoroacetylacetonate, 99%** *(17499-68-2)* $Zr(CF_3COCHCOCH_3)_4$; FW: 703.54; white pwdr.; m.p. 125-128°; b.p. dec. 235° (subl. 130°/0.05mm)	1g 5g 25g
40-2750 HAZ	**Zirconyl 2-ethylhexanoate in mineral spirits (~6% Zr)** *(22464-99-9)* liq.; f.p. 104°F	100g 500g

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BIOCATALYST KITS - CalB immo KIT™ - Immobilized Enzyme

96-4050 NEW

CalB immo KIT™ - Immobilized enzyme
Store in dry conditions (2-8°C). Do not freeze. Shelf Life: 1 year;
Sold in collaboration with Purolite for research purposes only.
Components also available for individual sale.
Contains the following:

07-3130	CalB immo Plus™ - Immobilized enzyme	10g	See page 14
07-3142	CalB immo 8285™ - Immobilized enzyme	10g	See page 14
07-3148	CalB immo 8806™ - Immobilized enzyme	10g	See page 14
07-3152	CalB immo 5587™ - Immobilized enzyme	10g	See page 14
07-3155	CalB immo 1090™ - Immobilized enzyme	10g	See page 13
07-3159	CalB immo 5872™ - Immobilized enzyme	10g	See page 14

Item #	Immobilized on	Immobilization	Enzyme activity (PLU/g dry)
07-3130	DVB/methacrylate	Adsorption	>9,000
07-3142	Epoxy/butyl methacrylate	Covelent	>10,000
07-3148	Octadecyl methacrylate	Adsorption	>10,000
07-3152	Styrene/DVB copolymer	Adsorption	>4,000
07-3155	Macroporous styrene/DVB	Adsorption	>8,000
07-3159	Styrene/DVB	Adsorption	>3,500

Appearance: White to slightly yellow spherical beads, free from foreign matter
Principal Applications: Screening of immobilized lipases for process development, Esterifications (regio- and stereo-selective), Transesterfication, Amidation, Fats and oils modification
Advantages: Fast screening in process development, Wide selection of enzyme carriers for different applications

BIOCATALYST KITS - Lipase immo Kit - Immobilized Enzymes

96-4065 NEW

Lipase immo Kit - Immobilized enzymes
The KIT contains 10g of each of the following:
- CalB immo Plus™(Lipase from Candida antarctica B)*07-3130*
- CalA immo (Lipase from Candida antarctica A)
- TL immo (Lipase from Thermomyces lanuginosa)
- RM immo (Lipase from Rhizomucor miehei)
- CR immo (Lipase from Candida rugosa)
- PS immo (Lipase from Pseudomonas cepacia)

A selection of immobilized lipases on different Lifetech™ ECR enzyme carrier resins for screening purposes.
Store in dry conditions (2-8°C). Do not freeze.
Sold in collaboration with Purolite for research purposes only.

Principal Applications: Esterifications (regio - and stereo-selective), Transesterfication, Kinetic resolution of racemic alcohols, amines, esters and triacylclycerides, Fats and oils modification, Hydrolysis of esters
Advantages: Fast screening in process development, Wide selection of immobilized lipases, Optimal for all applictions in organic solvents.

BIOCATALYST KITS - Novozymes Endoprotease Screening Kit

96-0224 NEW

Novozymes Endoprotease Screening Kit (contains 6 endoprotease enzymes)
Store at 0-10°C. DO NOT FREEZE. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes
Components also available for individual sale.
Contains the following:

06-3110	Alcalase® 2.4 L FG *(9014-01-1)*	10g	See page 13
06-3112	Alcalase® 2.5 L *(9014-01-1)*	10g	See page 13
06-3115	Esperase® 8.0 L *(9014-01-1)*	10g	See page 20
06-3137	Savinase® 12 T *(9014-01-1)*	10g	See page 22
06-3150	Savinase® 16 L *(9014-01-1)*	10g	See page 22
06-3160	Neutrase® 0.8 L *(9080-56-2)*	10g	See page 21

Item#	Density	Activity	Formulation	Optimal Conditions	Substrate Specificity
06-3110	1.17	2.4 AU-A/g	Liquid	30-65°C, pH 7-9	Serine endopeptidase
06-3112	1.08	2.5 AU-A/g	Liquid	30-65°C, pH 7-10	Serine endopeptidase
06-3115	1.07	8 KNPU-E/g	Liquid	pH 8-12.5	Serine endopeptidase
06-3137	1.13	12 KNPU S/g	Granulate	30-70°C, pH 8-10	Serine endopeptidase
06-3150	1.16	16 KNPU S/g	Liquid	30-70°C, pH 8-10	Serine endopeptidase
06-3160	1.26	0.8 AU/g	Liquid	40-50°C, pH 7	Metalloprotease
Optimal storage is 0-10°C/32-50°F. If stored above 25°C/77°F the samples should be used within 3 months.					

BIOCATALYST KITS - Novozymes Lipase Screening Kit

96-0220 NEW

Novozymes Lipase Screening Kit (contains 9 lipase enzymes)
Store at 0-10°C. DO NOT FREEZE. Sold in collaboration with Novozymes A/S. Novozymes does not promote nor support the use of enzymes as Active Pharmaceutical Ingredients or excipients. www.strem.com/novozymes
Components also available for individual sale.
Contains the following:

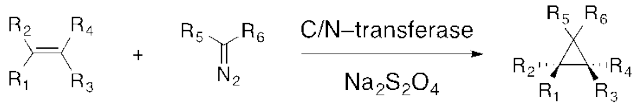
06-3100	NovoCor® AD L *(9001-62-1)*	10g	See page 21
06-3105	Lipozyme® CALB L *(9001-62-1)*	10g	See page 20
06-3118	Palatase® 20000 L *(9001-62-1)*	5g	See page 22
06-3120	Novozym® 40086 *(9001-62-1)*	5g	See page 21
06-3123	Novozym® 435 *(9001-62-1)*	5g	See page 21
06-3125	Resinase® HT *(9001-62-1)*	10g	See page 22
06-3135	Novozym® 51032 *(9001-62-1)*	10g	See page 21
06-3140	Lipozyme® TL 100 L *(9001-62-1)*	10g	See page 20
06-3155	Lipozyme® TL IM *(9001-62-1)*	10g	See page 21

Item#	Density	Activity	Formulation	Optimal Conditions	Substrate Specificity
06-3100	1.17	6000 LU/g	Liquid	30-60°C, pH 5-9	Sterically hindered esters
06-3105	1.20	5000 LU/g	Liquid	30-60°C, pH 5-9	Esters and alcohols
06-3118	1.19	20000 LU/g	Liquid	30-50°C, pH 7-10	Esters
06-3120	0.33	275 IUN/g	Immobilized Granulate	30-50°C, pH 7-10	Esters
06-3123	0.40	10000 PLU/g	Immobilized Granulate	30-60°C, pH 5-9	Esters and alcohols
06-3125	1.05	50 KLU/g	Liquid	up to 90°C, pH 5-8	Esters
06-3135	1.04	15 KLU/g	Liquid	35-70°C, pH 7-10	Esters
06-3140	1.05	100 KLU/g	Liquid	20-50°C, pH 7-10	Esters and diesters
06-3155	0.40	250 IUN/g	Immobilized Granulate	50-75°C, pH 6-8	Esters
Optimal storage is 0-10°C/32-50°F. If stored above 25°C/77°F the samples should be used within 3 months.					

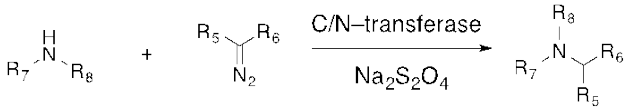
BIOCATALYST KITS - Provivi Carbene/Nitrene Transferase Screening Kit

96-1580 **Provivi Carbene/Nitrene Transferase Screening Kit**
NEW
Store dry at -20°C. Sold under license from Provivi for research purposes only.
HAZ

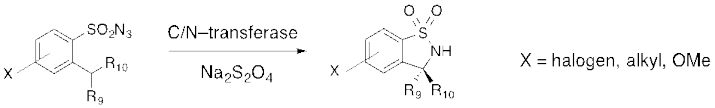
1. Reactions Catalyzed



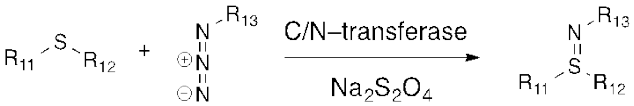
Synthesis of cyclopropanes via carbene transfer catalyzed by carbene/nitrene transferases.



Synthesis of substituted amines via carbene transfer catalyzed by carbene/nitrene ttransferases.



Synthesis of substituted benzosultams via nitrene transfer catalyzed by carbene/nitrene transferases.



Synthesis of sulfimides via nitrene transfer catalyzed by carbene/nitrene transferases.

2. Provivi C/N Transferase Screening Kit General Information

Provivi's proprietary enzymes can efficiently activate diazo and azide compounds to generate iron-carbenoids and iron-nitrenoids, respectively, through a mode of activation that has never been observed in nature. These intermediates can then react with a variety of substrates such as olefins, N-H bonds, C-H bonds, and sulfides, offering wide synthetic utility. After identifying initial activity on a reaction of interest, these enzymes can be further engineered and optimized (e.g. via directed evolution) to achieve high activity and stereoselectivity for a reaction of interest.

All reactions are best performed under anaerobic conditions. Cyclopropanes are synthesized by the reaction of a diazo carbene precursor (e.g. ethyl diazoacetate) with an olefin in the presence of a carbene/nitrene transferase as catalyst. The cyclopropanation instructions described in this technical note can be readily adapted for the other carbene and nitrene transfer reactions outlined above.

3. Provivi C/N Transferase Screening Kit Contents

- 24 vials (2 vials of each of 12 different enzymes, containing 50 nMoles of enzyme, enough for two screens) packed as lyophilized powders containing potassium phosphate in 2 ml screwcap vials
- 2 x 20 ml bottles containing 0.12 mMoles (25 mg) of 85% sodium dithionite (sodium hydrosulfite)

Each kit contains 12 different carbene/nitrene transfer enzymes as lyophilized powders together with potassium phosphate buffer. When reconstituted by the addition of deionized water and sodium dithionite as specified in the Screening Protocol in Section 4, each enzyme will be ready for immediate use under the desired reaction screening conditions: 50 nM/ml enzyme in 50mM potassium phosphate buffer, 10 mM sodium dithionite, pH 7.

Enzymes	PRVV-009	PRVV-010	PRVV-011	PRVV-013	PRVV-019	PRVV-032
	PRVV-034	PRVV-036	PRVV-040	PRVV-041	PRVV-042	PRVV-043

The enzymes should be stored dry at -20°C, and should be stable for more than 1 year under these conditions. We recommend that solutions of the enzymes be used the same day as they are prepared and not stored for extended periods of time. If storage of enzyme solutions is needed, we recommend storage at 4°C for periods of 1-2 days. For longer periods we recommend flash freezing the solutions and storage at −20°C.

BIOCATALYST KITS - Provivi Carbene/Nitrene Transferase Screening Kit

4. Screening Protocol

1. Add 12ml of deionized (DI) water to the bottle containing sodium sithionite and dissolve by inversion.
2. Purge the sodium dithionite solution with nitrogen or argon by bubbling for 5 minutes. Sodium dithionite solutions should be made immediately prior to use and kept anaerobic, as sodium dithionite undergoes air oxidation over time.
3. Add 1 ml of purged dithionite solution to each enzyme vial.
4. Add alkene (either neat or dissolved as 20% w/v in methanol or ethanol) to achieve a 1% w/v final concen tration (50 microliters of a 20% methanol/ethanol solutoin; final concentration of 10 mg alkene per ~1 ml reaction mixture). Do not worry if the alkene is not completely soluble. The reaction should still take place.
5. Add the diazo compound last (either neat or dissolved as 20% w/v in methanol or ethanol; ethyl diazoacetate is the most common choice and recommended as a positive control if another carbene precursor is used) to achieve 0.5% w/v final concentration (25 microliters of a 20% methanol/ethanol solution; 5mg diazo compound per ~1 ml reaction mixture) to initiate the reaction.
6. Allow reaction to proceed with mixing by shaking up to 800 rpm, taking samples at regular time points to analyze for product formation starting at 30 minutes. The reaction should be largely complete within 1-2 hours.
7. Samples may be quenched by the addition of each time point sample to an equal volume of extraction solvent (dichloromethane, hexane, and similar are recommended) for analysis by GC or HPLC. For a 1 ml reaction volume, samples of 0.2 ml can be withdrawn and diluted into 0.2 ml extraction solvent. If the product is water soluble, and/or if analysis will be by HPLC, quenching can be done by dilution of the sample into an equal volume of acetonitrile.

For tech support and questions: **enzymes@provivi.com**

5. Recommended Literature

Farwell, C.C., McIntosh, J.A., Hyster, T.K., Wang, Z.J. & Arnold, F.H., Enantioselective Imidation of Sulfides via Enzyme-Catalyzed Intermolecular Nitrogen-Atom Transfer *Journal of the American Chemical Society* **136**, 8766-8771 (2014).

Wang, Z.J., Renata, H., Peck, N.E., Farwell, C.C., Coelho, P.S. & Arnold, F.H., Improved Cyclopropanation Activity of Histidine-Ligated Cytochrome P450 Enables the Enantioselective Formal Synthesis of Levomilnacipran. *Angewandte Chemie Int Ed.* **126**, 6928-6931 (2014).

Wang, Z.J., Peck, N.E., Renata, H. & Arnold, F.H., Cytochrome P450-Catalyzed Insertion of Carbenoids into N-H Bonds. *Chemical Science (Royal Society of Chemistry : 2010)* **5**, 598-601 (2014).

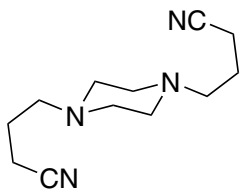
Coelho, P.S., Brustad, E.M., Kannan, A. & Arnold, F.H., Olefin Cyclopropanation via Carbene Transfer Catalyzed by Engineered Cytochrome P450 Enzymes. *Science (New York, N.Y.)* **339**, 307-310 (2013).

Coelho, P.S., Wang, Z.J., Ener, M.E., Baril, S.A., Kannan, A., Arnold, F.H. & Brustad, E.M., A serine-substituted P450 catalyzes highly efficient carbene transfer to olefins in vivo. *Nature Chemical Biology* **9**, 485-487 (2013).

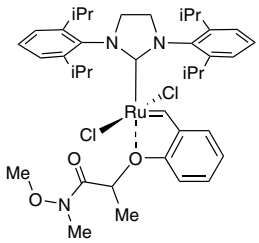
McIntosh J. A., Coelho, P.S., Farwell, C.C., Wang, Z.J., Lewis, J.C., Brown, T.R. & Arnold, F.H., Enantioselective intramolecular C-H amination catalyzed by engineered cytochrome P450 enzymes in vitro and in vivo. *Angewandte Chemie (International ed. in English)* **52**, 9309-9312 (2013).

CATALYST & ORGANOCATALYST KITS - Apeiron Ruthenium Metathesis Catalyst Kit

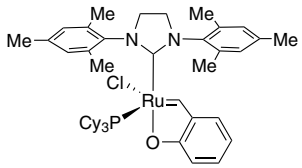
96-0400 **Apeiron Ruthenium Metathesis Catalyst Kit**
NEW
Sold in collaboration with Apeiron Synthesis, Inc.
Components also available for individual sale. Contains the following:



07-2203 1g



44-0750 100mg



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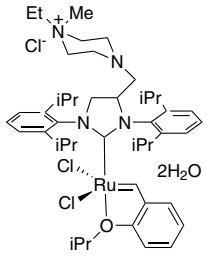

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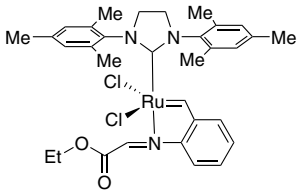

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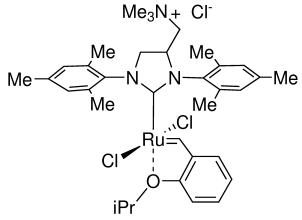
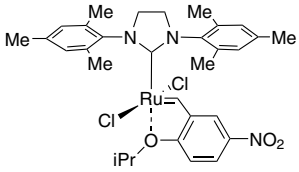
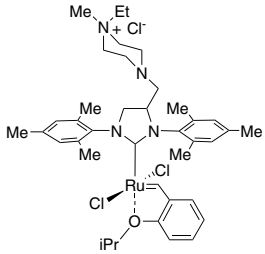


44-0765 100mg



44-0758 100mg



44-0768 100mg

07-2203	1,4-Bis(2-isocyanopropyl)piperazine (SnatchCat Metal Scavenger) *(51641-96-4)*	1g	See page 128
44-0750	[1,3-Bis(2,6-di-i-propylphenyl)imidazolidin-2-ylidene] {2-[[1-(methoxy(methyl)amino)-1-oxopropan-2-yl]oxy]benzylidene} ruthenium(II) dichloride GreenCat *(1448663-06-6)*	100mg	See page 365
44-0753	[1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)] (tricyclohexylphosphine)-(2-oxobenzylidene)ruthenium(II) chloride LatMet *(1407229-58-6)*	100mg	See page 368
44-0758	[1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)]-(2-i-propoxy-5-nitrobenzylidene)ruthenium(II) dichloride nitro-Grela *(502964-52-5)*	100mg	See page 368
44-0759	(1,3-Bis(2,6-diisopropylphenyl)-4-((4-ethyl-4-methylpiperzain-1-ium-1-yl)methyl)imidazolidin-2-ylidene)(2-isopropoxybenzylidene) ruthenium(II) chloride dihydrate FixCat *(1799947-97-9)*	100mg	See page 365
44-0760	Dichloro(1,3-dimesitylimidazolidin-2-ylidene){2-[(ethoxy-2-oxoethylidene)amino]benzylidene} ruthenium(II) HeatMet	100mg	See page 391
44-0765	[1,3-Bis(2,4,6-trimethylphenyl)-4-[(trimethylammonio)methyl] imidazolidin-2-ylidene]-(2-i-propoxybenzylidene)dichlororuthenium(II) chloride StickyCat CI *(1452227-72-3)*	100mg	See page 368
44-0768	[1,3-Bis(2,4,6-trimethylphenyl)-4-[(4-ethyl-4-methylpiperazin-1-ium-1-yl)methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene) dichlororuthenium(II) chloride AquaMet *(1414707-08-6)*	100mg	See page 367

CATALYST & ORGANOCATALYST KITS - BASF Blocking Group Removal Catalyst Kit

96-6715	**BASF Blocking Group Removal Catalyst Kit** Sold in collaboration with BASF for research purposes only. Components also available for individual sale. Contains the following:		
46-1905	Palladium, 10% on activated wood carbon, reduced, 50% water wet (Escat™ 1931) *(7440-05-3)*	10g	See page 224
46-1906	Palladium, 10% on activated wood carbon, unreduced, 50% water wet (Escat™ 1921) *(7440-05-3)*	10g	See page 224
46-1907	Palladium, 3% on activated carbon, reduced, 50% water wet paste (Escat™ 1911) *(7440-05-3)*	10g	See page 222
46-1908	Palladium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 1941) *(7440-05-3)*	10g	See page 222
46-1909	Palladium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 1961) *(7440-05-3)*	10g	See page 222
46-1911	Palladium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 1971) *(7440-05-3)*	10g	See page 222

CATALYST & ORGANOCATALYST KITS - BASF Heterogeneous Catalyst Kit

96-6717 HAZ	**BASF Heterogeneous Catalyst Kit** Product offered is commercial grade, sold in collaboration with BASF for research purposes only. Components also available for individual sale. Contains the following:		
44-4065	Ruthenium, 5% on activated carbon, reduced, 50% water wet paste (Escat™ 4401) *(7440-18-8)*	5g	See page 362
45-1875	Rhodium, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 3401) *(7440-16-6)*	1g	See page 348
46-1707	Palladium, 20% on activated carbon (Pearlman's catalyst), unreduced, 50% water wet paste (Escat™ 1951) *(7440-05-3)*	5g	See page 222
46-1710	Palladium, 0.6% on activated carbon, 50% water-wet paste (NanoSelect LF 100) *(7440-05-3)*	5g	See page 223
46-1901	Palladium, 5% on activated peat carbon, reduced, 50% water wet paste (Escat™ 1621) *(7440-05-3)*	10g	See page 223
46-1902	Palladium, 5% on activated wood carbon, reduced, dry (Escat™ 1431) *(7440-05-3)*	10g	See page 223
46-1903	Palladium, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 1421) *(7440-05-3)*	10g	See page 224
46-1904	Palladium, 5% on activated wood carbon, unreduced, 50% water wet paste (Escat™ 1471) *(7440-05-3)*	10g	See page 224
46-1905	Palladium, 10% on activated wood carbon, reduced, 50% water wet (Escat™ 1931) *(7440-05-3)*	10g	See page 224
46-1951	Palladium, 5% on alumina powder, reduced, dry (Escat™ 1241) *(7440-05-3)*	5g	See page 224
78-1611	Platinum, 5% on activated wood carbon, reduced, dry (Escat™ 2431) *(7440-06-4)*	5g	See page 334
78-1612	Platinum, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 2421) *(7440-06-4)*	5g	See page 334
78-1613	Platinum, 5% on activated carbon, unreduced, 50% water wet paste (Escat™ 2441) *(7440-06-4)*	5g	See page 334

CATALYST & ORGANOCATALYST KITS - BASF Palladium Catalyst Kit

96-6719 HAZ — **BASF Palladium Catalyst Kit**
Product offered is commercial grade, sold in collaboration with BASF for research purposes only. Components also available for individual sale. Contains the following:

46-1707	Palladium, 20% on activated carbon (Pearlman's catalyst), unreduced, 50% water wet paste (Escat™ 1951) *(7440-05-3)*	5g	See page 222
46-1710	Palladium, 0.6% on activated carbon, 50% water-wet paste (NanoSelect LF 100) *(7440-05-3)*	5g	See page 223
46-1901	Palladium, 5% on activated peat carbon, reduced, 50% water wet paste (Escat™ 1621) *(7440-05-3)*	10g	See page 223
46-1902	Palladium, 5% on activated wood carbon, reduced, dry (Escat™ 1431) *(7440-05-3)*	10g	See page 223
46-1903	Palladium, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 1421) *(7440-05-3)*	10g	See page 224
46-1904	Palladium, 5% on activated wood carbon, unreduced, 50% water wet paste (Escat™ 1471) *(7440-05-3)*	10g	See page 224
46-1905	Palladium, 10% on activated wood carbon, reduced, 50% water wet (Escat™ 1931) *(7440-05-3)*	10g	See page 224
46-1906	Palladium, 10% on activated wood carbon, unreduced, 50% water wet (Escat™ 1921) *(7440-05-3)*	10g	See page 224
46-1951	Palladium, 5% on alumina powder, reduced, dry (Escat™ 1241) *(7440-05-3)*	5g	See page 224

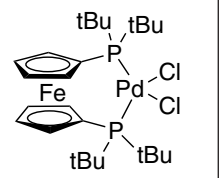
CATALYST & ORGANOCATALYST KITS - BASF Platinum Catalyst Kit

96-6721 HAZ — **BASF Platinum Catalyst Kit**
Product offered is commercial grade, sold in collaboration with BASF for research purposes only. Components also available for individual sale. Contains the following:

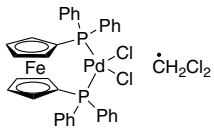
78-1611	Platinum, 5% on activated wood carbon, reduced, dry (Escat™ 2431) *(7440-06-4)*	5g	See page 334
78-1612	Platinum, 5% on activated wood carbon, reduced, 50% water wet paste (Escat™ 2421) *(7440-06-4)*	5g	See page 334
78-1613	Platinum, 5% on activated carbon, unreduced, 50% water wet paste (Escat™ 2441) *(7440-06-4)*	5g	See page 334
78-1614	Platinum, 3% on activated wood carbon, reduced, 70% water wet paste (Escat™ 2931) *(7440-06-4)*	5g	See page 334
78-1661	Platinum, 5% on alumina powder, reduced, dry (Escat™ 2941) *(7440-06-4)*	5g	See page 334
78-1892	Platinum(IV) oxide hydrate (~80-82% Pt) (99.95+%-Pt) ADAMS' CATALYST [BASF C7018] *(52785-06-5)*	1g	See page 338

CATALYST & ORGANOCATALYST KITS - [1,1'-Bis(dialkyl./diarylphosphino)ferrocene] palladium(II) dichloro Catalyst Kit

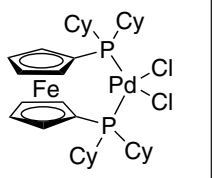
96-3735 — **[1,1'-Bis(dialkyl/diarylphosphino)ferrocene]palladium(II) dichloro Catalyst Kit**
Components also available for individual sale. Contains the following:



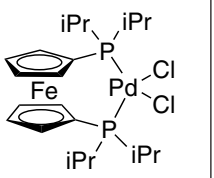
46-0445 500mg



46-0450 1g



46-0455 250mg

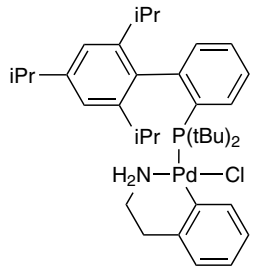


46-0460 500mg

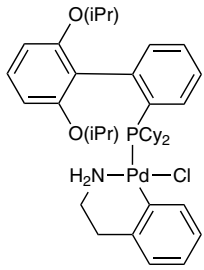
46-0445	Dichloro[1,1'-bis(di-t-butylphosphino) ferrocene]palladium(II), 99% *(95408-45-0)*	500mg	See page 236
46-0450	Dichloro 1,1'-bis(diphenylphosphino)ferrocene palladium (II) dichloromethane, 99% *(95464-05-4)*	1g	See page 238
46-0455	Dichloro[1,1'-bis(dicyclohexylphosphino)ferrocene]palladium(II), dichloromethane adduct, 99% *(917511-90-1)*	250mg	See page 237
46-0460	Dichloro[1,1'-bis(di-i-propylphosphino)ferrocene]palladium(II), 99% *(215788-65-1)*	500mg	See page 238

CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 1

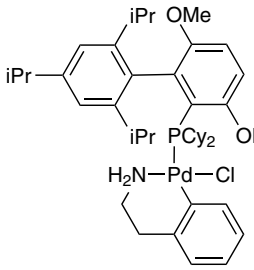
96-5503 **Buchwald Palladacycle Precatalyst Kit 1**
(Chloro-2-aminoethylphenyl- Palladacycles Gen. 1)
Patents US 6,395,916, US 6,307,087.
Components also available for individual sale.
Contains the following:



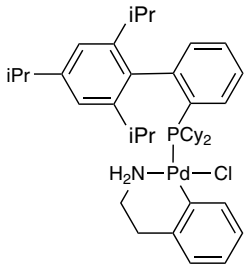
46-0264 100mg



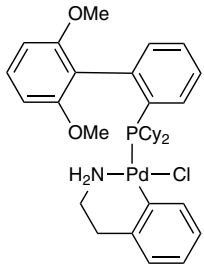
46-0266 100mg



46-0267 100mg



46-0268 250mg

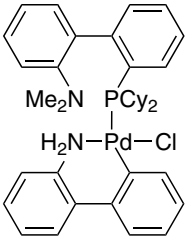


46-0269 250mg

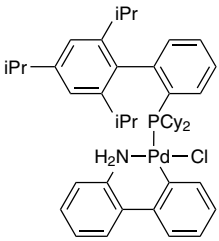
46-0264	Chloro(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl) [2-(2-aminoethyl)phenyl] palladium(II), min. 98% [t-BuXPhos Palladacycle Gen. 1] *(1142811-12-8)*	100mg	See page 231
46-0266	Chloro(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl) [2-(2-aminoethylphenyl)]palladium(II), methyl-t-butylether adduct, min. 98% [RuPhos Palladacycle Gen. 1] *(1028206-60-1)*	100mg	See page 232
46-0267	Chloro[2-(dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl][2-(2-aminoethyl)phenyl]palladium(II), min. 98% [BrettPhos Palladacycle Gen. 1] *(1148148-01-9)*	100mg	See page 231
46-0268	Chloro(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl) [2-(2-aminoethyl)phenyl] palladium(II) methyl-t-butylether adduct, min. 98% [XPhos Palladacycle Gen. 1] *(1028206-56-5)*	250mg	See page 232
46-0269	Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl) [2-(2-aminoethylphenyl)]palladium(II) methyl-t-butylether adduct, min. 98% [SPhos Palladacycle Gen. 1] *(1028206-58-7)*	250mg	See page 231

CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 3

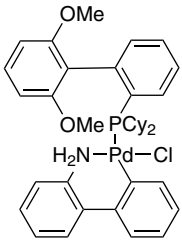
96-5508 **Buchwald Palladacycle Precatalyst Kit 3 (Chloro- 2'-amino-1,1'-biphenyl-2-yl - Palladacycles Gen. 2)**
Patents: US 6,395,916, US 6,307,087.
Components also available for individual sale.
Contains the following:



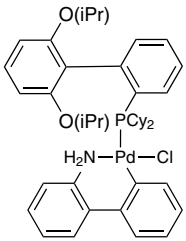
46-0232 250mg



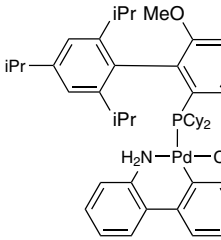
46-0281 250mg



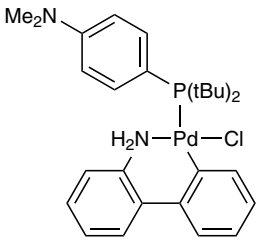
46-0283 250mg



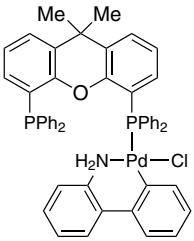
46-0286 250mg



46-0292 100mg



46-0342 250mg

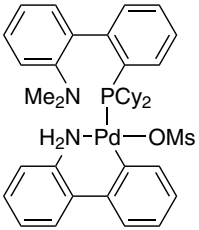


46-0955 500mg

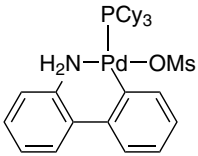
46-0232	Chloro[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DavePhos Palladacycle Gen. 2]	250mg	See page 232
46-0281	Chloro(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [XPhos Palladacycle Gen. 2] *(1310584-14-5)*	250mg	See page 232
46-0283	Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II) min. 98% [SPhos Palladacycle Gen. 2] *(1375325-64-6)*	250mg	See page 231
46-0286	Chloro(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 2] *(1375325-68-0)*	250mg	See page 232
46-0292	Chloro(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 2] *(1451002-39-3)*	100mg	See page 231
46-0342	Chloro{[4-(N,N-dimethylamino)phenyl]di-t-butylphosphino}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Amphos Palladacycle Gen. 2]	250mg	See page 233
46-0955	Chloro[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene][2'-amino-1,1'-biphenyl]palladium(II) dichloromethane adduct, min. 98% [Xantphos Palladacycle Gen. 2] *(1375325-77-1)*	500mg	See page 233

CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 2a

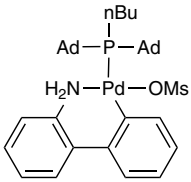
96-5505 **Buchwald Palladacycle Precatalyst Kit 2a (Methanesulfonato-2'-amino-1,1'-biphenyl-2-yl- Palladacycles Gen. 3)**
Patents: US 6,395,916, US 6,307,087.
Components also available for individual sale.
Contains the following:



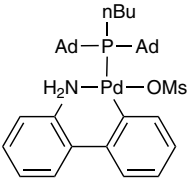
46-0237 250mg



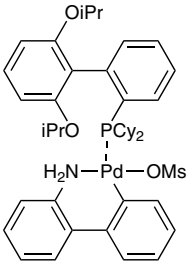
46-0239 250mg



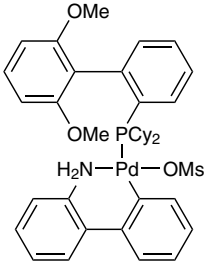
46-0278 250mg



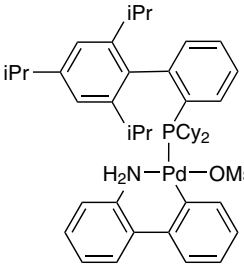
46-0278 250mg



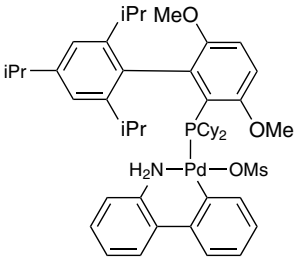
46-0314 250mg



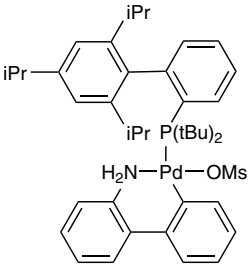
46-0318 250mg



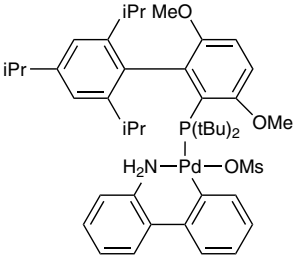
46-0320 250mg



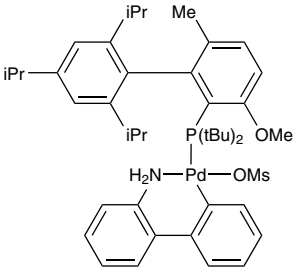
46-0322 100mg



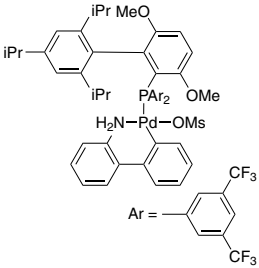
46-0323 250mg



46-0325 100mg

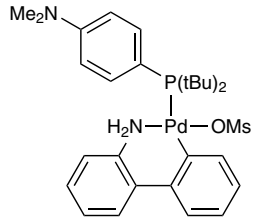


46-0335 100mg

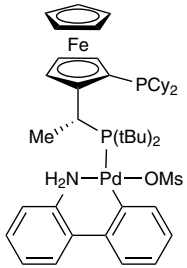


46-0340 100mg

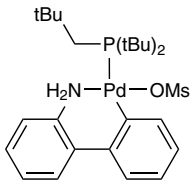
CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 2a



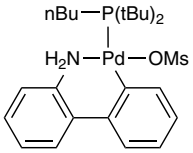
46-0345 250mg



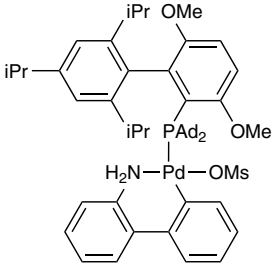
46-0353 250mg



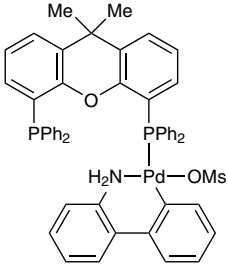
46-0358 250mg



46-0365 250mg



46-0480 50mg



46-0957 500mg

46-0237	Methanesulfonato[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II) CH_2Cl_2 adduct, min. 98% [DavePhos Palladacycle Gen. 3] *(1445085-87-9)*	250mg	See page 244
46-0239	Methanesulfonato(tricyclohexylphosphine)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [PCy3 Palladacycle Gen. 3] *(1445086-12-3)*	250mg	See page 246
46-0278	Methanesulfonato(diadamantyl-n-butylphosphino)-2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 95% [cataCXium® A Palladacycle Gen. 3]	250mg	See page 241
46-0314	Methanesulfonato(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 3] *(1445085-77-7)*	250mg	See page 244
46-0318	Methanesulfonato(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct min. 98% [SPhos Palladacycle Gen. 3] *(1445085-82-4)*	250mg	See page 243
46-0320	Methanesulfonato(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [Xphos Palladacycle Gen. 3] *(1445085-55-1)*	250mg	See page 245
46-0322	Methanesulfonato(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 3] *(1470372-59-8)*	100mg	See page 244
46-0323	Methanesulfonato(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [t-BuXPhos Palladacycle Gen. 3] *(1447963-75-8)*	250mg	See page 243
46-0325	Methanesulfonato(2-(di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), dichloromethane adduct, min. 98%[t-BuBrettPhos Palladacycle Gen. 3] *(1536473-72-9)*	100mg	See page 242
46-0335	Methanesulfonato(2-(di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RockPhos Palladacycle Gen. 3] *(2009020-38-4)*	100mg	See page 242
46-0340	Methanesulfonato[2-bis(3,5-di(trifluoromethyl)phenylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [JackiePhos Palladacycle Gen. 3]	100mg	See page 241

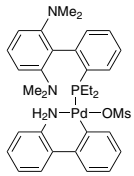
CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 2a

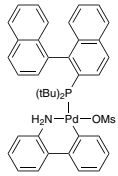
46-0345	Methanesulfonato{[4-(N,N-dimethylamino)phenyl]di-t-butylphosphino}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Amphos Palladacycle Gen. 3] *(1820817-64-8)*	250mg	See page 245
46-0353	Methanesulfonato{(R)-(-)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl]ethyldi-t-butylphosphine}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Josiphos Palladacycle Gen. 3] *(1702311-34-9)*	100mg	See page 245
46-0358	Methanesulfonato(di-t-butylneopentylphosphine)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DTBNpP Palladacycle Gen. 3] *(1507403-89-5)*	250mg	See page 242
46-0365	Methanesulfonato[di-t-butyl(n-butyl)phosphine](2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [P(t-Bu)$_2$(n-Bu) Palladacycle Gen. 3] *(1445086-17-8)*	250mg	See page 241
46-0480	Methanesulfonato[2-(di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [AdBrettPhos Palladacycle Gen. 3] *(1445972-29-1)*	50mg	See page 241
46-0957	Methanesulfonato[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene][2'-amino-1,1'-biphenyl]palladium(II) dichloromethane adduct, min. 98% [Xantphos Palladacycle Gen. 3] *(1445085-97-1)*	500mg	See page 246

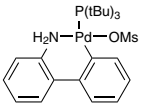
CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 2b

96-5506 NEW

Buchwald Palladacycle Precatalyst Kit 2b (Methanesulfonato-2'-amino-1,1'-biphenyl-2-yl- Palladacycles Gen. 3)
Patents: US 6,395,916, US 6,307,087.
Components also available for individual sale.
Contains the following:


46-0348 50mg


46-0357 100mg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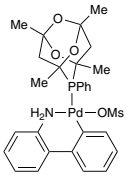
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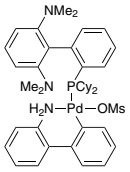
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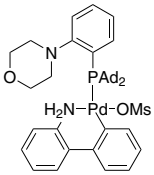
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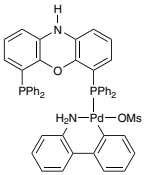
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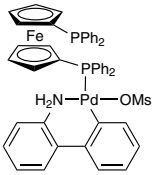
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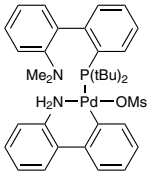
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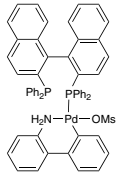
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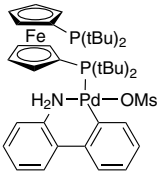
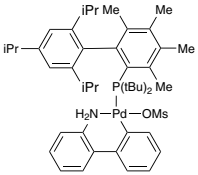

46-2158 250mg


46-2163 100mg

46-0348	Methanesulfonato[2-diethylphosphino-2',6'-bis(dimethylamino)-1,1-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [EtCPhos Palladacycle Gen. 3]	50mg	See page 245

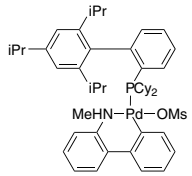
CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 2b

46-0357	Methanesulfonato(2-di-t-butylphosphino-1,1'-binaphthyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 95% [TrixiePhos Palladacycle Gen. 3]	100mg	See page 242
46-0387	Methanesulfonato(tri-t-butylphosphino)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), 98% [P(t-Bu)3 Palladacycle Gen. 3] *(1445086-17-8)*	250mg	See page 246
46-0392	Methanesulfonato(1,3,5,7-tetramethyl-8-phenyl-2,4,6-tri-oxa-8-phosphaadamantane)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [MeCgPPh Palladacycle Gen. 3]	500mg	See page 246
46-0487	Methanesulfonato(2-dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [CPhos Palladacycle Gen. 3] *(1447963-73-6)*	100mg	See page 243
46-0935	Methanesulfonato{N-[2-(di-1-adamantylphosphino)phenyl]morpholine}(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [Mor-DalPhos Palladacycle Gen. 3]	250mg	See page 241
46-0959	Methanesulfonato[4,6-bis(diphenylphosphino)phenoxazine](2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [NiXantphos Palladacycle Gen. 3] *(1602922-03-1)*	100mg	See page 240
46-2128	Methanesulfonato[1,1'-bis(diphenylphosphino)ferrocene)](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DPPF Palladacycle Gen. 3] *(1445086-28-1)*	250mg	See page 240
46-2135	Methanesulfonato[2-(di-t-butylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [t-BuDavePhos Palladacycle Gen. 3] *(1445085-92-6)*	250mg	See page 242
46-2153	Methanesulfonato[2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BINAP Palladacycle Gen. 3]	250mg	See page 240
46-2158	Methanesulfonato(1,1'-bis(di-t-butylphosphino)ferrocene)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DTBPF Palladacycle Gen. 3]	250mg	See page 240
46-2163	Methanesulfonato(2-di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propylbiphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 95% [Me4 t-ButylXPhos Palladacycle Gen. 3] *(1507403-85-1)*	100mg	See page 243

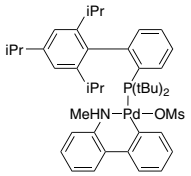
CATALYST & ORGANOCATALYST KITS - Buchwald Palladacycle Precatalyst Kit 4

96-5512 NEW

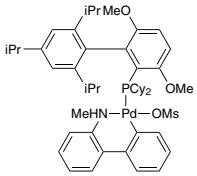
Buchwald Palladacycle Precatalyst Kit 4 (Methanesulfonato-2'-methylamino-1,1'-biphenyl-2-yl- Palladacycles Gen. 4)
Patents: PCT/US2013/030779, US Serial No. 13/799620
Components also available for individual sale.
Contains the following:



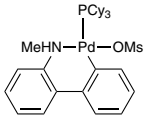
46-0327 250mg



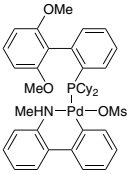
46-0330 250mg



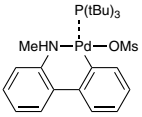
46-0333 250mg



46-0379 250mg



46-0380 250mg



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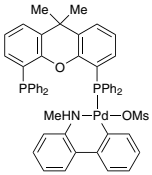
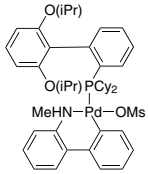


46-0388 250mg



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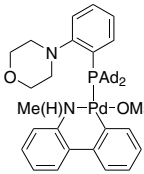
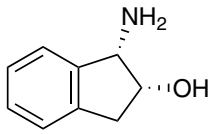


46-0940 250mg

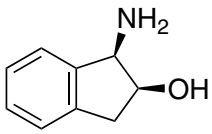
46-0327	Methanesulfonato(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [XPhos Palladacycle Gen. 4] *(1599466-81-5)*	250mg	See page 245
46-0330	Methanesulfonato(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [t-BuXphos Palladacycle Gen. 4] *(1599466-89-3)*	250mg	See page 243
46-0333	Methanesulfonato(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 4] *(1599466-83-7)*	250mg	See page 244
46-0379	Methanesulfonato(tricyclohexylphosphino)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [PCy_3 Palladacycle Gen. 4]	250mg	See page 247
46-0380	Methanesulfonato(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct min. 98% [SPhos Palladacycle Gen. 4] *(1599466-87-1)*	250mg	See page 244
46-0385	Methanesulfonato(tri-t-butylphosphino)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [$P(t\text{-}Bu)_3$ Palladacycle Gen. 4] *(1621274-11-0)*	250mg	See page 246
46-0388	Methanesulfonato[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene](2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [Xantphos Palladacycle Gen. 4] *(1621274-19-8)*	250mg	See page 246
46-0395	Methanesulfonato(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 4] *(1599466-85-9)*	250mg	See page 245
46-0940	Methanesulfonato{N-[2-(di-1-adamantylphosphino)phenyl]morpholine}(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% MorDalphos Palladacycle Gen. 4	250mg	See page 241

CATALYST & ORGANOCATALYST KITS - CATHy™ Catalyst Kit

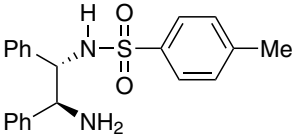
96-7650 **CATHy™ Catalyst Kit for Asymmetric Transfer Hydrogenation of Ketones and Imines**
For asymmetric transfer hydrogenation of ketones and imines.
Components also available for individual sale.
Contains the following:



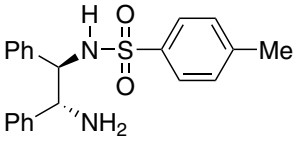
07-0200 1g



07-0201 1g



07-2370 500mg



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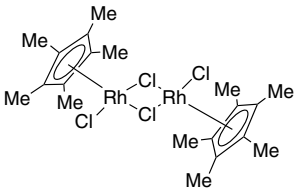
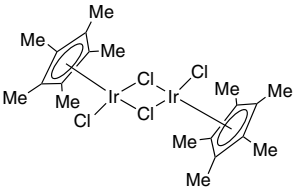


45-0195 500mg



77-1060 500mg

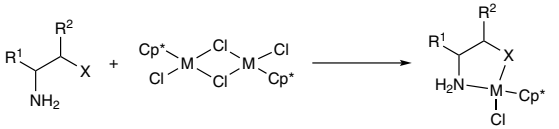
Chiral Bidentate Nitrogen Ligands

07-0200	(1S,2R)-(-)-cis-1-Aminoindan-2-ol, 98% *(126456-43-7)*	1g	See page 178
07-0201	(1R,2S)-(+)-cis-1-Aminoindan-2-ol, 98% *(136030-00-7)*	1g	See page 178
07-2370	(1S,2S)-(+)-N-(4-toluenesulfonyl)-1,2-diphenylethylenediamine, 98% (S,S)-TsDPEN *(167316-27-0)*	500mg	See page 210
07-2371	(1R,2R)-(-)-N-(4-toluenesulfonyl)-1,2-diphenylethylenediamine, 98% (R,R)-TsDPEN *(144222-34-4)*	500mg	See page 210

Rhodium & Iridium Components

45-0195	Dichloro(pentamethylcyclopentadienyl)rhodium(III) dimer, 99% *(12354-85-7)*	500mg	See page 357
77-1060	Dichloro(pentamethylcyclopentadienyl)iridium(III) dimer, 98% *(12354-84-6)*	500mg	See page 90

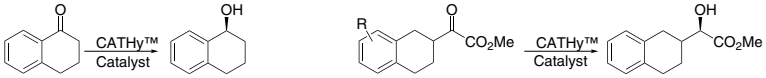
Catalyst Preparation



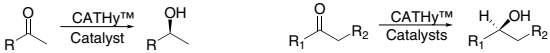
CATHy™ Catalyst

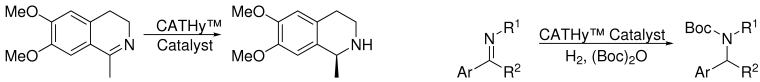
Technical Notes:
1. Catalyst for asymmetric ketone reduction in organic and aqueous media
2. Catalyst for asymmetric imine reduction in organic and aqueous media
3. Catalyst for asymmetric oxidative lactonizations of meso-diols
4. Catalyst for asymmetric transfer hydrogenation of quinolines

CATALYST & ORGANOCATALYST KITS - CATHy™ Catalyst Kit

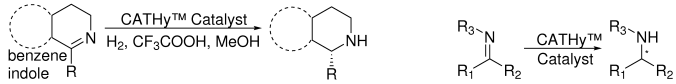


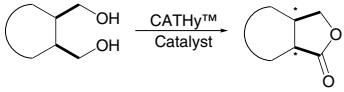
Tech. Note (1)
Ref. (1-7)



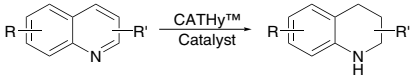


Tech. Note (2)
Ref. (1, 8-10)





Tech. Note (3)
Ref. (11)



Tech. Note (4)
Ref. (12-13)

References:

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2. *Tetrahedron,* **2006**, *62*, 1864
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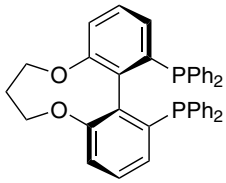
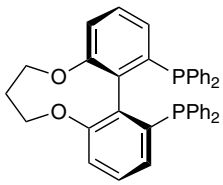
CATALYST & ORGANOCATALYST KITS - Chiral Quest Catalyst & Ligand Toolbox Kit

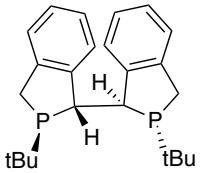
96-5900 **Chiral Quest Catalyst and Ligand Toolbox Kit for Asymmetric Hydrogenation**
Components also available for individual sale. Contains the following:



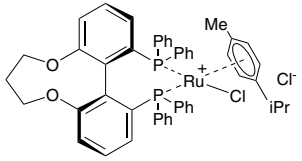
15-0175 100mg



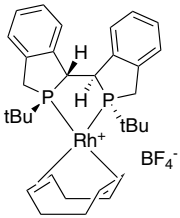
15-0176 100mg



15-1060 100mg



44-0109 100mg

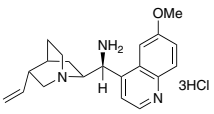


45-0663 100mg

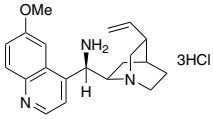
15-0175	R-(-)-1,13-Bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5] dioxonin, 97% (R)-C_3-TUNEPHOS *(301847-89-2)*	100mg	See page 268
15-0176	(S)-(+)-1,13-Bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5] dioxonin, 95% (S)-C_3-TUNEPHOS *(486429-99-6)*	100mg	See page 268
15-1060	(1R,1'R,2S,2'S)-(+)-2,2'-Di-t-butyl-2,3,2',3'-tetrahydro-1,1'-bi-1H-isophosphindole, min. 98% (R,R,S,S)-DUANPHOS *(528814-26-8)*	100mg	See page 291
44-0109	Chloro{(R)-(-)-1,13-bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin}(p-cymene)ruthenium(II) chloride (R)-C_3-TUNEPHOS-Ru	100mg	See page 374
45-0663	(1R,1'R,2S,2'S)-(+)-2,2'-Di-t-butyl-2,3,2',3'-tetrahydro-1,1'-bi-1H-isophosphindole(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R,S,S)-DUANPHOS-Rh	100mg	See page 357

CATALYST & ORGANOCATALYST KITS -Cinchona Alkaloid-Derived Organocatalyst Kit

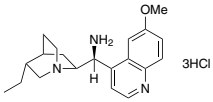
96-1575 **Cinchona Alkaloid-Derived Organocatalyst Kit - (enantiopure primary amines) for Iminium-Enamime Activation**
Components also available for individual sale.
Contains the following:



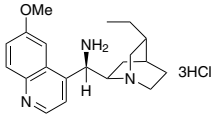
07-1710 100mg



07-1715 100mg



07-1718 100mg

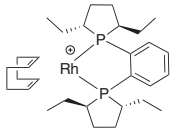


07-1722 100mg

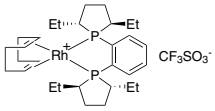
07-1710	(8α, 9S)-6'-Methoxycinchonan-9-amine trihydrochloride, min. 90% *(1231763-32-8)*	100mg	See page 202
07-1715	(8α, 9R)-6'-Methoxycinchonan-9-amine trihydrochloride, min. 90%	100mg	See page 202
07-1718	(8α, 9S)-10,11-Dihydro-6'-methoxycinchonan-9-amine trihydrochloride, min. 90% *(852913-53-2)*	100mg	See page 196
07-1722	(9R)-10,11-Dihydro-6'-methoxycinchonan-9-amine trihydrochloride, min. 90% *(931098-92-9)*	100mg	See page 196

CATALYST & ORGANOCATALYST KITS - (R,R)-Duphos & BPE Rhodium Catalyst Kit

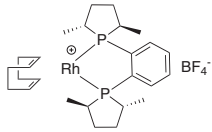
96-4730 **(R,R)-Duphos and BPE Rhodium Catalyst Kit for Asymmetric Hydrogenation**
Components also available for individual sale.
Contains the following:



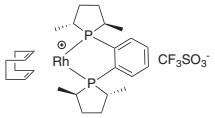
45-0148 100mg



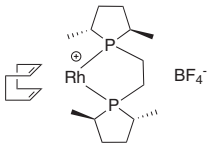
45-0150 100mg



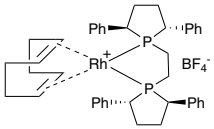
45-0158 100mg



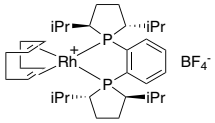
45-0160 100mg



45-0168 100mg



45-0201 100mg

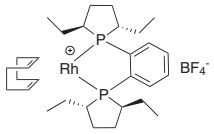


45-0210 100mg

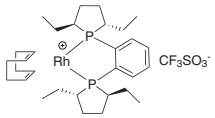
45-0148	(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Et-DUPHOS-Rh *(228121-39-9)*	100mg	See page 349
45-0150	(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (R,R)-Et-DUPHOS-Rh *(136705-77-6)*	100mg	See page 349
45-0158	(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Me-DUPHOS-Rh *(210057-23-1)*	100mg	See page 350
45-0160	(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I)trifluoromethanesulfonate, 98+% (R,R)-Me-DUPHOS-Rh *(187682-63-9)*	100mg	See page 351
45-0168	(+)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)ethane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, 98+% (R,R)-Me-BPE-Rh *(305818-67-1)*	100mg	See page 351
45-0201	(-)-1,2-Bis((2R,5R)-2,5-diphenylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R)-Ph-BPE-Rh *(528565-84-6)*	100mg	See page 353
45-0210	(+)-1,2-Bis((2R,5R)-2,5-di-i-propylphospholano)benzene)1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R)-i-Pr-DUPHOS-Rh *(569650-64-2)*	100mg	See page 354

CATALYST & ORGANOCATALYST KITS - (S,S)-Duphos & BPE Rhodium Catalyst Kit

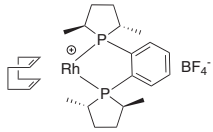
96-4731 **(S,S)-Duphos and BPE Rhodium Catalyst Kit for Asymmetric Hydrogenation**
Components also available for individual sale.
Contains the following:



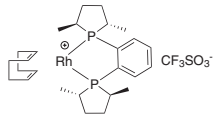
45-0149 100mg



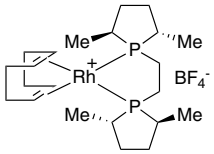
45-0151 100mg



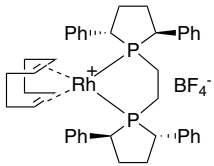
45-0159 100mg



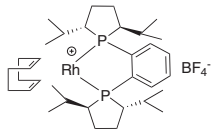
45-0161 100mg



45-0169 100mg



45-0202 100mg

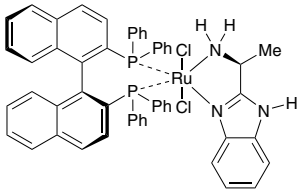


45-0211 100mg

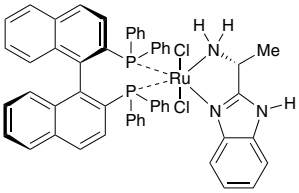
45-0149	(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (S,S)-Et-DUPHOS-Rh *(213343-64-7)*	100mg	See page 349
45-0151	(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (S,S)-Et-DUPHOS-Rh *(142184-30-3)*	100mg	See page 349
45-0159	(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (S,S)-Me-DUPHOS-Rh *(205064-10-4)*	100mg	See page 350
45-0161	(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I)trifluoromethanesulfonate, 98+% (S,S)-Me-DUPHOS-Rh *(136705-75-4)*	100mg	See page 351
45-0169	(-)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (S,S)-Me-BPE-Rh *(213343-65-8)*	100mg	See page 351
45-0202	(+)-1,2-Bis((2S,5S)-2,5-diphenylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (S,S)-Ph-BPE-Rh *(849950-53-4)*	100mg	See page 353
45-0211	(-)-1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (S,S)-i-Pr-DUPHOS-Rh	100mg	See page 354

CATALYST & ORGANOCATALYST KITS - Enantiotech BIMAH Ru BINAP Catalyst Kit

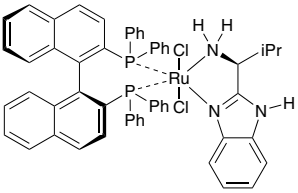
96-3705 **Enantiotech BIMAH Ru BINAP Catalyst Kit for Asymmetric Hydrogenation**
Sold under license from Enantiotech for research purposes.
PCT/CN2008/073648, CN 200810038929.
Components also available for individual sale.
Contains the following:



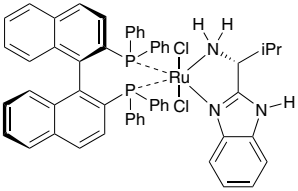
44-0905 100mg



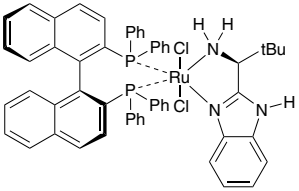
44-0910 100mg



44-0915 100mg



44-0920 100mg

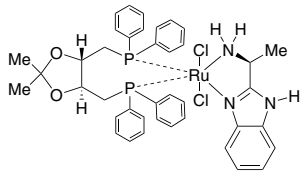


44-0925 100mg

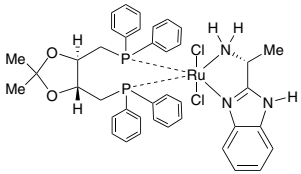
44-0905	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95% *(1443051-87-3)*	100mg	See page 385
44-0910	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 385
44-0915	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 386
44-0920	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 385
44-0925	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(t-butyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 384

CATALYST & ORGANOCATALYST KITS - Enantiotech BIMAH Ru DIOP Catalyst Kit

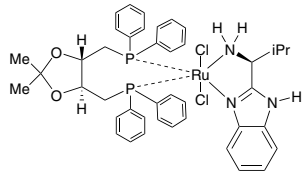
96-3715 **Enantiotech BIMAH Ru DIOP Catalyst Kit for Asymmetric Hydrogenation**
Sold under license from Enantiotech for research purposes only.
PCT/CN2008/073648, CN 200810038929.
Components also available for individual sale.
Contains the following:



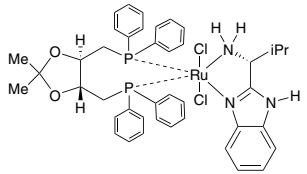
44-0955 100mg



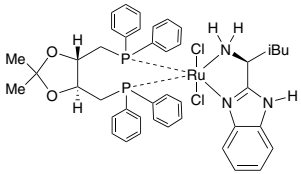
44-0960 100mg



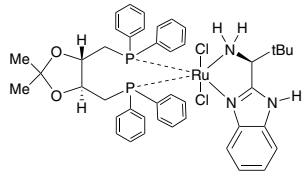
44-0965 100mg



44-0970 100mg



44-0975 100mg

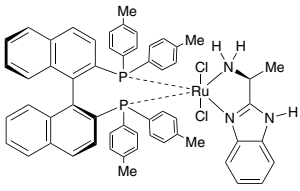


44-0980 100mg

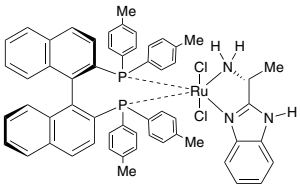
44-0955	Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole] ruthenium(II), min. 98% *(1280730-21-3)*	100mg	See page 387
44-0960	Dichloro[(4R,5R)-(-)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole] ruthenium(II), min. 95% *(1280732-29-7)*	100mg	See page 387
44-0965	Dichloro[(4S,5S)-(+)-4,5-bis(diphenyphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(i-propyl)methanamine)-1H-benzimidazole] ruthenium(II), min. 95% *(1443051-97-5)*	100mg	See page 387
44-0970	Dichloro[(4R,5R)-(-)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(R)-(+)-2-(i-propyl)methanamine)-1H-benzimidazole] ruthenium(II), min. 95%	100mg	See page 387
44-0975	Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(i-butyl)methanamine)-1H-benzimidazole] ruthenium(II), min. 95% *(1574321-76-8)*	100mg	See page 386
44-0980	Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(t-butyl)methanamine)-1H-benzimidazole] ruthenium(II), min. 97% *(1443051-98-6)*	100mg	See page 386

CATALYST & ORGANOCATALYST KITS - Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit

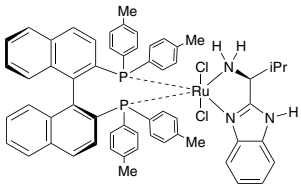
96-3710 **Enantiotech BIMAH Ru Tol-BINAP Catalyst Kit for Asymmetric Hydrogenation**
Sold under license from Enantiotech for research purposes only.
PCT/CN2008/073648, CN 200810038929.
Components also available for individual sale.
Contains the following:



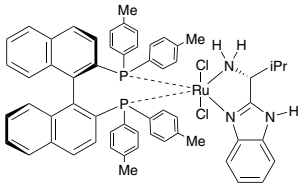
44-0930 100mg



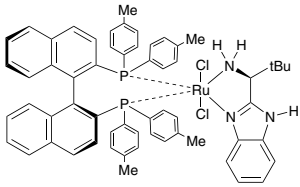
44-0935 100mg



44-0940 100mg



44-0945 100mg



44-0950 100mg

44-0930	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 97%	100mg	See page 388
44-0935	Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 388
44-0940	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 389
44-0945	Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	100mg	See page 388
44-0950	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(t-butyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 97%	100mg	See page 388

CATALYST & ORGANOCATALYST KITS - Evonik Heterogeneous Catalyst Kit

96-6670 **Evonik Heterogeneous Catalyst Kit**
Sold in collaboration with Evonik for research purposes only.
Components also available for individual sale. Contains the following:

44-4060	Ruthenium, 5% on activated carbon, (50-70% wetted powder) Evonik Noblyst® P3060 *(7440-18-8)*	10g	See page 362
45-1863	Rhodium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P3053 *(7440-16-6)*	10g	See page 348
46-1703	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1086 *(7440-05-3)*	10g	See page 223
46-1706	Palladium, 10% on activated carbon, Pearlman (50-70% wetted powder) Evonik Noblyst® P1070 *(7440-05-3)*	10g	See page 222
46-1740	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1090 *(7440-05-3)*	10g	See page 223
46-1743	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1093 *(7440-05-3)*	10g	See page 223
46-1747	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1092 *(7440-05-3)*	10g	See page 223
46-1750	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1109 *(7440-05-3)*	10g	See page 223
78-1530	Platinum, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P2058 *(7440-06-4)*	10g	See page 333
78-1534	Platinum, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P2060 *(7440-06-4)*	10g	See page 333
78-1536	Platinum 1% and vanadium 2%, on activated carbon (50-70% wetted powder) Evonik Noblyst® P8078 *(7440-06-4)*	10g	See page 336
78-1540	Platinum, 3% on activated carbon, sulfided (50-70% wetted powder) Evonik Noblyst® P2065 *(7440-06-4)*	10g	See page 333

CATALYST & ORGANOCATALYST KITS - Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation

96-6674 **Evonik Heterogeneous Catalyst Kit for Selective Hydrogenation**
Sold in collaboration with Evonik for research purposes only.
Components also available for individual sale. Contains the following:

44-4060	Ruthenium, 5% on activated carbon, (50-70% wetted powder) Evonik Noblyst® P3060 *(7440-18-8)*	10g	See page 362
45-1863	Rhodium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P3053 *(7440-16-6)*	10g	See page 348
78-1530	Platinum, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P2058 *(7440-06-4)*	10g	See page 333
78-1534	Platinum, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P2060 *(7440-06-4)*	10g	See page 333
78-1536	Platinum 1% and vanadium 2%, on activated carbon (50-70% wetted powder) Evonik Noblyst® P8078 *(7440-06-4)*	10g	See page 336
78-1540	Platinum, 3% on activated carbon, sulfided (50-70% wetted powder) Evonik Noblyst® P2065 *(7440-06-4)*	10g	See page 333

CATALYST & ORGANOCATALYST KITS - Evonik Heterogeneous Palladium Catalyst Kit

96-6672 **Evonik Heterogeneous Palladium Catalyst Kit**
Sold in collaboration with Evonik for research purposes only.
Components also available for individual sale. Contains the following:

46-1703	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1086 *(7440-05-3)*	10g	See page 223
46-1706	Palladium, 10% on activated carbon, Pearlman (50-70% wetted powder) Evonik Noblyst® P1070 *(7440-05-3)*	10g	See page 222
46-1740	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1090 *(7440-05-3)*	10g	See page 223
46-1743	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1093 *(7440-05-3)*	10g	See page 223
46-1747	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1092 *(7440-05-3)*	10g	See page 223
46-1750	Palladium, 5% on activated carbon (50-70% wetted powder) Evonik Noblyst® P1109 *(7440-05-3)*	10g	See page 223

CATALYST & ORGANOCATALYST KITS - Evonik Heterogeneous Catalyst Kits Table

	96-6670 - Heterogeneous Catalyst Kit											
	96-6672 - Palladium Catalyst Kit						96-6674 - Selective Hydrogenation Kit					
Strem Item #	**46-1706**	**46-1703**	**46-1740**	**46-1747**	**46-1743**	**46-1750**	**78-1530**	**78-1534**	**78-1540**	**45-1863**	**44-4060**	**78-1536**
Evonik Item #	E 101 NE/W	E 101 R/W	E 105 N/W	E 105 NN/W	E 105 O/W	E 107 MA/	F 1015 RE/W	F 105 N/W	F 1082 QHA/W	G 106 N/W	H 198 P/W	CF 1082 BV/W
Nobylst® nomenclature Application/ Catalyst	Nobylst® P 1070 10% Pd	Nobylst® P 1086 5% Pd	Nobylst® P 1090 5% Pd	Nobylst® P 1092 5% Pd	Nobylst® P 1093 5% Pd	Nobylst® P 1109 5% Pd	Nobylst® P 2058 5% Pt	Nobylst® P 2060 5% Pt	Nobylst® P 2065 3% Pt	Nobylst® P 3053 5% Rh	Nobylst® P 3060 5% Ru	Nobylst® P 8078 1% Pt
Hydrogenation of C=C Double Bonds		●		○	●	○						
Hydrogenation of CN Bonds	○		○	●		●	○	●		●		
Reduction of the C=O Group		○		●	○	●				●	●	
Hydrogenation of Nitro Groups	●	●		●	○	○	●	○	○			●
Hydrogenolysis Reactions (Deprotections, Dehalogenations, etc.)	○		●	●		○						
Reductive Alkylation and Amination		●	○	○	●				●			
Hydrogenation of (Hetero) Aromatic Rings		●	○	●	○		○	○		●	●	
Oxidations (Alcohols and Sugars)							●	●				
CC Coupling Reactions	○			●	●	○						

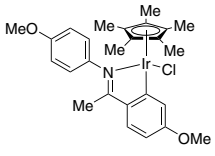
○ recommended
● preferred

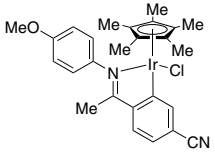
Note: Please refer to the different reaction classes in the Evonik manual for more detailed information regarding selectivity, activity and reaction conditions. This sample kit is deisgned as an entry point to find a suitable catalyst. Please contact one of our technical specialists for further recommendations. Most often the catalyst performance can be improved significantly by tailoring the catalyst to your requirements.

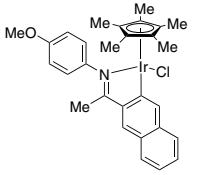
The recommendations given above are believed to be accurate at the time of publication but EVONIK makes no warranty with respect therto, including but not limited to any results to be obtained or the infrigement of any proprietary right.

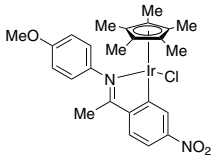
CATALYST & ORGANOCATALYST KITS - Iridicycle Catalyst Kit

96-3745 **Iridicycle Catalyst Kit**
Sold in collaboration with Yorkshire Process Technology for research purposes only. Developed by Prof. J. Xiao, Liverpool University.
Patents GB 1206572.8 and GB 1206573.6
Components also available for individual sale.
Contains the following:


77-0418 100mg


77-0424 100mg


77-0428 100mg

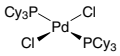
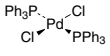
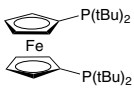
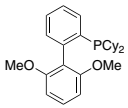

77-0430 100mg

77-0418	Chloro(pentamethylcyclopentadienyl){5-methoxy-2-{1-[(4-methoxyphenyl) imino-kN]ethyl}phenyl-kC}iridium(III), 99% Iridicycle-MeO *(1258964-48-5)*	100mg	See page 88
77-0424	Chloro(pentamethylcyclopentadienyl){5-cyano-2-{1-[(4-methoxyphenyl) imino-kN]ethyl}phenyl-kC}iridium(III), 99% Iridicycle-CN *(1258964-46-3)*	100mg	See page 87
77-0428	Chloro(pentamethylcyclopentadienyl){2-{1-[(4-methoxyphenyl)imino-kN] ethyl}naphthyl-kC}iridium(III), 99% Iridicycle-Naphth *(1469467-94-4)*	100mg	See page 88
77-0430	Chloro(pentamethylcyclopentadienyl){5-nitro-2-{1-[(4-methoxyphenyl) imino-kN]ethyl}phenyl-kC}iridium(III), 99% Iridicycle-NO2 *(1439402-25-1)*	100mg	See page 88

CATALYST & ORGANOCATALYST KITS - Kit of CatKits - Single-Use Vial

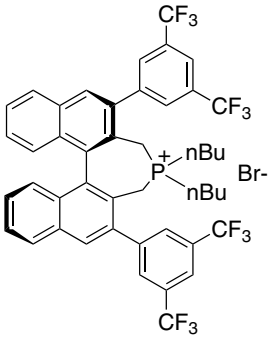
96-3790 **Kit of CatKits - Single-Use Vials for Low Catalyst Loading Experiments**
Components also available for individual sale.
Contains the following:

46-2030	Palladium(II) acetate/1,1'-bis(di-t-butylphosphino)ferrocene/potassium phosphate admixture [CatKit single-use vials - 2.02 wt% $Pd(OAc)_2$]	5 x 1vial	See page 247
46-2033	Palladium(II) acetate/2-dicyclohexylphosphino-2,6-dimethoxy-1,1'-bi-phenyl (SPhos)/potassium phosphate admixture [CatKit single-use vials - 1.96 wt% $Pd(OAc)_2$]	5 x 1vial	See page 247
46-2038	trans-Dichlorobis(triphenylphosphine)palladium(II)/potassium phosphate admixture [CatKit single-use vials - 6.32 wt% Pd complex] *(13965-03-2)*	5 x 1vial	See page 239
46-2040	trans-Dichlorobis(tricyclohexylphosphine)palladium(II)/potassium phosphate admixture [CatKit single-use vials - 6.62 wt% Pd complex] *(29934-17-6)*	5 x 1vial	See page 238

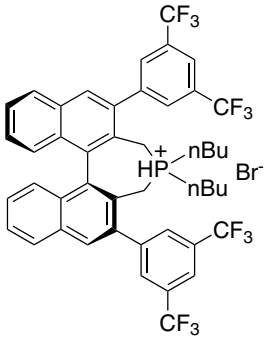
Components	46-2040	46-2038	46-2030	46-2033
Metal Precursor	 mixture with K_3PO_4	 mixture with K_3PO_4	$Pd(OAc)_2$	$Pd(OAc)_2$
Ligand	---	---	 mixture with $Pd(OAc)_2/K_3PO_4$	 mixture with $Pd(OAc)_2/K_3PO_4$
Base	K_3PO_4	K_3PO_4	K_3PO_4	K_3PO_4
This Kit contains 4 different types of Single-Use Vials. Each type has 5 x 1 vials.				

CATALYST & ORGANOCATALYST KITS - Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit

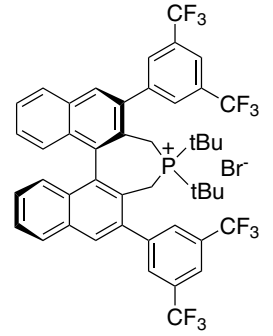
96-3750 **Maruoka Chiral Phase-Transfer Phosphonium Organocatalyst Kit**
Components also available for individual sale.
Contains the following:



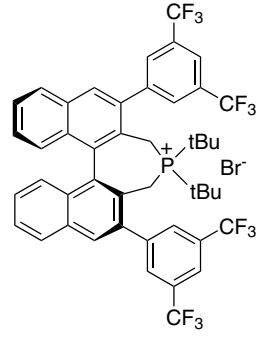
15-1457 50mg



15-1458 50mg



15-1464 50mg



15-1465 50mg

15-1457	(11bR)-(+)-4,4-Dibutyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% R-MARUOKA CAT P-NB	50mg	See page 286
15-1458	(11bS)-(-)-4,4-Dibutyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% S-Maruoka CAT P-NB *(1110711-01-7)*	50mg	See page 286
15-1464	(11bR)-(+)-4,4-Di-t-butyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% R-MARUOKA CAT P-TB	50mg	See page 286
15-1465	(11bS)-(-)-4,4-Di-t-butyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% S-MARUOKA CAT P-TB	50mg	See page 286

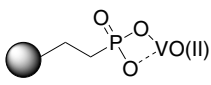
CATALYST & ORGANOCATALYST KITS - Palladium Kit

96-4650 **Palladium Kit**
For a variety of catalytic organic transformations.
Components also available for individual sale.
Contains the following:

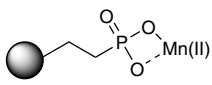
46-0100	Allylpalladium chloride dimer, min. 98% *(12012-95-2)*	500mg	See page 226
46-0400	Dichlorobis(benzonitrile)palladium(II), 99% *(14220-64-5)*	1g	See page 236
46-1780	Palladium(II) acetate, min. 98% (99.9+%-Pd) *(3375-31-3)*	1g	See page 247
46-1850	Palladium(II) chloride (99.9%-Pd) *(7647-10-1)*	1g	See page 248
46-2150	Tetrakis(triphenylphosphine)palladium(0), 99% (99.9+%-Pd) *(14221-01-3)*	5g	See page 248
46-3000	Tris(dibenzylideneacetone)dipalladium(0) *(51364-51-3)*	5g	See page 249
46-3010	Tris(dibenzylideneacetone)dipalladium(0) chloroform adduct *(52522-40-4)*	500mg	See page 249

CATALYST & ORGANOCATALYST KITS - PhosphonicS Metal Oxidation Catalyst Kit

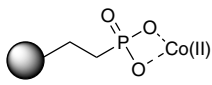
96-6770 **PhosphonicS Metal Oxidation Catalyst Kit**
Sold in collaboration with PhosphonicS Ltd. for research purposes only.
Components also available for individual sale.
Contains the following:



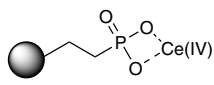
23-4380 5g



25-1200 5g



27-0900 5g



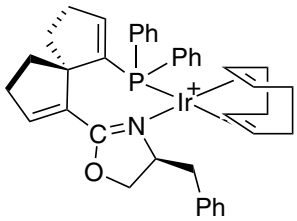
58-5100 5g

23-4380	Vanadyl(II) ethyl/butyl phosphonate Silica (PhosphonicS POVO)	5g	See page 446
25-1200	Manganese(II) ethyl/butyl phosphonate Silica (PhosphonicS POMn)	5g	See page 126
27-0900	Cobalt(II) ethyl/butyl phosphonate Silica (PhosphonicS POCo)	5g	See page 49
58-5100	Cerium(IV) ethyl/butyl phosphonate Silica (PhosphonicS POCe)	5g	See page 41

Reactions such as allylic and benzylic oxidations, alcohol oxidations and epoxidations are key chemical transformations in organic synthesis. In general these reactions are conducted by the use of stoichiometric, or even higher concentrations, of inorganic oxidants. Typical oxidizing agents include potassium permanganate, manganese dioxide, chromium trioxide, potassium chromate, potassium dichromate and peracids. These hazardous reagents produce large volumes of toxic wastes that are becoming increasingly costly to treat and dispose. In addition, difficulties are often encountered in the work up of reactions and purification of the products. There is a need for new heterogeneous oxidation catalysts that are not only effective, but exhibit ease of recovery and recycleability. PhosphonicS has developed a number of novel heterogeneous oxidation catalysts for a wide range of applications in the pharmaceutical, fine chemicals and petrochemical industries. Reactions include allylic and benzylic oxidations, epoxidations and the selective oxidations of alcohols to ketones and sulfides to sulfoxides.

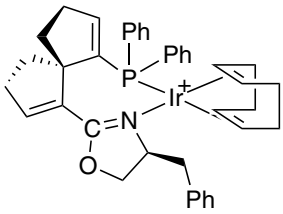
CATALYST & ORGANOCATALYST KITS - SpinPHOX-Ir Catalyst Kit

96-7710 **SpinPHOX-Ir Catalyst Kit for enantioselective hydrogenation**
Sold in collaboration with SIOC for research purposes only.
Patents CN200910051314.3, CN 101555259.
Components also available for individual sale.
Contains the following:



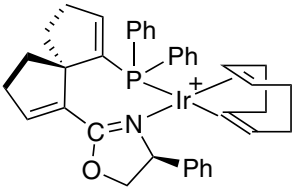
$B[C_6H_3(CF_3)_2]_4^-$

77-5040 25mg



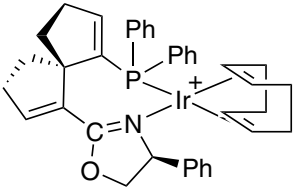
$B[C_6H_3(CF_3)_2]_4^-$

77-5041 25mg



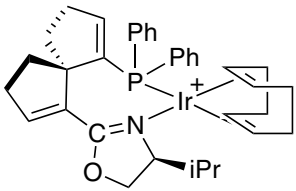
$B[C_6H_3(CF_3)_2]_4^-$

77-5046 25mg



$B[C_6H_3(CF_3)_2]_4^-$

77-5047 25mg



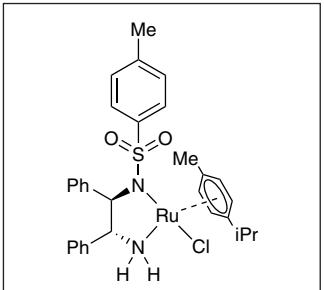
$B[C_6H_3(CF_3)_2]_4^-$

77-5050 25mg

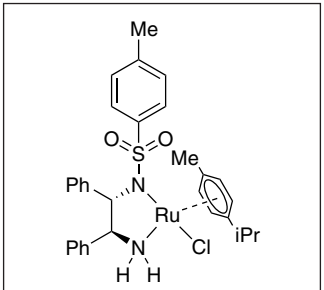
77-5040	1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino) spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-benzyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD) Ir[Bn-SpinPHOX] *(1194050-19-5)*	25mg	See page 89
77-5041	1,5-Cyclooctadiene{(4S)-(-)-2-[(5R)-6-(diphenylphosphino) spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-benzyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (R.S)-(COD) Ir[Bn-SpinPHOX] *(1195511-56-8)*	25mg	See page 89
77-5046	1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino) spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-phenyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD) Ir[Ph-SpinPHOX] *(1194050-21-9)*	25mg	See page 89
77-5047	1,5-Cyclooctadiene{(4S)-(-)-2-[(5R)-6-(diphenylphosphino) spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-phenyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (R,S)-(COD) Ir[Ph-SpinPHOX] *(1195511-59-1)*	25mg	See page 89
77-5050	1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4] nona-1.6-dien-1-yl]-4,5-dihydro-4-(i-propyl)oxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD) Ir[iPr-SpinPHOX] *(1194050-23-1)*	25mg	See page 89

CATALYST & ORGANOCATALYST KITS - Takasago ATH Catalyst Kit

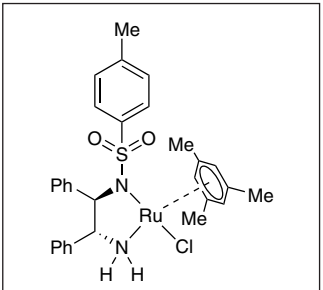
96-6955 **Takasago ATH (Asymmetric Transfer Hydrogenation) Catalyst Kit**
Manufactured under license of Takasago patent US7129367B2.
Components also available for individual sale.
Contains the following:



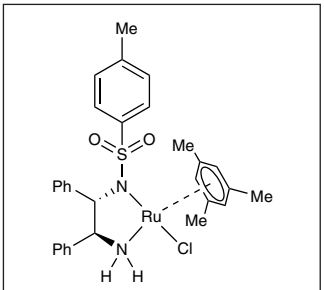
44-0148 250mg



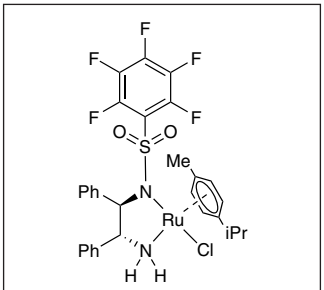
44-0149 250mg



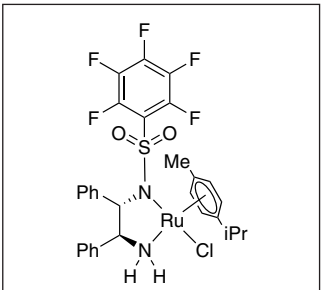
44-0154 250mg



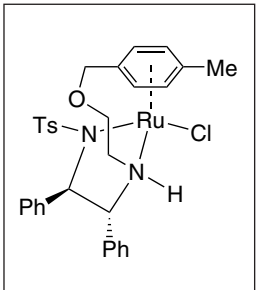
44-0155 250mg



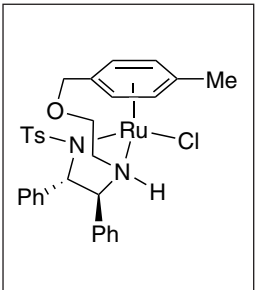
44-0156 250mg



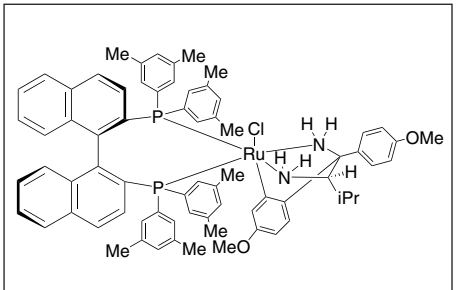
44-0157 250mg



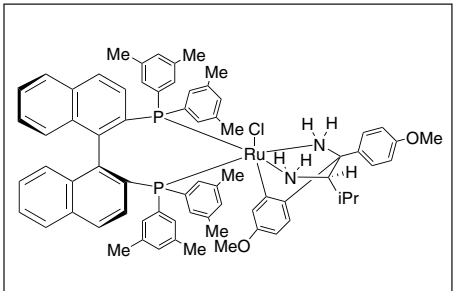
44-0185 250mg



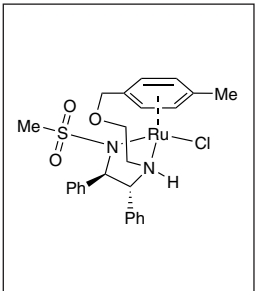
44-0186 250mg



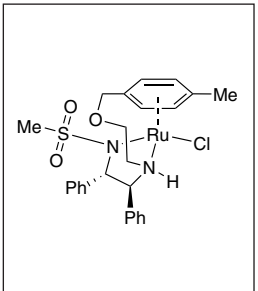
44-0217 250mg



44-0218 250mg



44-0255 250mg



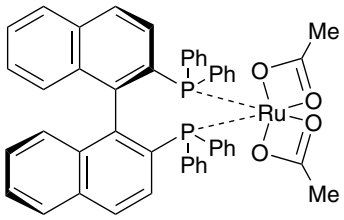
44-0256 250mg

CATALYST & ORGANOCATALYST KITS - Takasago ATH Catalyst Kit

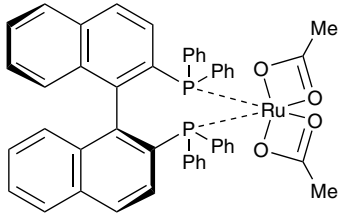
44-0148	Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl) amido}(p-cymene)ruthenium(II), min. 95% RuCl[(R,R)-Tsdpen] (p-cymene) *(192139-92-7)*	250mg	See page 370
44-0149	Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl) amido}(p-cymene)ruthenium(II), min. 90% RuCl[(S,S)-Tsdpen] (p-cymene) *(192139-90-5)*	250mg	See page 370
44-0154	Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl) amido}(mesitylene)ruthenium(II), min. 90% RuCl[(R,R)-Tsdpen(mesitylene) *(174813-82-2)*	250mg	See page 371
44-0155	Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl) amido}(mesitylene)ruthenium(II), min. 90% RuCl[(S,S)-Tsdpen] (mesitylene) *(174813-81-1)*	250mg	See page 371
44-0156	Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](pentafluorophenylsul-fonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(R,R)-Fsdpen] (p-cymene) *(1026995-71-0)*	250mg	See page 370
44-0157	Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](pentafluorophenylsul-fonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(S,S)-Fsdpen] (p-cymene) *(1026995-72-1)*	250mg	See page 370
44-0185	Chloro{N-[(1R,2R)-1,2-diphenyl-2-(2-(4-methylbenzyloxy)ethylamino)-ethyl]-4-methylbenzene sulfonamide(chloro)ruthenium(II) (R,R)-Ts-DENEB™ *(1333981-84-2)*	250mg	See page 378
44-0186	N-[(1S,2S)-1,2-Diphenyl-2-(2-(4-methylbenzyloxy)ethylamino)-ethyl]-4-methylbenzene sulfonamide(chloro)ruthenium(II) (S,S)-Ts-DENEB™ *(1384974-37-1)*	250mg	See page 396
44-0217	Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} [(2R)-(-)-1-(4-methoxyphenyl)- 1'-(4-methoxyphenyl-kC)-3- methyl-1,2-butanediamine]ruthenium(II) (R)-RUCY™-XylBINAP *(1384974-38-2)*	250mg	See page 376
44-0218	Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}[(2S)-(+)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butanediamine]ruthenium(II) (S)-RUCY™-XylBINAP *(1312713-89-5)*	250mg	See page 376
44-0255	Chloro{N-[(1R,2R)-2-[(S)-[2-[[1,2,3,4,5,6-η)-4-methylphenyl]methoxy] ethyl]amino]-1,2-diphenylethylmethanesulfonamidato}ruthenium(II) Ru-(R,R)-Ms-DENEB *(1333981-86-4)*	250mg	See page 379
44-0256	Chloro{N-[(1S,2S)-2-[(R)-[2-[[1,2,3,4,5,6-η)-4-methylphenyl]methoxy] ethyl]amino]-1,2-diphenylethylmethanesulfonamidato}ruthenium(II) Ru-(S,S)-Ms-DENEB *(1361318-83-3)*	250mg	See page 379

CATALYST & ORGANOCATALYST KITS - Takasago BINAP Ru Acetate Catalyst Kit

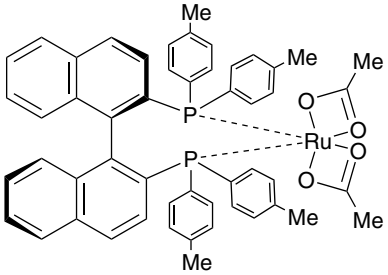
96-6953 **Takasago BINAP Ru Acetate Catalyst Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



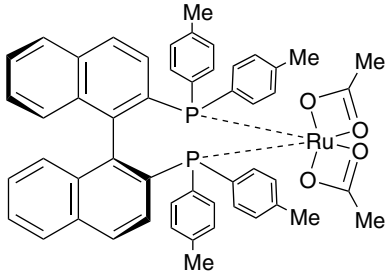
44-0152 250mg



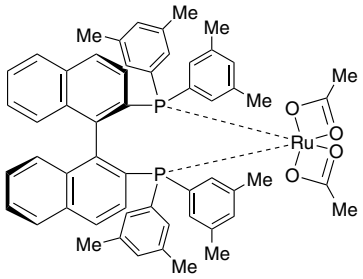
44-0153 250mg



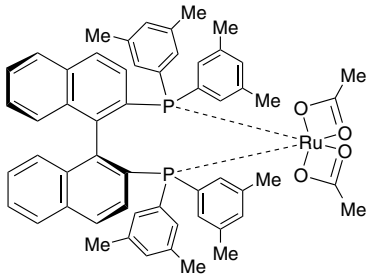
44-0162 250mg



44-0163 250mg



44-0164 250mg

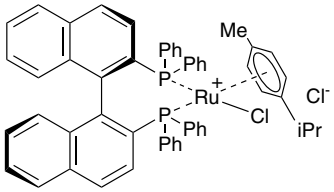


44-0165 250mg

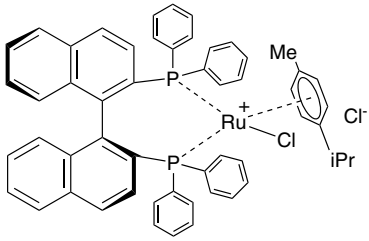
44-0152	Diacetato[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(R)-binap] *(325146-81-4)*	250mg	See page 380
44-0153	Diacetato[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(S)-binap] *(261948-85-0)*	250mg	See page 380
44-0162	Diacetato[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(R)-tolbinap] *(116128-29-1)*	250mg	See page 381
44-0163	Diacetato[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(S)-tolbinap] *(106681-15-6)*	250mg	See page 381
44-0164	Diacetato{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} ruthenium(II) $Ru(OAc)_2$[(R)-xylbinap] *(374067-50-2)*	250mg	See page 381
44-0165	Diacetato{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} ruthenium(II) $Ru(OAc)_2$[(S)-xylbinap] *(374067-49-9)*	250mg	See page 381

CATALYST & ORGANOCATALYST KITS - Takasago BINAP Ru Cymene Catalyst Kit

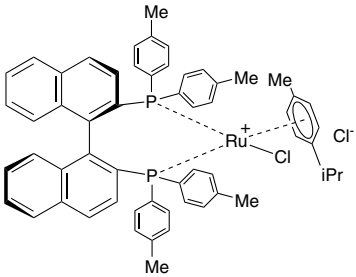
96-6951 **Takasago BINAP Ru Cymene Catalyst Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



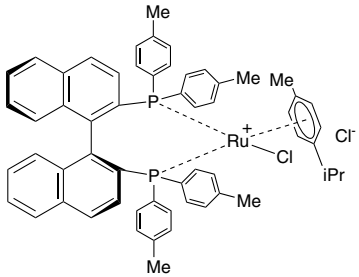
44-0084 250mg



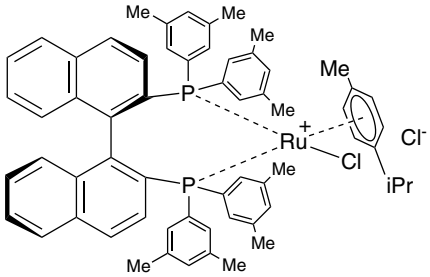
44-0086 250mg



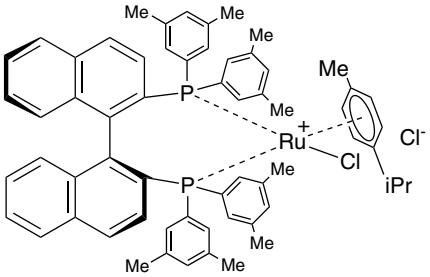
44-0088 250mg



44-0089 250mg



44-0092 250mg

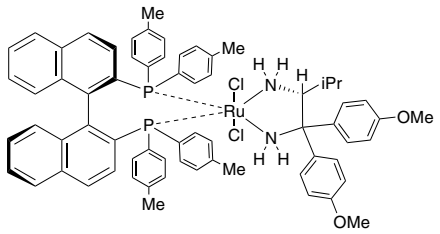


44-0093 250mg

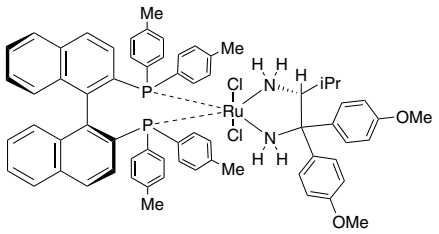
44-0084	Chloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((R)-binap)]Cl *(145926-28-9)*	250mg	See page 373
44-0086	Chloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-binap)]Cl *(130004-33-0)*	250mg	See page 373
44-0088	Chloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((R)-tolbinap)]Cl *(131614-43-2)*	250mg	See page 375
44-0089	Chloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-tolbinap)]Cl *(228120-95-4)*	250mg	See page 375
44-0092	Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} (p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-xylbinap}]Cl *(944451-24-5)*	250mg	See page 375
44-0093	Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} (p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-xylbinap)]Cl *(944451-25-6)*	250mg	See page 375

CATALYST & ORGANOCATALYST KITS - Takasago BINAP Ru Diamine Catalyst Kit

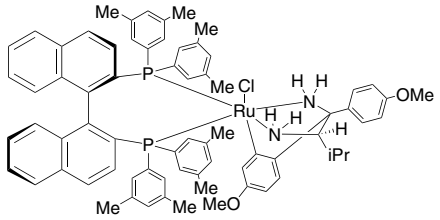
96-6954 **Takasago BINAP Ru Diamine Catalyst Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



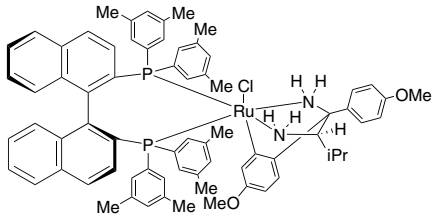
44-0212 250mg



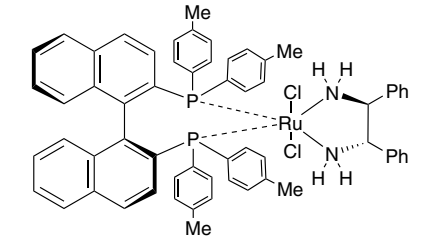
44-0213 250mg



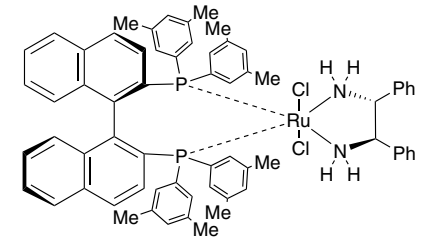
44-0217 250mg



44-0218 250mg



44-0224 250mg

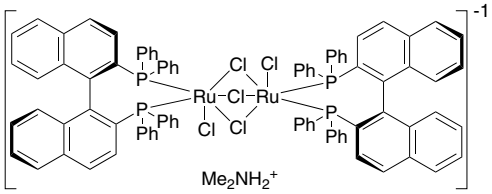


44-0226 250mg

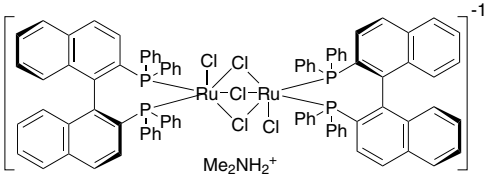
44-0212	Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(R)-xylbinap][(R)-daipen] *(220114-32-9)*	250mg	See page 390
44-0213	Dichloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(S)-xylbinap][(S)-daipen] *(220114-01-2)*	250mg	See page 390
44-0217	Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} [(2R)-(-)-1-(4-methoxyphenyl)- 1'-(4-methoxyphenyl-kC)-3- methyl-1,2-butanediamine]ruthenium(II) (R)-RUCY™-XylBINAP *(1384974-38-2)*	250mg	See page 376
44-0218	Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}[(2S)-(+)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butanediamine]ruthenium(II) (S)-RUCY™-XylBINAP *(1312713-89-5)*	250mg	See page 376
44-0224	Dichloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(S)-xylbinap][(S,S)-dpen] *(220114-03-4)*	250mg	See page 390
44-0226	Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(R)-xylbinap][(R,R)-dpen] *(220114-38-5)*	250mg	See page 390

CATALYST & ORGANOCATALYST KITS - Takasago BINAP Ru Dimer Catalyst Kit

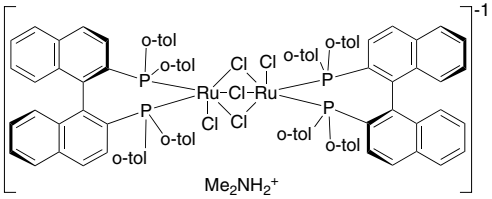
96-6952 **Takasago BINAP Ru Dimer Catalyst Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



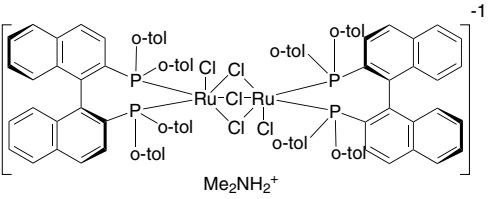
44-0510 250mg



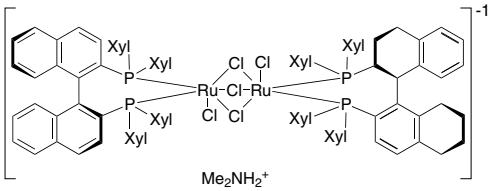
44-0511 250mg



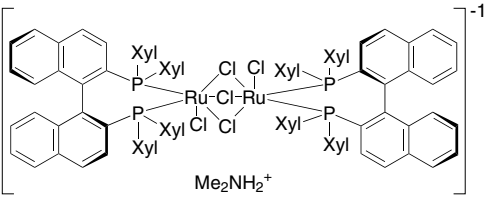
44-0512 250mg



44-0513 250mg



44-0514 250mg

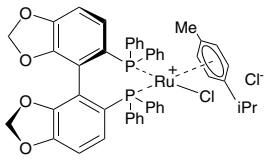


44-0515 250mg

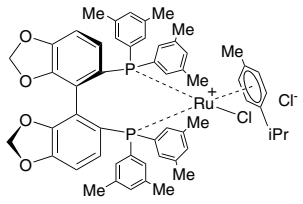
44-0510	Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-binap})\}_2(\mu\text{-}Cl)_3]$ *(199684-47-4)*	250mg	See page 395
44-0511	Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-binap})\}_2(\mu\text{-}Cl)_3]$ *(199541-17-8)*	250mg	See page 395
44-0512	Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-tolbinap})\}_2(\mu\text{-}Cl)_3]$ *(749935-02-2)*	250mg	See page 396
44-0513	Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-tolbinap})\}_2(\mu\text{-}Cl)_3]$ *(309735-86-2)*	250mg	See page 396
44-0514	Dimethylammonium dichlorotri(μ-chloro)bis{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-xylbinap})\}_2(\mu\text{-}Cl)_3]$ *(944451-08-5)*	250mg	See page 394
44-0515	Dimethylammonium dichlorotri(μ-chloro)bis{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-xylbinap})\}_2(\mu\text{-}Cl)_3]$ *(944451-10-9)*	250mg	See page 394

CATALYST & ORGANOCATALYST KITS - Takasago SEGPHOS® Ru Catalyst Kit

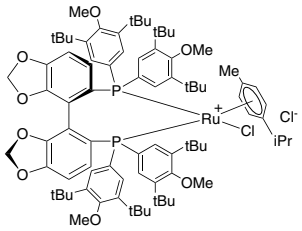
96-6901 **Takasago SEGPHOS® Ru Catalyst Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



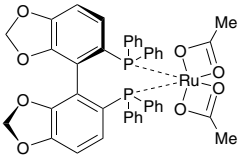
44-0096 250mg



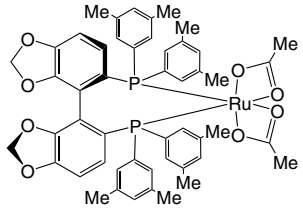
44-0098 250mg



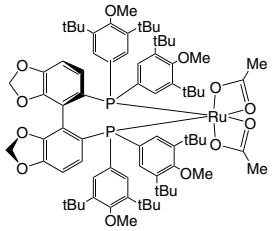
44-0102 250mg



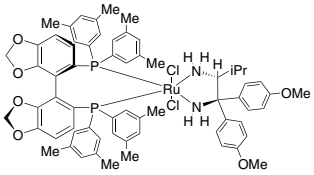
44-0168 250mg



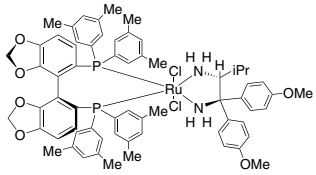
44-0174 250mg



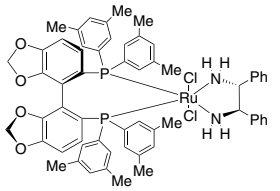
44-0180 250mg



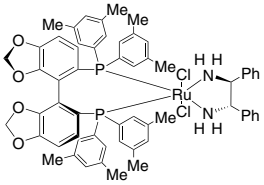
44-0214 250mg



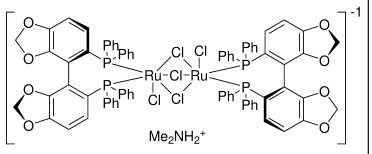
44-0215 250mg



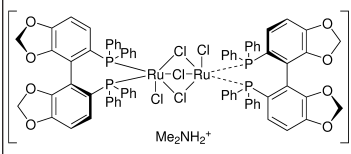
44-0228 250mg



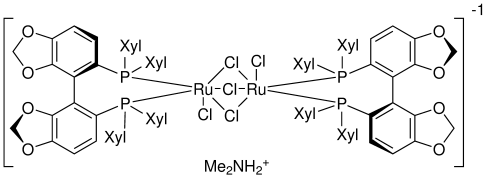
44-0229 250mg



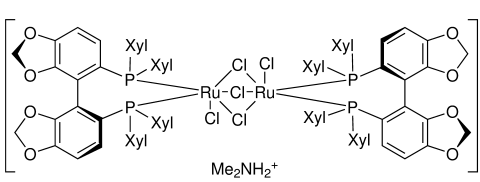
44-0518 250mg



44-0519 250mg



44-0520 250mg



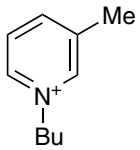
44-0521 250mg

CATALYST & ORGANOCATALYST KITS - Takasago SEGPHOS® Ru Catalyst Kit

44-0096	Chloro[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-segphos®)]Cl *(944451-28-9)*	250mg	See page 371
44-0097	Chloro[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-segphos®)]Cl *(944451-29-0)*	250mg	See page 372
44-0098	Chloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-dm-segphos®)]Cl *(944451-30-3)*	250mg	See page 375
44-0099	Chloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-dm-segphos®)]Cl *(944451-31-4)*	250mg	See page 375
44-0102	Chloro{(R)-(-)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-dtbm-segphos®)]Cl *(944451-32-5)*	250mg	See page 371
44-0103	Chloro{(S)-(+)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-dtbm-segphos®)]Cl *(944451-33-6)*	250mg	See page 371
44-0168	Diacetato[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]ruthenium(II) $Ru(OAc)_2$[(R)-segphos®] *(944450-48-0)*	250mg	See page 380
44-0169	Diacetato[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]ruthenium(II) $Ru(OAc)_2$[(S)-segphos®] *(373650-12-5)*	250mg	See page 380
44-0174	Diacetato{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(R)-dm-segphos®] *(944450-49-1)*	250mg	See page 381
44-0176	Diacetato{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(S)-dm-segphos®] *(944450-50-4)*	250mg	See page 381
44-0180	Diacetato{(R)-(-)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(R)-dtbm-segphos®] *(1025477-38-6)*	250mg	See page 379
44-0181	Diacetato{(S)-(+)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(S)-dtbm-segphos®] *(1025476-84-9)*	250mg	See page 380
44-0214	Dichloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(R)-dm-segphos®][(R)-daipen] *(944450-43-5)*	250mg	See page 389
44-0215	Dichloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(S)-dm-segphos®][(S)-daipen] *(944450-44-6)*	250mg	See page 389
44-0228	Dichloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(R)-dm-segphos®][(R,R)-dpen] *(944450-45-7)*	250mg	See page 389
44-0229	Dichloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(S)-dm-segphos®][(S,S)-dpen] *(944450-46-8)*	250mg	See page 389
44-0518	Dimethylammonium dichlorotri(μ-chloro)bis[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]diruthenate(II) [NH_2Me_2][{RuCl((R)-segphos®)}$_2$(μ-Cl)$_3$] *(346457-41-8)*	250mg	See page 395
44-0519	Dimethylammonium dichlorotri(μ-chloro)bis[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]diruthenate(II) [NH_2Me_2][{RuCl((S)-segphos®)}$_2$(μ-Cl)$_3$] *(488809-34-3)*	250mg	See page 395
44-0520	Dimethylammonium dichlorotri(μ-chloro)bis{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}diruthenate(II) [NH_2Me_2][{RuCl((R)-dm-segphos®)}$_2$(μ-Cl)$_3$] *(935449-46-0)*	250mg	See page 394
44-0521	Dimethylammonium dichlorotri(μ-chloro)bis{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}diruthenate(II) [NH_2Me_2][{RuCl((S)-dm-segphos®)}$_2$(μ-Cl)$_3$] *(944451-14-3)*	250mg	See page 394

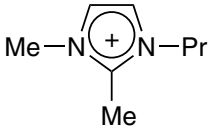
IONIC LIQUID KITS - Ionic Liquid Kit 1: Hydrophobic (Water-Immiscible) Kit

96-6500 **Ionic Liquid Kit 1: Hydrophobic (water-immiscible) Kit**
Components also available for individual sale.
Contains the following:



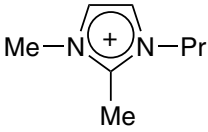
$[N(SO_2CF_3)_2]^-$

07-0180 1g



$[NH(SO_2CF_3)_2]^-$

07-0465 1g



$(CF_3SO_2)_3C^-$

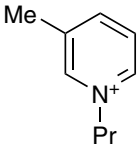
07-0470 500mg

$[(CF_3CF_2SO_2)_2N]^-$

07-0578 500mg

$[N(SO_2CF_3)_2]^-$

07-0579 1g



$[N(SO_2CF_3)_2]^-$

07-1775 1g

07-0180	N-Butyl-3-methylpyridinium bis(trifluoromethylsulfonyl)imide, 99% [BMPIm] *(344790-86-9)*	1g	See page 82
07-0465	1,2-Dimethyl-3-propylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [DMPIIm] *(169051-76-7)*	1g	See page 82
07-0470	1,2-Dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl)methide, 99% [DMPIMe] *(169051-77-8)*	500mg	See page 82
07-0578	1-Ethyl-3-methylimidazolium bis(pentafluoroethylsulfonyl)imide, 99% [EMIBeti] *(216299-76-2)*	500mg	See page 82
07-0579	1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [EMIIm] *(174899-82-2)*	1g	See page 82
07-1775	N-Propyl-3-methylpyridinium bis(trifluoromethylsulfonyl)imide, 99% [PMPIm] *(817575-06-7)*	1g	See page 83

IONIC LIQUID KITS: Ionic Liquid Kit 2: BMIM Kit

96-6510 **Ionic Liquid Kit 2: BMIM Kit**
Components also available for individual sale.
Contains the following:

Cl^-

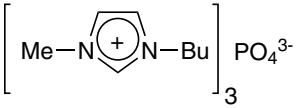
07-0100 10g

$MeOSO_3^-$

07-0140 5g

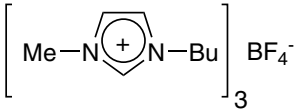
$Me(CH_2)_7CH_2OSO_3^-$

07-0150 5g



PO_4^{3-}

07-0160 5g



BF_4^-

07-0170 5g

07-0100	1-Butyl-3-methylimidazolium chloride, 98% [BMIM]Cl *(79917-90-1)*	10g	See page 81
07-0140	1-Butyl-3-methylimidazolium methanesulfonate, 98% [BMIM] [$MeSO_4$] *(401788-98-5)*	5g	See page 81
07-0150	1-Butyl-3-methylimidazolium octylsulfate, 98% [BMIM] [$OctSO_4$] *(445473-58-5)*	5g	See page 81
07-0160	1-Butyl-3-methylimidazolium phosphate, 99% $[BMIM]_3$ [PO_4]	5g	See page 81
07-0170	1-Butyl-3-methylimidazolium tetrafluoroborate, 98% [BMIM] [BF_4] *(174501-65-6)*	5g	See page 81

IONIC LIQUID KITS - Ionic Liquid Kit 3: CYPHOS® IL Phosphonium Salt Kit

96-6520 **Ionic Liquid Kit 3: CYPHOS® IL Phosphonium Salt Kit**
Components also available for individual sale.
Contains the following:

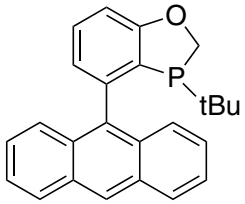
15-6370	Trihexyl(tetradecyl)phosphonium bis(trifluoromethanesulfonyl)amide, min. 97% CYPHOS® IL 109 *(460092-03-9)*	10g	See page 83
15-6374	Trihexyl(tetradecyl)phosphonium bis(2,4,4-trimethylpentyl) phosphinate, min. 95% CYPHOS® IL 104 *(465527-59-7)*	10g	See page 83
15-6378	Trihexyl(tetradecyl)phosphonium bromide, min. 95% CYPHOS® IL 102 *(654057-97-3)*	10g	See page 84
15-6382	Trihexyl(tetradecyl)phosphonium chloride, min. 93% CYPHOS® IL 101 *(258864-54-9)*	10g	See page 84
15-6386	Trihexyl(tetradecyl)phosphonium decanoate, min. 95% CYPHOS® IL 103 *(465527-65-5)*	10g	See page 84
15-6390	Trihexyl(tetradecyl)phosphonium dicyanamide, min. 95% CYPHOS® IL 105	10g	See page 84
15-6394	Trihexyl(tetradecyl)phosphonium hexafluorophosphate, min. 98% CYPHOS® IL 110 *(374683-44-0)*	10g	See page 84

CYPHOS® IL Registered trademark of Cytec.

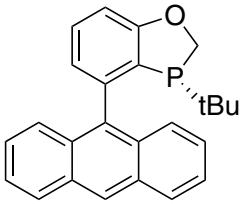
References:
1. The Strem Chemiker, Vol. XX, No. 1, 2003 for technical note.

LIGAND KITS - AntPhos and WingPhos Kit

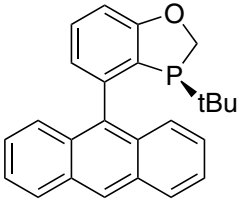
96-3810 **AntPhos and WingPhos Kit**
Sold in collaboration with Zejun for research purposes only.
Patents ZL201310020371.1, CN 201610056390.
Components also available for individual sale.
Contains the following:



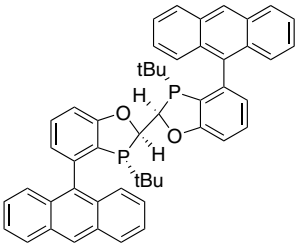
15-1960 25mg



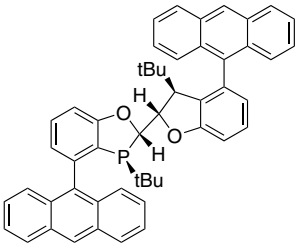
15-1963 25mg



15-1967 25mg



15-1970 25mg

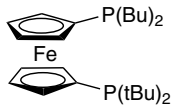


15-1975 25mg

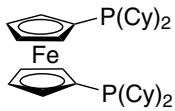
15-1960	4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3]oxaphosphole, 98+% rac-AntPhos *(1268693-24-8)*	25mg	See page 250
15-1963	(R)-4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3] oxaphosphole,98+% (>99% ee) [(R)-AntPhos] *(1456816-37-7)*	25mg	See page 251
15-1967	(S)-4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3] oxaphosphole,99+% (>99% ee) [(S)-AntPhos] *(1807740-34-6)*	25mg	See page 251
15-1970	(2R,2'R,3R,3'R)-4,4'-Di(anthracen-9-yl)-3,3'-di-t-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole, min 98% (>90% ee), [(2R,2'R,3R,3'R)-WingPhos] *(1884680-45-8)*	25mg	See page 285
15-1975	(2S,2'S,3S,3'S)-4,4'-Di(anthracen-9-yl)-3,3'-di-t-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole, min 98%, (>99% ee), [(2S,2'S,3S,3'S)-WingPhos] *(1435940-19-4)*	25mg	See page 285

LIGAND KITS - 1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit

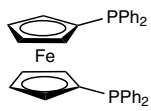
96-3730 **1,1'-Bis(dialkyl/diarylphosphino)ferrocene Ligand Kit**
Components also available for individual sale.
Contains the following:



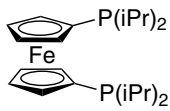
26-0150 500mg



26-0155 500mg



26-0270 1g

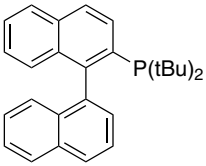


26-0275 500mg

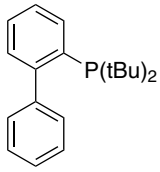
26-0150	1,1'-Bis(di-t-butylphosphino)ferrocene, min. 98% DTBPF *(84680-95-5)*	500mg	See page 95
26-0155	1,1'-Bis(dicyclohexylphosphino)ferrocene, min. 98% *(146960-90-9)*	500mg	See page 95
26-0270	1,1'-Bis(diphenylphosphino)ferrocene, 99% DPPF *(12150-46-8)*	1g	See page 97
26-0275	1,1'-Bis(di-i-propylphosphino)ferrocene, min. 98% DiPPF *(97239-80-0)*	500mg	See page 98

LIGAND KITS - Buchwald Biaryl Phosphine Ligand Master Kit

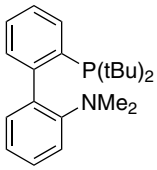
96-5500 **Buchwald Biaryl Phosphine Ligand Master Kit for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
For aromatic carbon-heteroatom bond formation and Suzuki Coupling.
Patents: US 6,395,916, US 6,307,087
Components also available for individual sale.
Contains the following:



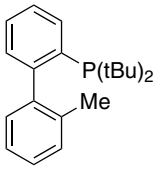
15-1043 250mg



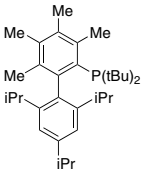
15-1045 500mg



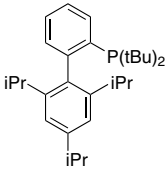
15-1048 500mg



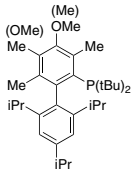
15-1049 500mg



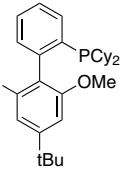
15-1051 250mg



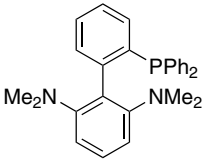
15-1052 500mg



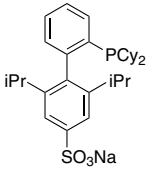
15-1063 250mg



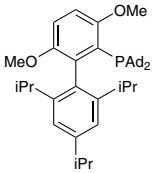
15-1105 250mg



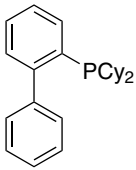
15-1125 100mg



15-1135 100mg

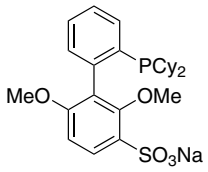


15-1138 100mg

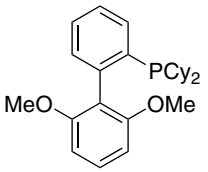


15-1140 1g

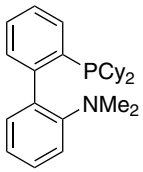
LIGAND KITS - Buchwald Biaryl Phosphine Ligand Master Kit



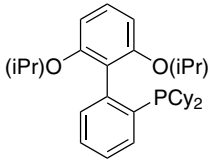
15-1142 500mg



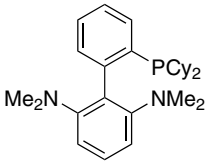
15-1143 500mg



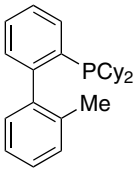
15-1145 500mg



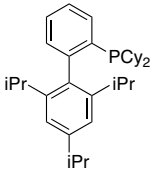
15-1146 1g



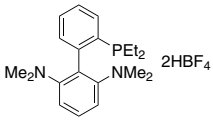
15-1147 250mg



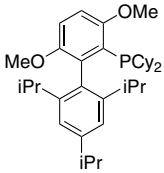
15-1148 500mg



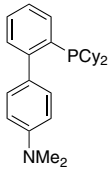
15-1149 500mg



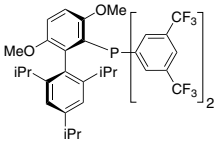
15-1151 100mg



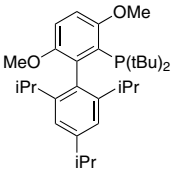
15-1152 250mg



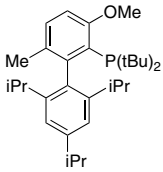
15-1154 250mg



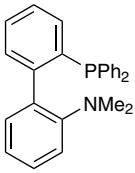
15-1157 100mg



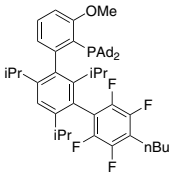
15-1164 100mg



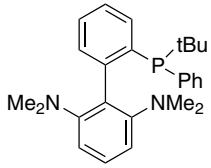
15-1168 100mg



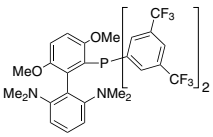
15-1745 500mg



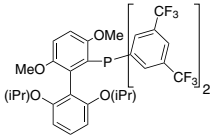
15-2065 100mg



15-3010 250mg



15-3015 100mg



15-3020 250mg

15-1043	racemic-2-Di-t-butylphosphino-1, 1'-binaphthyl, 98% TrixiePhos *(255836-67-0)*	250mg	See page 288
15-1045	2-(Di-t-butylphosphino))-1,1'-biphenyl, 99% JohnPhos *(224311-51-7)*	500mg	See page 288
15-1048	2-Di-t-butylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% tBuDavePhos *(224311-49-3)*	500mg	See page 289
15-1049	2-Di-t-butylphosphino-2'-methyl)-1,1'-biphenyl, 99% t-BuMePhos *(255837-19-5)*	500mg	See page 289
15-1051	2-Di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% Me_4 t-BuXPhos *(857356-94-6)*	250mg	See page 290

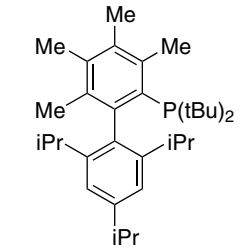
LIGAND KITS - Buchwald Biaryl Phosphine Ligand Master Kit

15-1052	2-Di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuXPhos *(564483-19-8)*	500mg	See page 290
15-1063	2-Di-t-butylphosphino-4-methoxy-3,5,6-trimethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% [~1:1 mixture with regioisomer, 2-Di-t-butylphosphino-5-methoxy-3,4,6-trimethyl-2',4',6'-tri-i-propylbiphenyl] *(1359986-21-2)*	250mg	See page 289
15-1105	2-Dicyclohexylphosphino-2'-methoxy-4',6'-di-t-butyl-1,1'-biphenyl, min. 98% VPhos *(1848244-75-6)*	250mg	See page 294
15-1125	2-Diphenylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% PhCPhos *(1447963-71-4)*	100mg	See page 303
15-1135	2'-Dicyclohexylphosphino-2,6-di-i-propyl-4-sulfonato-1,1'-biphenyl hydrate sodium salt (XPhos-SO_3Na) *(870245-84-4)*	100mg	See page 293
15-1138	2-(Di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 95% AdBrettPhos *(1160861-59-5)*	100mg	See page 284
15-1140	2-(Dicyclohexylphosphino))-1,1'-biphenyl, 98% CyJohnPhos *(247940-06-3)*	1g	See page 292
15-1142	2'-Dicyclohexylphosphino-2,6-dimethoxy-3-sulfonato-1,1'-biphenyl hydrate sodium salt (water soluble SPhos), min. 98% *(1049726-96-6)*	500mg	See page 292
15-1143	2-Dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl, min. 98% SPhos *(657408-07-6)*	500mg	See page 292
15-1145	2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% DavePhos *(213697-53-1)*	500mg	See page 293
15-1146	2-Dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl, min. 98% RuPhos *(787618-22-8)*	1g	See page 293
15-1147	2-Dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% CPhos *(1160556-64-8)*	250mg	See page 292
15-1148	2-Dicyclohexylphosphino-2'-methyl-)-1,1'-biphenyl, min. 98% MePhos *(251320-86-2)*	500mg	See page 294
15-1149	2-(Dicyclohexylphosphino)-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% XPhos *(564483-18-7)*	500mg	See page 295
15-1151	2-Diethylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl di(hydrogen tetrafluoroborate) salt, min. 98% EtCPhos	100mg	See page 296
15-1152	2-(Dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% BrettPhos *(1070663-78-3)*	250mg	See page 293
15-1154	2-Dicyclohexylphosphino-4'-(N,N-dimethylamino)-1,1'-biphenyl, 98% *(1185899-00-6)*	250mg	See page 293
15-1157	2-Di[3,5-bis(trifluoromethyl)phenylphosphino]-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% JackiePhos *(1160861-60-8)*	100mg	See page 285
15-1164	2-(Di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuBrettPhos *(1160861-53-9)*	100mg	See page 288
15-1168	2-(Di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% RockPhos *(1262046-34-3)*	100mg	See page 289
15-1745	2-Diphenylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% PhDavePhos *(240417-00-9)*	500mg	See page 304
15-2065	2-(Diadamantylphosphino)-3-methoxy-2',4',6'-tri-i-propyl-3'-(2,3,5,6-tetrafluoro-4-butylphenyl)-1,1'-biphenyl AlPhos *(1805783-60-1)*	100mg	See page 284
15-3010	2-(t-Butylphenylphosphino)-2',6'-dimethylamino-1,1'-biphenyl, 98% (t-Bu)PhCPhos *(1660153-91-2)*	250mg	See page 282
15-3015	2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-dimethylamino-1,1'-biphenyl, 98% *(1810068-30-4)*	100mg	See page 280
15-3020	2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-di-i-propoxy-1,1'-biphenyl, 98% *(1810068-31-5)*	250mg	See page 280

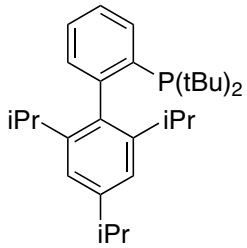
LIGAND KITS - Buchwald Biaryl Phosphine Ligand Mini Kit 1

96-5485 **Buchwald Biaryl Phosphine Ligand Mini Kit 1 for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**

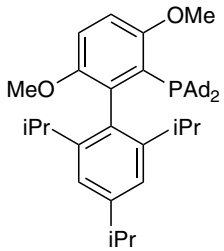
For aromatic carbon-heteroatom bond formation and Suzuki Coupling.
Patents: US 6,395,916, US 6,307,087
Components also available for individual sale. Contains the following:



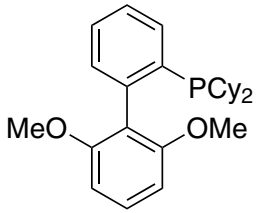
15-1051 250mg



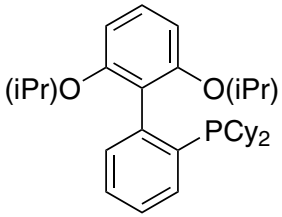
15-1052 500mg



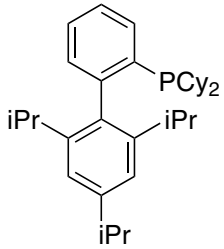
15-1138 100mg



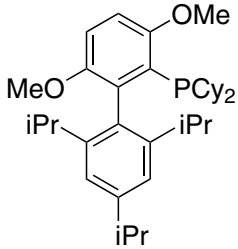
15-1143 500mg



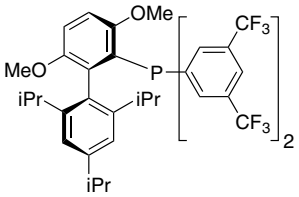
15-1146 1g



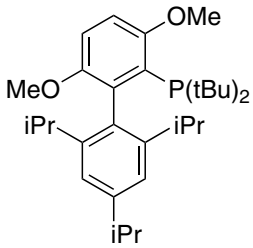
15-1149 500mg



15-1152 250mg



15-1157 100mg

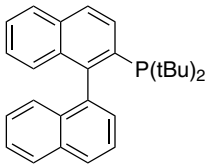


15-1164 100mg

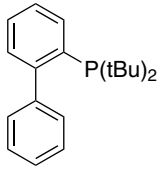
15-1051	2-Di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% Me_4 t-BuXPhos *(857356-94-6)*	250mg	See page 290
15-1052	2-Di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuXPhos *(564483-19-8)*	500mg	See page 290
15-1138	2-(Di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 95% AdBrettPhos *(1160861-59-5)*	100mg	See page 284
15-1143	2-Dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl, min. 98% SPhos *(657408-07-6)*	500mg	See page 292
15-1146	2-Dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl, min. 98% RuPhos *(787618-22-8)*	1g	See page 293
15-1149	2-(Dicyclohexylphosphino)-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% XPhos *(564483-18-7)*	500mg	See page 295
15-1152	2-(Dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% BrettPhos *(1070663-78-3)*	250mg	See page 293
15-1157	2-Di[3,5-bis(trifluoromethyl)phenylphosphino]-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% JackiePhos *(1160861-60-8)*	100mg	See page 285
15-1164	2-(Di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuBrettPhos *(1160861-53-9)*	100mg	See page 288

LIGAND KITS - Buchwald Biaryl Phosphine Ligand Mini Kit 2

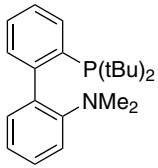
96-5490 **Buchwald Biaryl Phosphine Ligand Mini Kit 2 for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
For aromatic carbon-heteroatom bond formation and Suzuki Coupling.
Patents: US 6,395,916, US 6,307,087
Components also available for individual sale.
Contains the following:



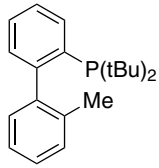
15-1043 250mg



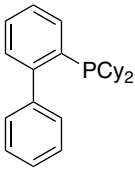
15-1045 500mg



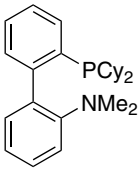
15-1048 500mg



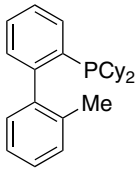
15-1049 500mg



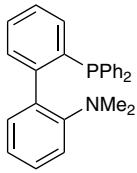
15-1140 1g



15-1145 500mg



15-1148 500mg

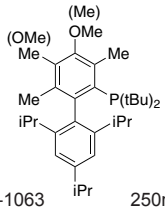


15-1745 500mg

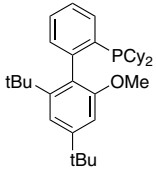
15-1043	racemic-2-Di-t-butylphosphino-1, 1'-binaphthyl, 98% TrixiePhos *(255836-67-0)*	250mg	See page 288
15-1045	2-(Di-t-butylphosphino))-1,1'-biphenyl, 99% JohnPhos *(224311-51-7)*	500mg	See page 288
15-1048	2-Di-t-butylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% tBuDavePhos *(224311-49-3)*	500mg	See page 289
15-1049	2-Di-t-butylphosphino-2'-methyl)-1,1'-biphenyl, 99% t-BuMePhos *(255837-19-5)*	500mg	See page 289
15-1140	2-(Dicyclohexylphosphino))-1,1'-biphenyl, 98% CyJohnPhos *(247940-06-3)*	1g	See page 292
15-1145	2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% DavePhos *(213697-53-1)*	500mg	See page 293
15-1148	2-Dicyclohexylphosphino-2'-methyl-)-1,1'-biphenyl, min. 98% MePhos *(251320-86-2)*	500mg	See page 294
15-1745	2-Diphenylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% PhDavePhos *(240417-00-9)*	500mg	See page 304

LIGAND KITS - Buchwald Biaryl Phosphine Ligand Mini Kit 3

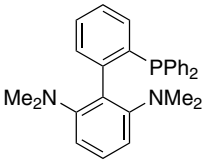
96-5495 NEW **Buchwald Biaryl Phosphine Ligand Mini Kit 3 for Aromatic Carbon-Heteroatom Bond Formation, Suzuki Coupling and Negishi Cross-coupling**
For aromatic carbon-heteroatom bond formation and Suzuki Coupling.
Patents: US 6,395,916, US 6,307,087.
Components also available for individual sale.
Contains the following:



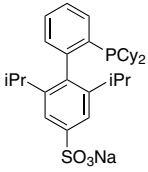
15-1063 250mg



15-1105 250mg

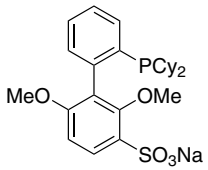


15-1125 100mg

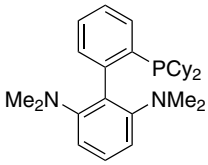


15-1135 100mg

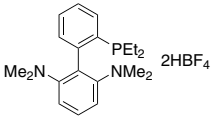
LIGAND KITS - Buchwald Biaryl Phospine Ligand Mini Kit 3



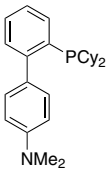
15-1142 500mg



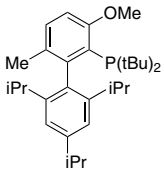
15-1147 250mg



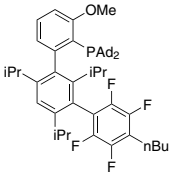
15-1151 100mg



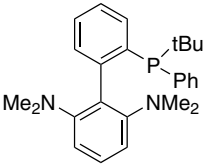
15-1154 250mg



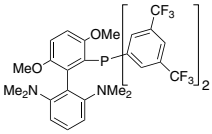
15-1168 100mg



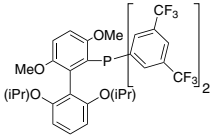
15-2065 100mg



15-3010 250mg



15-3015 100mg



15-3020 250mg

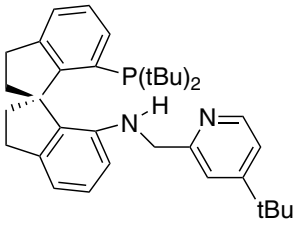
15-1063	2-Di-t-butylphosphino-4-methoxy-3,5,6-trimethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% [~1:1 mixture with regioisomer, 2-Di-t-butylphosphino-5-methoxy-3,4,6-trimethyl-2',4',6'-tri-i-propylbiphenyl] *(1359986-21-2)*	250mg	See page 289
15-1105	2-Dicyclohexylphosphino-2'-methoxy-4',6'-di-t-butyl-1,1'-biphenyl, min. 98% VPhos *(1848244-75-6)*	250mg	See page 294
15-1125	2-Diphenylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% PhCPhos *(1447963-71-4)*	100mg	See page 303
15-1135	2'-Dicyclohexylphosphino-2,6-di-i-propyl-4-sulfonato-1,1'-biphenyl hydrate sodium salt (XPhos-SO_3Na) *(870245-84-4)*	100mg	See page 293
15-1142	2'-Dicyclohexylphosphino-2,6-dimethoxy-3-sulfonato-1,1'-biphenyl hydrate sodium salt (water soluble SPhos), min. 98% *(1049726-96-6)*	500mg	See page 292
15-1147	2-Dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% CPhos *(1160556-64-8)*	250mg	See page 292
15-1151	2-Diethylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl di(hydrogen tetrafluoroborate) salt, min. 98% EtCPhos	100mg	See page 296
15-1154	2-Dicyclohexylphosphino-4'-(N,N-dimethylamino)-1,1'-biphenyl, 98% *(1185899-00-6)*	250mg	See page 293
15-1168	2-(Di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% RockPhos *(1262046-34-3)*	100mg	See page 289
15-2065	2-(Diadamantylphosphino)-3-methoxy-2',4',6'-tri-i-propyl-3'-(2,3,5,6-tetrafluoro-4-butylphenyl)-1,1'-biphenyl AlPhos *(1805783-60-1)*	100mg	See page 284
15-3010	2-(t-Butylphenylphosphino)-2',6'-dimethylamino-1,1'-biphenyl, 98% (t-Bu)PhCPhos *(1660153-91-2)*	250mg	See page 282
15-3015	2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-dimethylamino-1,1'-biphenyl, 98% *(1810068-30-4)*	100mg	See page 280
15-3020	2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-di-i-propoxy-1,1'-biphenyl, 98% *(1810068-31-5)*	250mg	See page 280

LIGAND KITS - Chiral SpiroPAP Ligand Kit

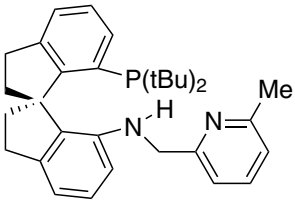
96-0445 **Chiral SpiroPAP Ligand Kit**

NEW

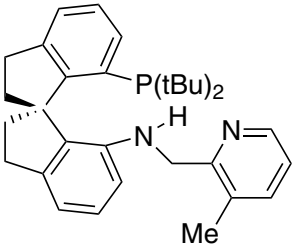
Also available: 77-4035 [Ir-(R)-DTB-SpiroPAP-3-Me] and 77-4036 [Ir-(S)-DTB-SpiroPAP-3-Me] (not part of the kit)
Components also available for individual sale.
Contains the following:



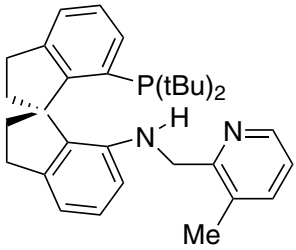
15-5147 25mg



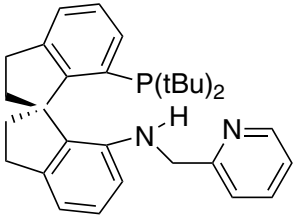
15-5148 25mg



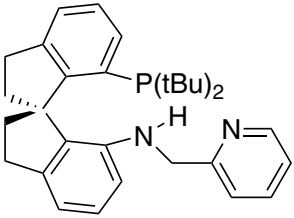
15-5158 25mg



15-5159 25mg



15-5166 25mg



15-5167 25mg

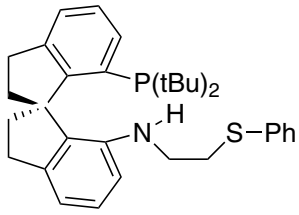
15-5147	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(4-t-butylpyridine-2-yl-methyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-4-t-Bu *(1298133-38-6)*	25mg	See page 256
15-5148	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(6-methylpyri-dine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-6-Me *(1298133-26-2)*	25mg	See page 257
15-5158	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyri-dine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-3-Me *(1298133-36-4)*	25mg	See page 256
15-5159	(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-yl-methyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (S)-DTB-SpiroPAP-3-Me	25mg	See page 257
15-5166	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(pyridine-2-ylmethyl) amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP *(1298133-21-7)*	25mg	See page 257
15-5167	(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(pyridine-2-ylmethyl) amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (S)-DTB-SpiroPAP *(1415636-82-6)*	25mg	See page 257

LIGAND KITS - Chiral SpiroSAP Ligand Kit

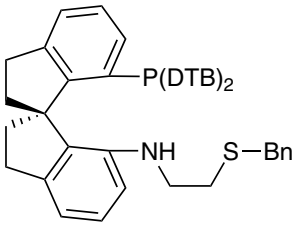
96-0070 **Chiral SpiroSAP Ligand Kit**

NEW

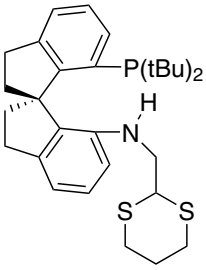
Also available: 77-2510 [Ir-(R)-DTB-SpiroSAP] and 77-2511 [Ir-(S)-DTB-SpiroSAP] (not part of the kit)
Components also available for individual sale.
Contains the following:



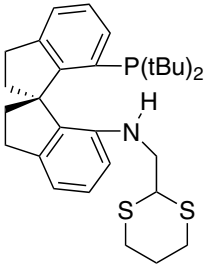
15-1605 25mg



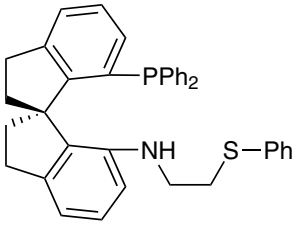
15-1613 25mg



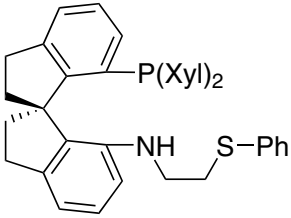
15-1638 25mg



15-1639 25mg



15-1643 25mg

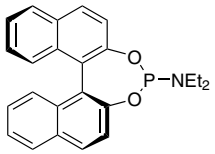


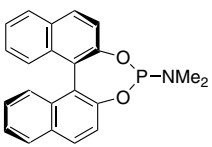
15-1645 25mg

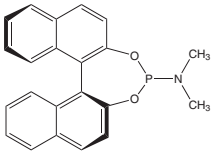
15-1605	(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[bis(3,5-di-t-butylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP-Ph] *(1809609-38-8)*	25mg	See page 319
15-1613	(R)-(+)-7-[N-(2-Benzylthio)ethylamino]-7'-[bis(3,5-di-t-butylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP-Bn] *(1809609-52-6)*	25mg	See page 252
15-1638	(R)-(+)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP] *(1809609-53-7)*	25mg	See page 311
15-1639	(S)-(-)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(S)-DTB-SpiroSAP]	25mg	See page 311
15-1643	(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[diphenylphosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-Ph-SpiroSAP-Ph] *(1809609-40-2)*	25mg	See page 319
15-1645	(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[bis(3,5-dimethylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-Xyl-SpiroSAP-Ph] *(1809609-39-9)*	25mg	See page 319

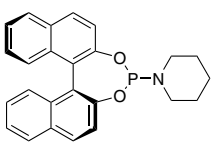
LIGAND KITS - DSM MonoPhos™ Ligand Kit

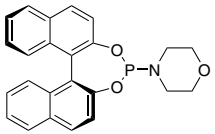
96-5650 **DSM MonoPhos™ Ligand Kit**
For asymmetric catalytic hydrogenations and other transformations.
Sold in collaboration with DSM for research purposes only.
Components also available for individual sale. Contains the following:

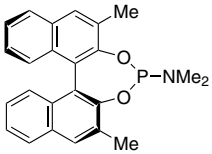

15-1231 250mg

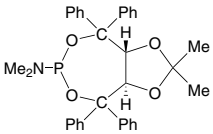

15-1232 1g

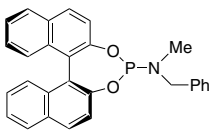

15-1233 1g

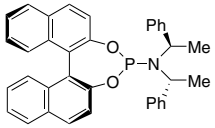

15-1234 100mg

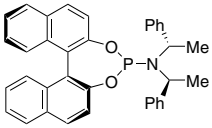

15-1235 100mg

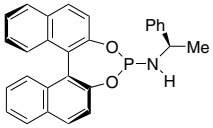

15-1255 100mg

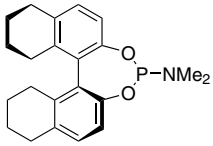

15-1505 100mg


15-1510 100mg


15-1520 100mg


15-1521 100mg

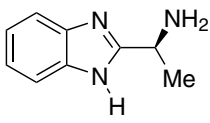

15-1525 100mg


15-3495 100mg

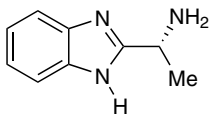
15-1231	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)diethylamine, min. 97% *(252288-04-3)*	250mg	See page 302
15-1232	(R)-(-)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, min. 97% (R)-MONOPHOS *(157488-65-8)*	1g	See page 302
15-1233	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, min. 97% (S)-MONOPHOS *(185449-80-3)*	1g	See page 302
15-1234	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)piperidine, min. 97% (S)-PipPhos *(284472-79-3)*	100mg	See page 302
15-1235	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)morpholine, min. 97% (S)-MorfPhos *(185449-81-4)*	100mg	See page 302
15-1255	(S)-(+)-(2,6-Dimethyl-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a'] dinaphthalen-4-yl)dimethylamine, min. 98% *(185449-86-9)*	100mg	See page 298
15-1505	(3aR,8aR)-(-)-(2,2-Dimethyl-4,4,8,8-tetraphenyl-tetrahydro-[1,3] dioxolo[4,5-e][1,3,2]dioxaphosphepin-6-yl)dimethylamine, min. 98% *(213843-90-4)*	100mg	See page 300
15-1510	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)benzyl(methyl)amine, 99% *(490023-37-5)*	100mg	See page 301
15-1520	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)bis[(1R)-1-phenylethyl]amine, dichloromethane adduct, min. 95% *(415918-91-1)*	100mg	See page 301
15-1521	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)bis[(1S)-1-phenylethyl]amine, min. 95% *(380230-02-4)*	100mg	See page 301
15-1525	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)[(1R)-1-phenylethyl]amine, min. 95% *(422509-53-3)*	100mg	See page 302
15-3495	(S)-(+)-(8,9,10,11,12,13,14,15-Octahydro-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, 99% *(389130-06-7)*	100mg	See page 317

LIGAND KITS - Enantiotech BIMAH Ligand Kit

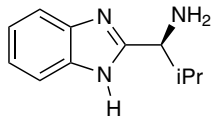
96-3700 **Enantiotech BIMAH Ligand Kit for Asymmetric Hydrogenation**
Sold under license from Enantiotech for research purposes only.
PCT/CN2008/073648, CN 200810038929.
Components also available for individual sale.
Contains the following:



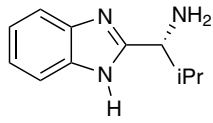
07-1232 250mg



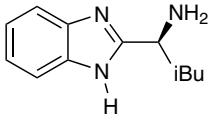
07-1234 250mg



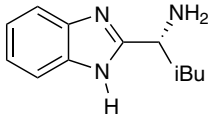
07-1236 250mg



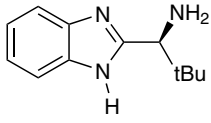
07-1238 250mg



07-1240 250mg



07-1242 100mg

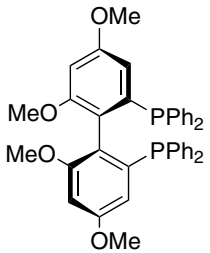


07-1245 100mg

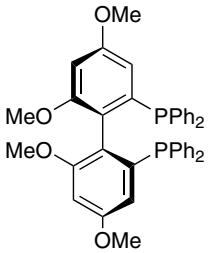
07-1232	(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole, min. 98% (S)-Me-BIMAH *(925689-54-9)*	250mg	See page 203
07-1234	(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole, min. 98% (R)-Me-BIMAH *(163959-79-3)*	250mg	See page 203
07-1236	(S)-(-)-2-(α-(i-propyl)methanamine)-1H-benzimidazole, min. 98% (S)-i-Pr-BIMAH *(59653-66-6)*	250mg	See page 206
07-1238	(R)-(+)-2-(α-(i-propyl)methanamine)-1H-benzimidazole, min. 98% (R)-i-Pr-BIMAH *(1235024-08-4)*	250mg	See page 206
07-1240	(S)-(-)-2-(α-(i-butyl)methanamine)-1H-benzimidazole, min. 98% (S)-i-Bu-BIMAH *(59592-31-3)*	250mg	See page 190
07-1242	(R)-(+)-2-(α-(i-butyl)methanamine)-1H-benzimidazole, min. 98% (R)-i-Bu-BIMAH *(1235960-36-7)*	100mg	See page 190
07-1245	(S)-(-)-2-(α-(t-butyl)methanamine)-1H-benzimidazole, min. 95% (S)-t-Bu-BIMAH *(1118114-88-7)*	100mg	See page 189

LIGAND KITS - Garphos™ Ligand Kit

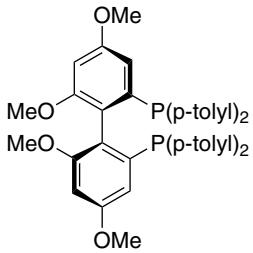
96-4100 **Garphos™ Ligand Kit**
Sold in collaboration with KCT. Patent US App No. 61/381,493.
Components also available for individual sale.
Contains the following:



15-1653 100mg

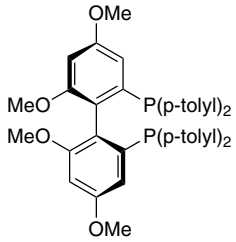


15-1654 100mg

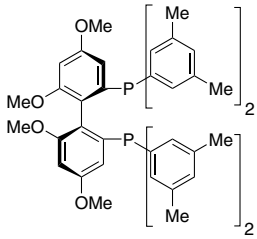


15-1657 100mg

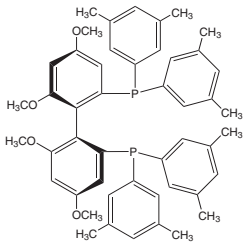
LIGAND KITS - Garphos™ Ligand Kit



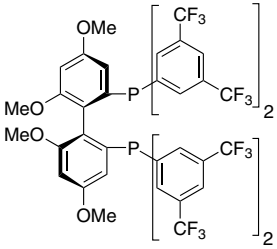
15-1658 100mg



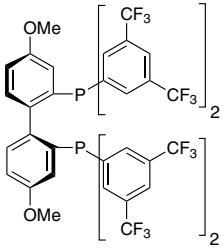
15-1661 100mg



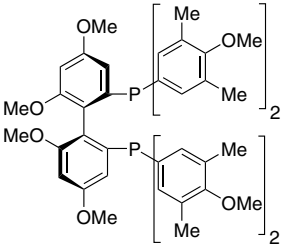
15-1662 100mg



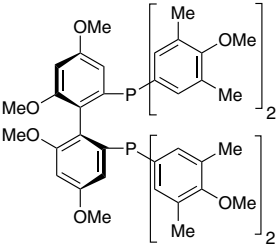
15-1663 100mg



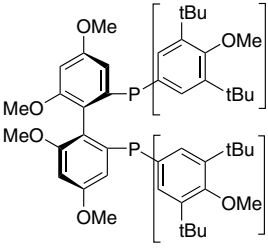
15-1664 100mg



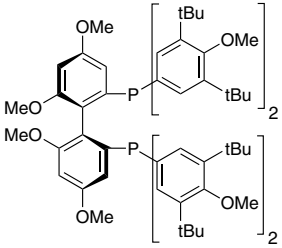
15-1666 100mg



15-1667 100mg



15-1672 100mg

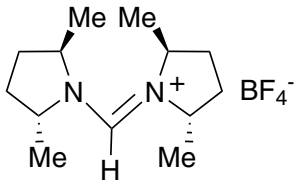


15-1673 100mg

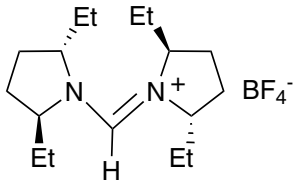
15-1653	(R)-2,2'-Bis(diphenylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-Ph-Garphos™ *(1365531-75-4)*	100mg	See page 272
15-1654	(S)-2,2'-Bis(diphenylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Ph-Garphos™ *(1365531-76-5)*	100mg	See page 272
15-1657	(R)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-Tol-Garphos™ *(1365531-81-2)*	100mg	See page 275
15-1658	(S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Tol-Garphos™ *(1365531-82-3)*	100mg	See page 275
15-1661	(R)-2,2'-Bis[bis(3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy-)-1,1'-biphenyl, min. 97% (R)-Xyl-Garphos™ *(1365531-89-0)*	100mg	See page 253
15-1662	(S)-2,2'-Bis[bis(3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Xyl-Garphos™ *(1365531-90-3)*	100mg	See page 253
15-1663	(R)-2,2'-Bis[bis(3,5-trifluoromethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-BTFM-Garphos™ *(1365531-84-5)*	100mg	See page 255
15-1664	(S)-2,2'-Bis[bis(3,5-trifluoromethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-BTFM-Garphos™ *(1365531-85-6)*	100mg	See page 255
15-1666	(R)-2,2'-Bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-DMM-Garphos™ *(1365531-93-6)*	100mg	See page 254
15-1667	(S)-2,2'-Bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-DMM-Garphos™ *(1365531-94-7)*	100mg	See page 254
15-1672	(R)-2,2'-Bis[bis(4-methoxy-3,5-di-t-butylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-DTBM-Garphos™ *(1365531-98-1)*	100mg	See page 253
15-1673	(S)-2,2'-Bis[bis(4-methoxy-3,5-di-t-butylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-DTBM-Garphos™ *(1365531-99-2)*	100mg	See page 253

LIGAND KITS - NHC Ligand Kit 1: Chiral N-Heterocyclic Carbenes

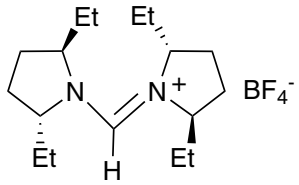
96-3760 **NHC Ligand Kit 1: Chiral N-Heterocyclic Carbenes**
Sold under license from Kanata for research purposes only. WO2010/003226.
Components also available for individual sale.
Contains the following:



07-4022 100mg



07-4024 100mg

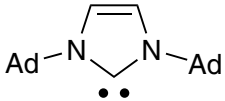


07-4025 100mg

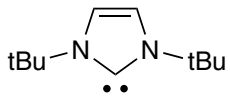
07-4022	(2R,5R)-1-{[(2R,5R)-2,5-Dimethylpyrrolidin-1-yl]methylene}-2,5-dimethylpyrrolidinium tetrafluoroborate, min. 97% *(1204324-14-0)*	100mg	See page 198
07-4024	(2R,5R)-1-{[(2R,5R)-2,5-Diethylpyrrolidin-1-yl]methylene}-2,5-diethylpyrrolidinium tetrafluoroborate, min. 97% *(1204324-20-8)*	100mg	See page 196
07-4025	(2S,5S)-1-{[(2S,5S)-2,5-Diethylpyrrolidin-1-yl]methylene}-2,5-diethylpyrrolidinium tetrafluoroborate, min. 97% *(1204324-18-4)*	100mg	See page 196

LIGAND KITS - NHC Ligand Kit 2: "Free" Carbenes

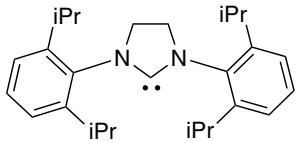
96-3765 **NHC Ligand Kit 2: "Free" Carbenes**
HAZ Components also available for individual sale.
Contains the following:



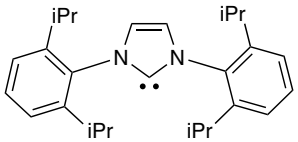
07-0324 250mg



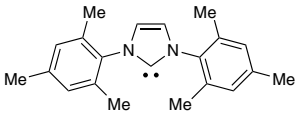
07-0333 250mg



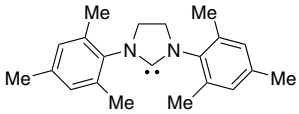
07-0593 500mg



07-0595 250mg



07-0600 500mg

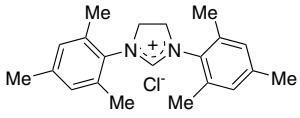


07-0605 500mg

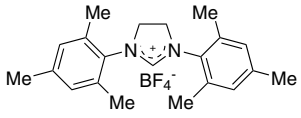
07-0324	1,3-Bis(1-adamantyl)imidazol-2-ylidene, min. 98% ARDUENGO'S CARBENE *(131042-77-8)*	250mg	See page 180
07-0333	1,3-Di-t-butylimidazol-2-ylidene, min. 98% *(157197-53-0)*	250mg	See page 195
07-0593	1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidine, min. 98% *(258278-28-3)*	500mg	See page 183
07-0595	1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene, min. 98% *(244187-81-3)*	250mg	See page 184
07-0600	1,3-Bis(2,4,6-trimethylphenyl)imidazol-2-ylidene, min. 98% *(141556-42-5)*	500mg	See page 189
07-0605	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene, min. 98% *(173035-11-5)*	500mg	See page 189

LIGAND KITS - NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes

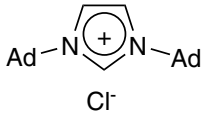
96-3770 **NHC Ligand Kit 3: Variety of N-Heterocyclic Carbenes**
Components also available for individual sale. Contains the following:



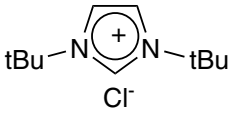
07-0299 1g



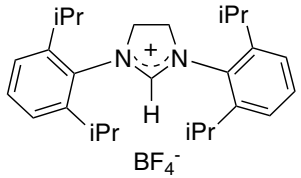
07-0302 1g



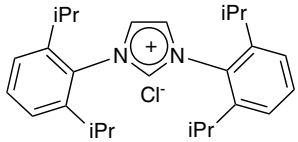
07-0322 250mg



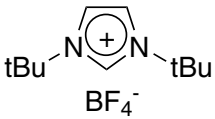
07-0368 250mg



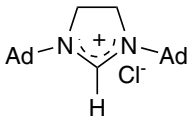
07-0587 1g



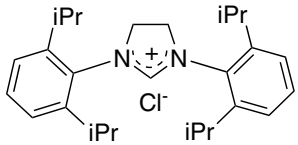
07-0590 500mg



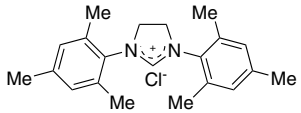
07-0598 500mg



07-4007 500mg



07-4009 500mg

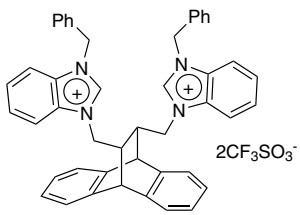


07-4011 500mg

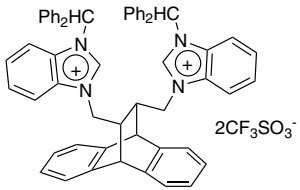
07-0299	1,3-Bis(2,4,6-trimethylphenyl)imidazolium chloride, min. 97% *(141556-45-8)*	1g	See page 189
07-0302	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazolium tetrafluoroborate, min. 95% SIMes-HBF_4 *(245679-18-9)*	1g	See page 189
07-0322	1,3-Bis(1-adamantyl)imidazolium chloride, min. 97% *(131042-78-9)*	250mg	See page 180
07-0368	1,3-Di-t-butylimidazolium chloride, min. 98% *(157197-54-1)*	250mg	See page 194
07-0587	1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazolium tetrafluoroborate, min. 95% *(282109-83-5)*	1g	See page 183
07-0590	1,3-Bis(2,6-di-i-propylphenyl) imidazolium chloride, min. 97% *(250285-32-6)*	500mg	See page 184
07-0598	1,3-Bis(t-butyl)imidazolium tetrafluoroborate, min. 97% ItBuHBF_4 *(263163-17-3)*	500mg	See page 181
07-4007	1,3-Bis(1-adamantyl)-4,5-dihydroimidazolium chloride, min. 97% *(871126-33-9)*	500mg	See page 180
07-4009	1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazolium chloride, min. 97% *(258278-25-0)*	500mg	See page 183
07-4011	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazolium chloride, min. 97% *(173035-10-4)*	500mg	See page 189

LIGAND KITS - NHC Ligand Kit 4: Bis Carbenes

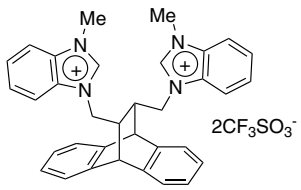
96-3775 **NHC Ligand Kit 4: Bis Carbenes**
Components also available for individual sale.
Contains the following:



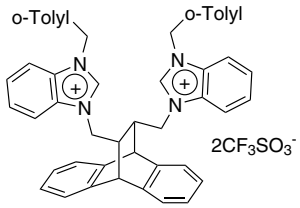
07-0076 100mg



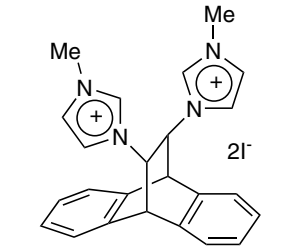
07-0078 100mg



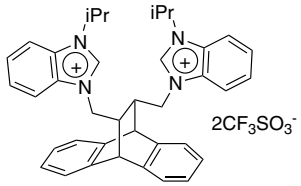
07-0080 100mg



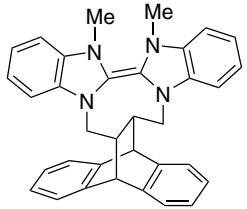
07-0082 100mg



07-0083 100mg

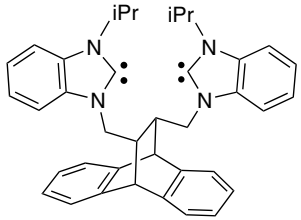


07-0084 100mg



CF_3SO_3K adduct

07-0086 100mg

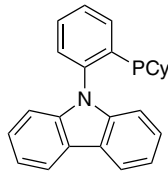


07-0088 100mg

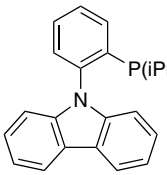
07-0076	11,12-Bis[N-benzyl-1H-imidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)	100mg	See page 180
07-0078	11,12-Bis[N-(2,2-diphenyl-1-ethyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate), min. 95%	100mg	See page 183
07-0080	11,12-Bis[N-methyl-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate) *(958004-03-0)*	100mg	See page 186
07-0082	11,12-Bis[N-(2-methylbenzyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate), min. 95%	100mg	See page 186
07-0083	11,12-Bis[3-methylimidazolium]-9,10-dihydro-9,10-ethanoanthracene bis(iodide), min. 95%	100mg	See page 186
07-0084	11,12-Bis[N-(i-propyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate) *(958004-12-1)*	100mg	See page 188
07-0086	(12a,18a)-5,6,12,12a,13,18,18a,19-Octahydro-5,6-dimethyl-13,18[1',2']-benzenobisbenzimidazo [1,2-b:2',1'-d]benzo[i][2.5] benzodiazocine potassium triflate adduct *(958004-04-1)*	100mg	See page 204
07-0088	11,12-Bis[1,3-dihydro-3-(i-propyl)-2H-benzimidazol-2-ylidene-3-methylene]-9,10-dihydro-9,10-ethanoanthracene *(958004-05-2)*	100mg	See page 182

LIGAND KITS - PhenCar-Phos Ligand Kit

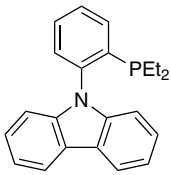
96-3780 **PhenCar-Phos Ligand Kit**
Components also available for individual sale.
Contains the following:



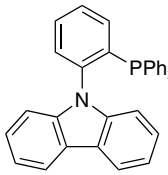
15-0445 250mg



15-0493 250mg



15-0496 100mg

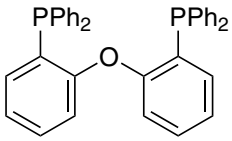


15-0498 250mg

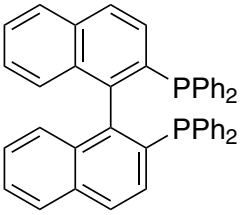
15-0445	9-[2-(Dicyclohexylphosphino) phenyl]-9H-carbazole, min. 98% PhenCar-Phos *(1308652-64-3)*	250mg	See page 294
15-0493	9-[2-(Di-i-propylphosphino)phenyl]- 9H-carbazole, min. 97% i-Pr PhenCar-Phos *(1308652-65-4)*	250mg	See page 310
15-0496	9-[2-(Diethylphosphino)phenyl]-9H-carbazole, min. 97% Et PhenCar-Phos *(1308652-66-5)*	100mg	See page 296
15-0498	9-[2-(Diphenylphosphino)phenyl]-9H-carbazole, min. 97% Ph PhenCar-Phos *(1308652-67-6)*	250mg	See page 307

LIGAND KITS - Phosphine Ligand Kit

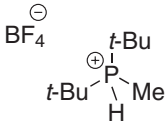
96-1650 **Phosphine Ligand Kit for Palladium-Catalyzed Carbon-Carbon and Carbon-Heteroatom Bond Formation**
For Palladium-catalyzed carbon-carbon and carbon-heteroatom bond formation.
Components also available for individual sale. Contains the following:



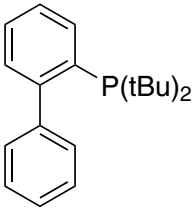
15-0380 5g



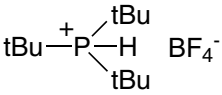
15-0433 1g



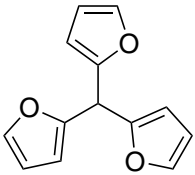
15-1023 1g



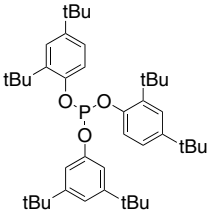
15-1045 500mg



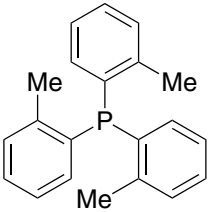
15-6000 1g



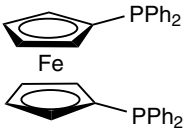
15-6372 500mg



15-7720 10g



15-8050 5g



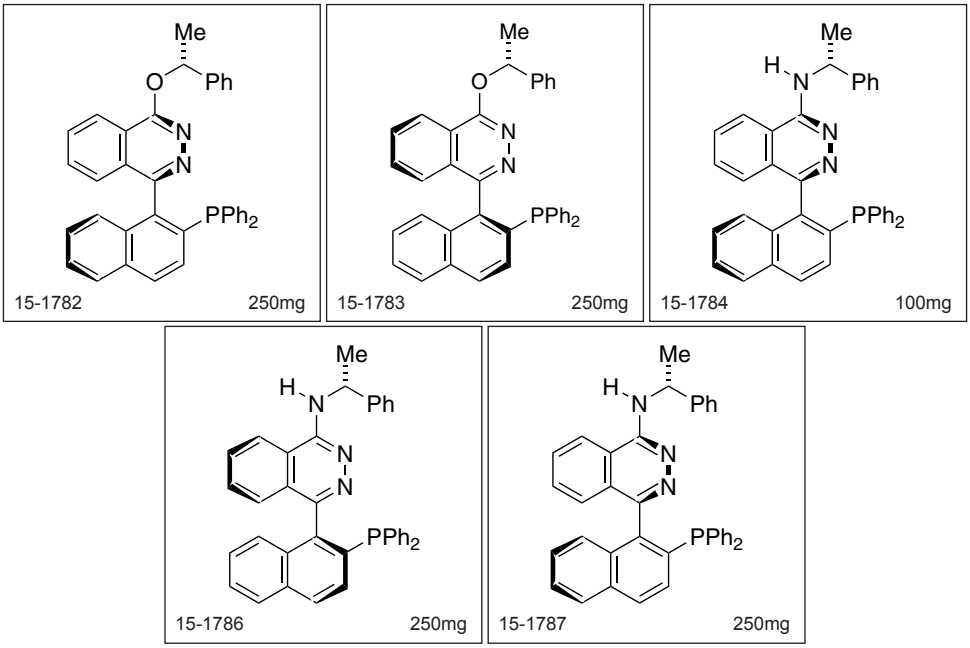
26-0270 1g

LIGAND KITS - Phosphine Ligand Kit

15-0380	Bis(2-diphenylphosphinophenyl)ether, 98% DPEphos *(166330-10-5)*	5g	See page 270
15-0433	racemic-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% rac-BINAP *(98327-87-8)*	1g	See page 267
15-1023	Di-t-butylmethylphosphonium tetrafluoroborate, 99% *(870777-30-3)*	1g	See page 287
15-1045	2-(Di-t-butylphosphino))-1,1'-biphenyl, 99% JohnPhos *(224311-51-7)*	500mg	See page 288
15-6000	Tri-t-butylphosphonium tetrafluoroborate, 99% *(131274-22-1)*	1g	See page 326
15-6372	Tri-2-furylphosphine, 98+% *(5518-52-5)*	500mg	See page 327
15-7720	Tris(2,4-di-t-butylphenyl)phosphite, 98% *(31570-04-4)*	10g	See page 331
15-8050	Tri-o-tolylphosphine, 99% *(6163-58-2)*	5g	See page 333
26-0270	1,1'-Bis(diphenylphosphino)ferrocene, 99% DPPF *(12150-46-8)*	1g	See page 97

LIGAND KITS - PINAP Ligand Kit

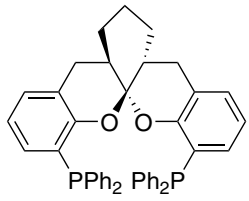
96-7050 **PINAP Ligand Kit**
For a variety of asymmetric C-C bond formations.
Components also available for individual sale.
Contains the following:



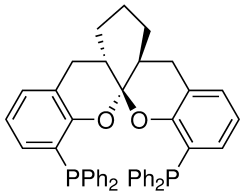
15-1782	(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethoxy]phthalazine, min. 97% (R,R)-O-PINAP *(828927-95-3)*	250mg	See page 307
15-1783	(S)-(-)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethoxy]phthalazine, min. 97% (R,S)-O-PINAP *(828927-94-2)*	250mg	See page 307
15-1784	(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethyl]-1-phthalazinamine, min. 97% (R,R)-N-PINAP *(828927-97-5)*	100mg	See page 307
15-1786	(S)-(-)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethyl]-1-phthalazinamine, min. 97% (R,S)-N-PINAP *(828927-96-4)*	250mg	See page 307
15-1787	(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(S)-1-phenylethyl]-1-phthalazinamine, min. 97% (S,R)-N-PINAP *(1173836-08-2)*	250mg	See page 307

LIGAND KITS - SKP Ligand Kit

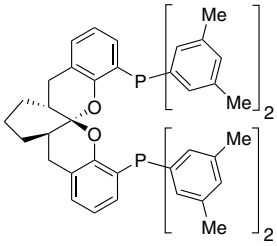
96-2310 **SKP Ligand Kit for asymmetric-allylic amination and cyclopropanation**
Sold in collaboration with SIOC for research purposes only.
Patents PCT/CN2013/071091, CN202110253896.5
Components also available for individual sale.
Contains the following:



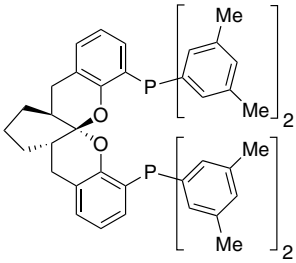
15-4310 25mg



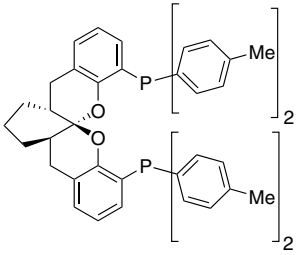
15-4311 25mg



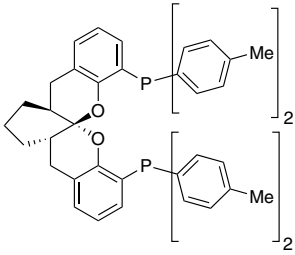
15-4320 25mg



15-4321 25mg



15-4330 25mg

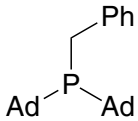


15-4331 25mg

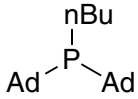
15-4310	(+)-1,13-Bis(diphenyl)phosphino-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano [3,2-d]xanthene, 97% (R,R,R)-(+)-Ph-SKP *(1360823-43-3)*	25mg	See page 269
15-4311	(-)-1,13-Bis(diphenyl)phosphino-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano [3,2-d]xanthene, 97% (S,S,S)-(-)-Ph-SKP *(1439556-82-7)*	25mg	See page 269
15-4320	(+)-1,13-Bis[di(3,5-dimethylphenyl)phosphino]-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (R,R,R)-(+)-Xyl-SKP *(1429939-35-4)*	25mg	See page 260
15-4321	(-)-1,13-Bis[di(3,5-dimethylphenyl)phosphino]-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (S,S,S)-(-)-Xyl-SKP *(1429939-31-0)*	25mg	See page 261
15-4330	(+)-1,13-Bis[di(4-methylphenyl)phosphino]-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (R,R,R)-(+)-Tol-SKP *(1429939-32-1)*	25mg	See page 264
15-4331	(-)-1,13-Bis[di(4-methylphenyl)phosphino]-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (S,S,S)-(-)-Tol-SKP *(1548897-80-8)*	25mg	See page 264

LIGAND KITS - Solvias CataCXium® Ligand Kit

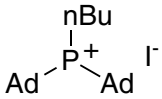
96-6651 **Solvias cataCXium® Ligand Kit for C-X coupling reactions**
For C-X coupling reactions. Sold in collaboration with Solvias for research purposes only.
Components also available for individual sale. Contains the following:



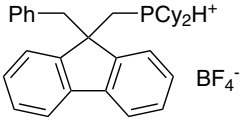
15-0038 500mg



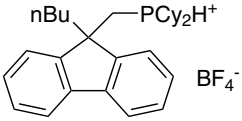
15-0483 1g



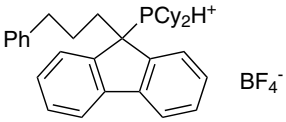
15-0495 250mg



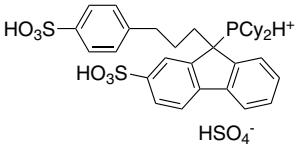
15-1072 500mg



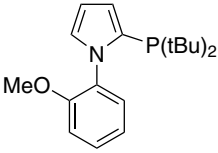
15-1074 500mg



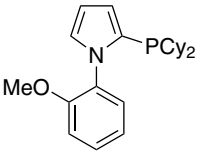
15-1076 500mg



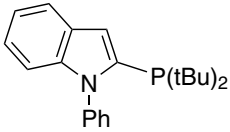
15-1078 500mg



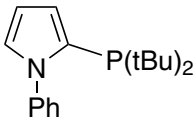
15-2975 500mg



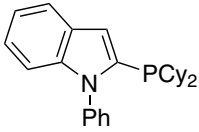
15-2980 500mg



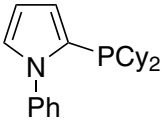
15-3550 500mg



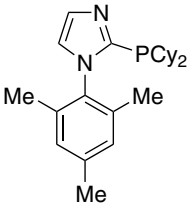
15-3600 500mg



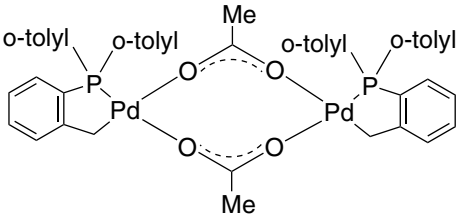
15-3605 500mg



15-3610 500mg



15-6362 500mg



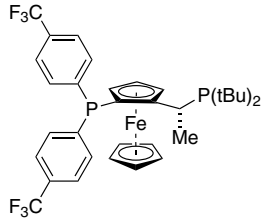
46-0290 250mg

LIGAND KITS - Solvias CataCXium® Ligand Kit

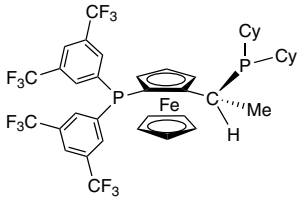
15-0038	Benzyldi-1-adamantylphosphine, min. 85% [cataCXium® ABn] *(395116-70-8)*	500mg	See page 251
15-0483	Butyldi-1-adamantylphosphine, min. 95% [cataCXium® A] *(321921-71-5)*	1g	See page 282
15-0495	n-Butyl-di-(1-adamantyl)phosphonium iodide, min. 95% [cataCXium® AHI] *(714951-87-8)*	250mg	See page 282
15-1072	Dicyclohexyl(9-benzylfluoren-9-yl)phosphonium tetrafluoroborate, min. 97% [cataCXium® FBn] *(937378-18-2)*	500mg	See page 291
15-1074	Dicyclohexyl(9-butylfluoren-9-yl)phosphonium tetrafluoroborate, min. 95% [cataCXium® FBu] *(1007311-98-9)*	500mg	See page 291
15-1076	Dicyclohexyl[9-(3-phenylpropyl)fluoren-9-yl]phosphonium tetrafluoroborate, min. 95% [cataCXium® FPrPh] *(1007311-95-6)*	500mg	See page 292
15-1078	Dicyclohexyl-{9-[3-(4-sulfonylphenyl)propyl]-2-sulfonylfluoren-9-yl} phosphonium hydrogen sulfate, min. 95% [cataCXium® FSulf]	500mg	See page 295
15-2975	N-(2-Methoxyphenyl)-2-(di-t-butylphosphino)pyrrole, min. 95% [cataCXium® POMetB] *(1053658-91-5)*	500mg	See page 315
15-2980	1-(2-Methoxyphenyl)-2-(dicyclohexylphosphino)pyrrole, min. 95% [cataCXium® POMeCy] *(672937-63-2)*	500mg	See page 315
15-3550	N-Phenyl-2-(di-t-butylphosphino)indol, min. 98% [cataCXium® PIntB] *(740815-37-6)*	500mg	See page 318
15-3600	N-Phenyl-2-(di-t-butylphosphino)pyrrole, 95+% [cataCXium® PtB] *(672937-61-0)*	500mg	See page 318
15-3605	N-Phenyl-2-(dicyclohexylphosphino)indol, min. 95% [cataCXium® PInCy] *(740815-36-5)*	500mg	See page 318
15-3610	N-Phenyl-2-(dicyclohexylphosphino)pyrrole, 90% [cataCXium® PCy] *(672937-60-9)*	500mg	See page 318
15-6362	1-(2,4,6-Trimethylphenyl)-2-(dicyclohexylphosphino)imidazole, min. 95% [cataCXium® PICy] *(794527-14-3)*	500mg	See page 328
46-0290	trans-Di(μ-acetato)bis[o-(di-o-tolylphosphino)benzyl]dipalladium(II), 97+% [cataCXium® C] *(172418-32-5)*	250mg	See page 235

LIGAND KITS - Solvias Josiphos Ligand Kit

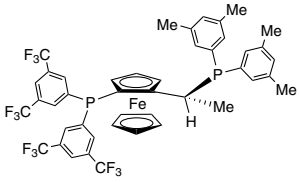
96-3650 **Solvias Josiphos Ligand Kit**
For asymmetric catalytic hydrogenations and other transformations.
Sold in collaboration with Solvias for research purposes only.
Components also available for individual sale.
Contains the following:



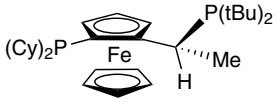
26-0650 100mg



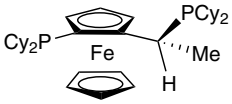
26-0960 100mg



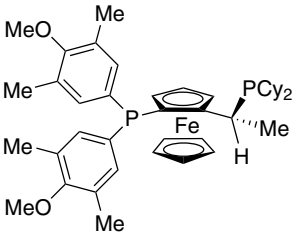
26-0965 100mg



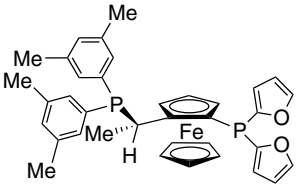
26-0975 100mg



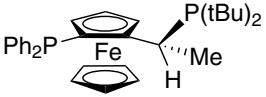
26-1000 100mg



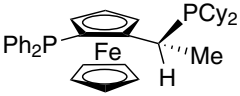
26-1150 100mg



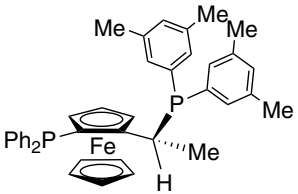
26-1170 100mg



26-1200 100mg



26-1210 100mg



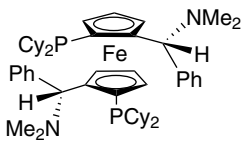
26-1255 100mg

LIGAND KITS - Solvias Josiphos Ligand Kit

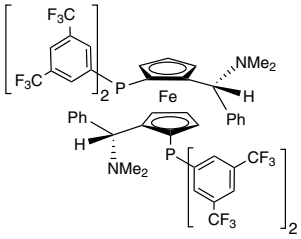
26-0650	(R)-(-)-1-{(S)-2-[Bis(4-trifluoromethylphenyl) phosphino]ferrocenyl} ethyl-di-t-butylphosphine, min. 97% *(246231-79-8)*	100mg	See page 99
26-0960	(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino]ferrocenyl} ethyldicyclohexylphosphine, min. 97% *(292638-88-1)*	100mg	See page 98
26-0965	(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino]ferrocenyl} ethyldi-3,5-xylylphosphine, min. 97% *(166172-63-0)*	100mg	See page 98
26-0975	(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97% *(158923-11-6)*	100mg	See page 101
26-1000	(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldicyclo-hexylphosphine, min. 97% *(167416-28-6)*	100mg	See page 101
26-1150	(R)-(-)-1-{(S)-2-[Bis(3,5-dimethyl-4-methoxyphenyl)phosphino] ferrocenyl}ethyldicyclohexylphosphine, min. 97% *(360048-63-1)*	100mg	See page 97
26-1170	(S)-(+)-1-[(R)-2-(Di-2-furylphosphino)ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97% *(649559-66-0)*	100mg	See page 102
26-1200	(R)-(-)-1-[(S)-2-(Diphenylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97% *(155830-69-6)*	100mg	See page 103
26-1210	(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldicyclo-hexylphosphine ethanol adduct, min. 97% (R)-(S)-JOSIPHOS *(155806-35-2)*	100mg	See page 104
26-1255	(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97% *(184095-69-0)*	100mg	See page 104

LIGAND KITS - Solvias MandyPhos™ Ligand Kit

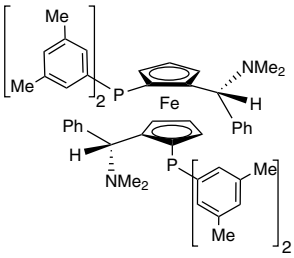
96-3652 **Solvias MandyPhos™ Ligand Kit**
For asymmetric catalytic hydrogenations and other transformations.
Sold in collaboration with Solvias for research purposes only.
Components also available for individual sale.
Contains the following:



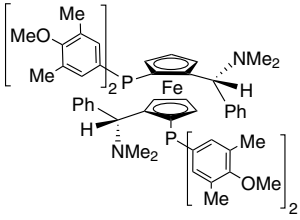
26-0240 100mg



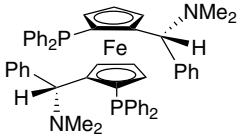
26-0244 100mg



26-0246 100mg



26-0248 100mg



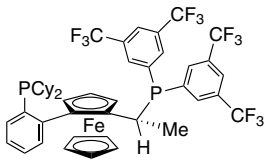
26-0252 100mg

LIGAND KITS - Solvias MandyPhos™ Ligand Kit

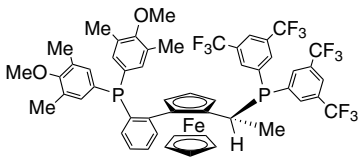
26-0240	(S,S)-(+)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(dicyclohexylphosphino)ferrocene, min. 97% *(494227-35-9)*	100mg	See page 96
26-0244	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-trifluoromethylphenyl)phosphino]ferrocene, min. 97% *(494227-36-0)*	100mg	See page 97
26-0246	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97% *(793718-16-8)*	100mg	See page 96
26-0248	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocene, min. 97% *(494227-37-1)*	100mg	See page 96
26-0252	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl) methyl]-1,1'-bis(diphenylphosphino)ferrocene, min. 97% *(174467-31-3)*	100mg	See page 96

LIGAND KITS - Solvias Walphos Ligand Kit

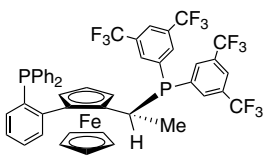
96-3651 **Solvias Walphos Ligand Kit**
For asymmetric catalytic hydrogenations and other transformations.
Sold in collaboration with Solvias for research purposes only.
Components also available for individual sale.
Contains the following:



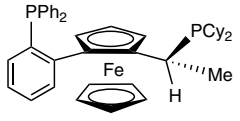
26-1120 100mg



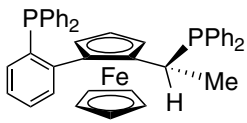
26-1130 100mg



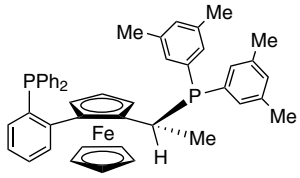
26-1300 100mg



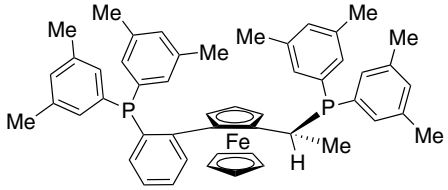
26-1310 100mg



26-1315 100mg



26-1320 100mg



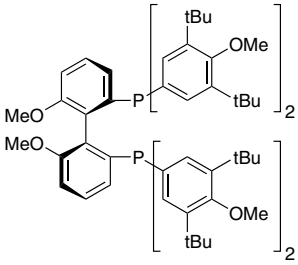
26-1555 100mg

LIGAND KITS - Solvias Walphos Ligand Kit

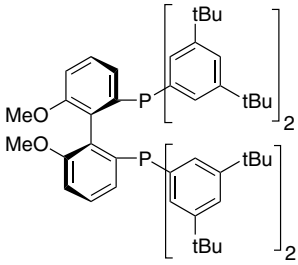
26-1120	(R)-(+)-1-[(R)-2-(2'-Dicyclohexylphosphinophenyl)ferrocenyl]ethyl-bis(3,5-trifluoromethylphenyl)phosphine, min. 97% *(821009-34-1)*	100mg	See page 102
26-1130	(R)-(+)-1-{(R)-2-[2'-Bis(3,5-dimethyl-4-methoxyphenyl)phosphino-phenyl]ferrocenyl} ethylbis(di-3,5-tri fluoromethylphenyl) phosphine, min. 97% *(494227-30-4)*	100mg	See page 97
26-1300	(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethylbis(di-3,5-trifluoromethylphenyl)phosphine, min. 97% *(565184-33-0)*	100mg	See page 104
26-1310	(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl] ethyldicyclohexylphosphine, min. 97% *(565184-29-4)*	100mg	See page 104
26-1315	(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldi-phenylphosphine, min. 97% *(565184-32-9)*	100mg	See page 104
26-1320	(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldi(3,5-xylyl)phosphine, min. 97% *(894771-25-6)*	100mg	See page 105
26-1555	(R)-(+)-1-[(R)-2-(2'-Di-3,5-xylylphosphinophenyl)ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97% *(894771-28-9)*	100mg	See page 105

LIGAND KITS - Solvias (R)-MeO-BIPHEP Ligand Kit

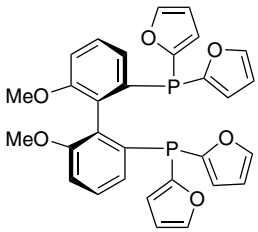
96-3655 **Solvias (R)-MeO-BIPHEP Ligand Kit**
Sold in collaboration with Solvias for research purposes only.
Components also available for individual sale.
Contains the following:



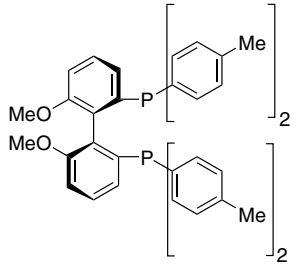
15-0042 100mg



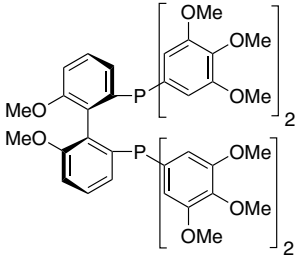
15-0044 100mg



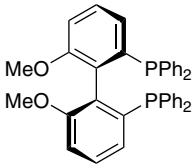
15-0112 100mg



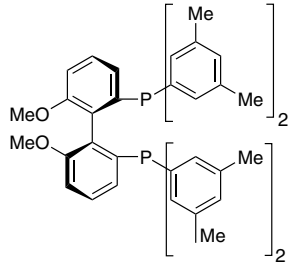
15-0156 100mg



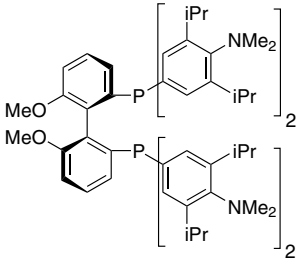
15-0158 100mg



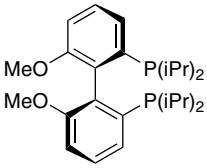
15-0178 100mg



15-0488 100mg



15-0652 100mg



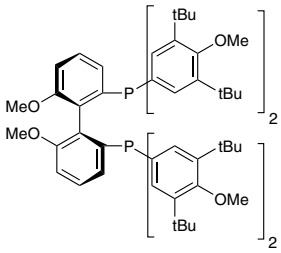
15-0654 100mg

LIGAND KITS - Solvias (R)-MeO-BIPHEP Ligand Kit

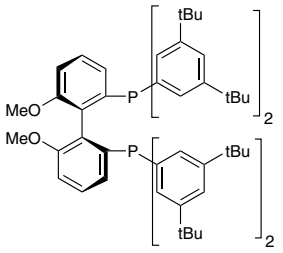
15-0042	(R)-(-)-2,2'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(352655-61-9)*	100mg	See page 260
15-0044	(R)-(+)-2,2'-Bis[di(3,5-di-t-butylphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(192138-05-9)*	100mg	See page 260
15-0112	(R)-(+)-2,2'-Bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(145214-57-9)*	100mg	See page 262
15-0156	(R)-(+)-2,2'-Bis(di-p-tolylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(133545-24-1)*	100mg	See page 275
15-0158	(R)-(+)-2,2'-Bis[di(3,4,5-trimethoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(256390-47-3)*	100mg	See page 276
15-0178	(R)-(+)-2,2'-Bis(diphenylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% (R)-MeO-BIPHEP *(133545-16-1)*	100mg	See page 268
15-0488	(R)-(+)-2,2'-Bis[di(3,5-xylyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(394248-45-4)*	100mg	See page 277
15-0652	(R)-(-)-2,2'-Bis[di(3,5-di-i-propyl-4-dimethylaminophenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(352655-40-4)*	100mg	See page 261
15-0654	(R)-(+)-2,2'-Bis(di-i-propylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(150971-45-2)*	100mg	See page 273

LIGAND KITS - Solvias (S)-MeO-BIPHEP Ligand Kit

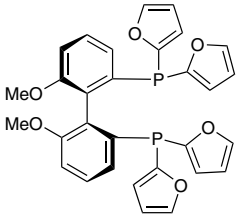
96-3656 **Solvias (S)-MeO-BIPHEP Ligand Kit**
Sold in collaboration with Solvias for research purposes only.
Components also available for individual sale.
Contains the following:



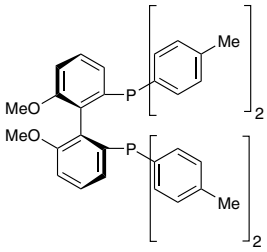
15-0043 100mg



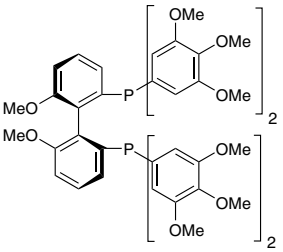
15-0045 100mg



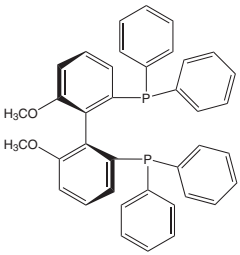
15-0113 100mg



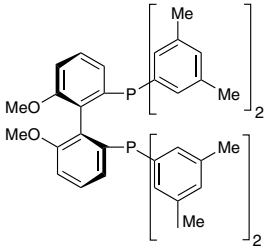
15-0157 100mg



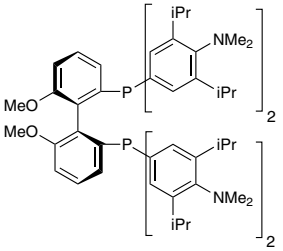
15-0159 100mg



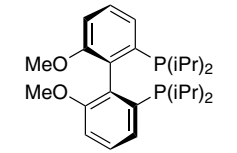
15-0179 100mg



15-0489 100mg



15-0653 100mg



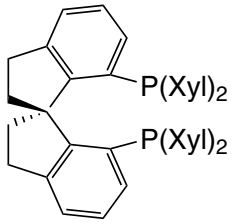
15-0655 100mg

LIGAND KITS - Solvias (S)-MeO-BIPHEP Ligand Kit

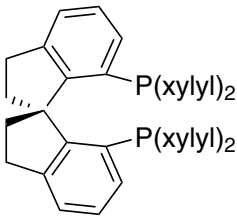
15-0043	(S)-(+)-2,2'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-6,6'-di-methoxy-1,1'-biphenyl, min. 97% *(910134-30-4)*	100mg	See page 260
15-0045	(S)-(-)-2,2'-Bis[di(3,5-di-t-butylphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(167709-31-1)*	100mg	See page 260
15-0113	(S)-(-)-2,2'-Bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(145214-59-1)*	100mg	See page 262
15-0157	(S)-(-)-2,2'-Bis(di-p-tolylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(133545-25-2)*	100mg	See page 275
15-0159	(S)-(-)-2,2'-Bis[di(3,4,5-trimethoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(256235-61-7)*	100mg	See page 276
15-0179	(S)-(-)-2,2'-Bis(diphenylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% (S)-MeO-BIPHEP *(133545-17-2)*	100mg	See page 268
15-0489	(S)-(-)-2,2'-Bis[di(3,5-xylyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(362634-22-8)*	100mg	See page 277
15-0653	(S)-(+)-2,2'-Bis[di(3,5-di-i-propyl-4-dimethylaminophenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(919338-66-2)*	100mg	See page 261
15-0655	(S)-(-)-2,2'-Bis(di-i-propylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% *(150971-43-0)*	100mg	See page 273

LIGAND KITS - Spiro Biphosphine Ligand Kit

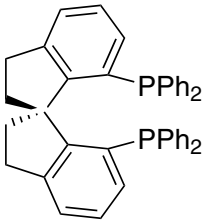
96-0060 **Spiro Bisphosphine Ligand Kit**
Components also available for individual sale.
Contains the following:



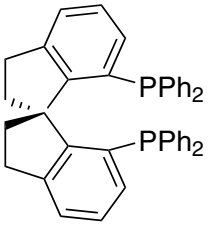
15-5168 25mg



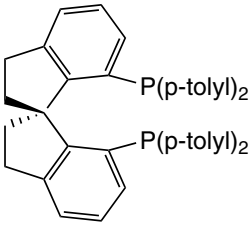
15-5169 25mg



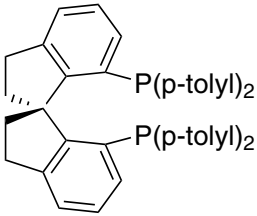
15-5174 25mg



15-5175 25mg



15-5180 25mg

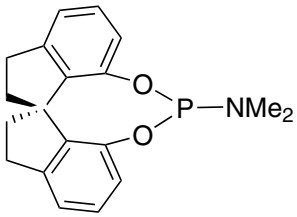


15-5181 25mg

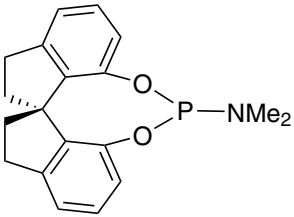
15-5168	(R)-(+)-7,7'-Bis[di(3,5-dimethylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-Xyl-SDP *(917377-75-4)*	25mg	See page 261
15-5169	(S)-(-)-7,7'-Bis[di(3,5-dimethylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-Xyl-SDP *(528521-89-3)*	25mg	See page 261
15-5174	(R)-(+)-7,7'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-SDP *(917377-74-3)*	25mg	See page 272
15-5175	(S)-(-)-7,7'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-SDP *(528521-86-0)*	25mg	See page 272
15-5180	(R)-(+)-7,7'-Bis[di(4-methylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-Tol-SDP *(528521-87-1)*	25mg	See page 264
15-5181	(S)-(-)-7,7'-Bis[di(4-methylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-Tol-SDP *(817176-80-0)*	25mg	See page 265

LIGAND KITS - Spiro Monophosphite & Monophosphoramidite Ligand Kit

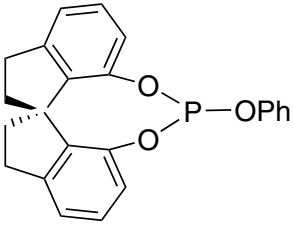
96-0065 **Spiro Monophosphite and Monophosphoramidite Ligand Kit**
Components also available for individual sale.
Contains the following:



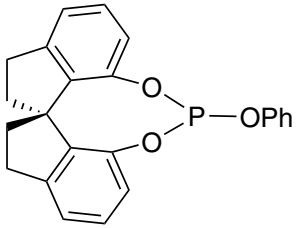
15-5150 100mg



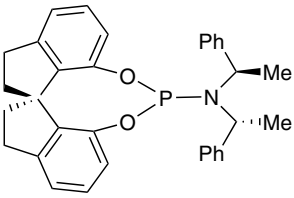
15-5151 100mg



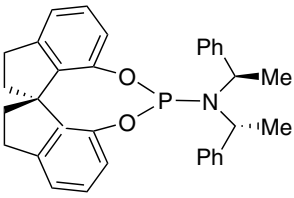
15-5156 100mg



15-5157 100mg



15-5162 100mg

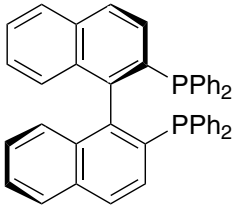


15-5163 100mg

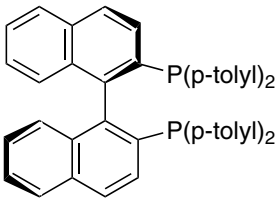
15-5150	(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% (R)-SIPHOS *(443965-14-8)*	100mg	See page 321
15-5151	(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% (S)-SIPHOS *(443965-10-4)*	100mg	See page 321
15-5156	(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (R)-ShiP *(656233-53-3)*	100mg	See page 322
15-5157	(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (S)-ShiP *(885701-71-3)*	100mg	See page 322
15-5162	(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (R)-SIPHOS-PE *(500997-69-3)*	100mg	See page 321
15-5163	(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (S)-SIPHOS-PE *(500997-70-6)*	100mg	See page 321

LIGAND KITS - Takasago BINAP Ligand Kit

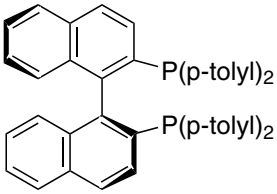
96-6950 **Takasago BINAP Ligand Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



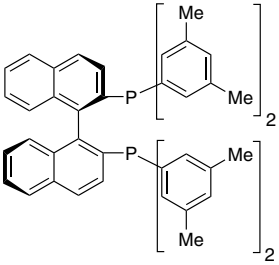
15-0150 250mg



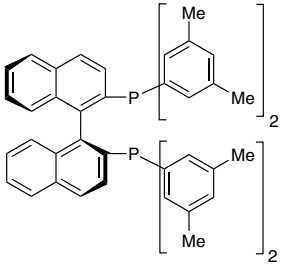
15-0152 250mg



15-0153 250mg



15-0476 250mg

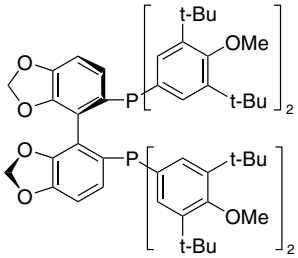


15-0477 250mg

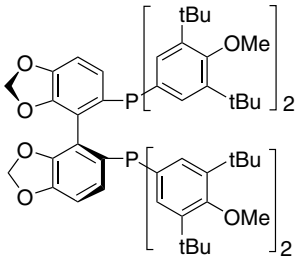
15-0150	(R)-(+)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% (R)-(+)-BINAP *(76189-55-4)*	250mg	See page 267
15-0151	(S)-(-)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% (S)-(-)-BINAP *(76189-56-5)*	250mg	See page 267
15-0152	(R)-(+)-2,2'-Bis(di-p-tolylphosphino)-1,1'-binaphthyl, 98% (R)-(+)-TolBINAP *(99646-28-3)*	250mg	See page 275
15-0153	(S)-(-)-2,2'-Bis(di-p-tolylphosphino)-1,1'-binaphthyl, 98% (S)-(-)-TolBINAP *(100165-88-6)*	250mg	See page 275
15-0476	(R)-(+)-2,2'-Bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl, 98% (R)-(+)-XylBINAP *(137219-86-4)*	250mg	See page 276
15-0477	(S)-(-)-2,2'-Bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl, 98% (S)-(-)-XylBINAP *(135139-00-3)*	250mg	See page 276

LIGAND KITS - Takasago SEGPHOS® Ligand Kit

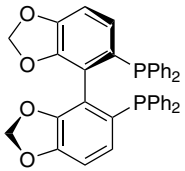
96-6900 **Takasago SEGPHOS® Ligand Kit**
Manufactured under license of Takasago patent.
Components also available for individual sale.
Contains the following:



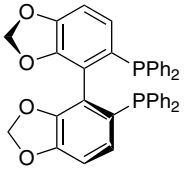
15-0066 250mg



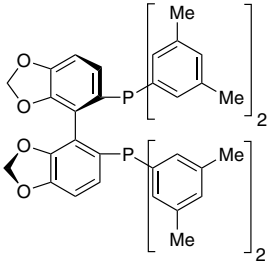
15-0067 250mg



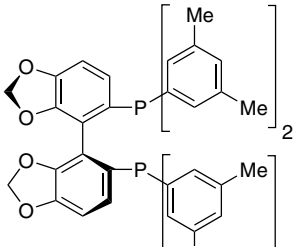
15-0136 250mg



15-0137 250mg



15-0478 250mg

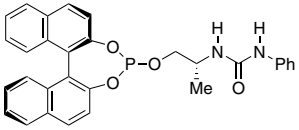


15-0479 250mg

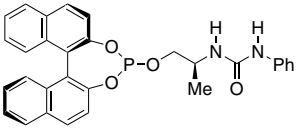
15-0066	(R)-(-)-5,5'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(-)-DTBM-SEGPHOS® *(566940-03-2)*	250mg	See page 259
15-0067	(S)-(+)-5,5'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(+)-DTBM-SEGPHOS® *(210169-40-7)*	250mg	See page 260
15-0136	(R)-(+)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(+)-SEGPHOS® *(244261-66-3)*	250mg	See page 266
15-0137	(S)-(-)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(-)-SEGPHOS® *(210169-54-3)*	250mg	See page 266
15-0478	(R)-(+)-5,5'-Bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(+)-DM-SEGPHOS® *(850253-53-1)*	250mg	See page 276
15-0479	(S)-(-)-5,5'-Bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(-)-DM-SEGPHOS® *(210169-57-6)*	250mg	See page 276

LIGAND KITS - UREAphos & METAMORPhos Ligand Kit

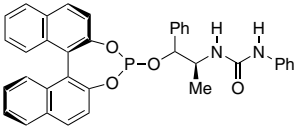
96-3740 **UREAphos and METAMORPhos Ligand Kit for Asymmetric Hydrogenation**
Sold under license from InCatT for research purposes only.
WO2004/103559, WO2009/065853
Components also available for individual sale.
Contains the following:



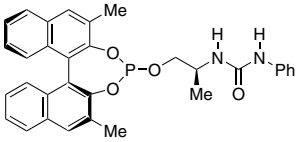
15-2200 50mg



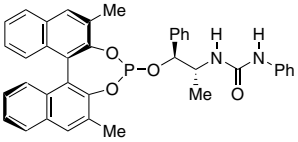
15-2201 50mg



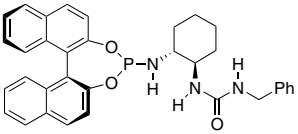
15-2202 50mg



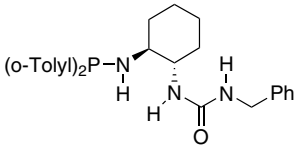
15-2204 50mg



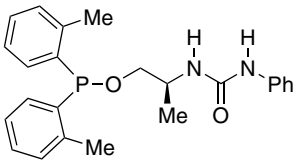
15-2206 50mg



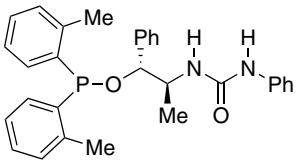
15-2208 50mg



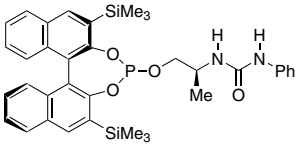
15-2210 50mg



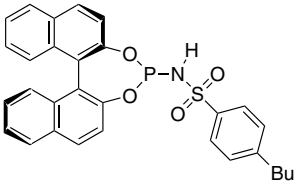
15-2212 50mg



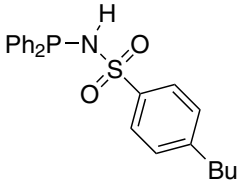
15-2214 50mg



15-2216 50mg

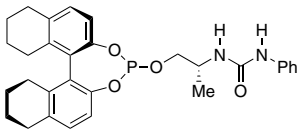


15-2218 50mg

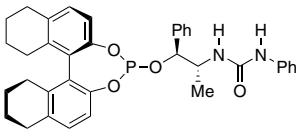


15-2220 50mg

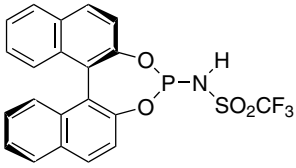
LIGAND KITS - UREAphos & METAMORPhos Ligand Kit



15-2222 50mg



15-2224 50mg



15-2228 50mg

15-2200	1-{(2R)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% UREAPhos *(1198080-53-3)*	50mg	See page 300
15-2201	1-{(2S)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% *(1357562-63-0)*	50mg	See page 300
15-2202	1-{(1R,2S)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97% *(1198080-55-5)*	50mg	See page 300
15-2204	1-{(2S)-1-[(11bS)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% *(1357562-63-0)*	50mg	See page 298
15-2206	1-{(1S,2R)-1-[(11bR)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97% *(1858223-86-5)*	50mg	See page 298
15-2208	1-Benzyl-3-{(1R,2R)-2-[(11bS)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-ylamino]cyclohexyl}urea, min. 97% *(1198080-57-7)*	50mg	See page 251
15-2210	1-Benzyl-3-[(1S,2S)-2-(di-o-tolylphosphinoamino)cyclohexyl]urea, min. 97% *(1858223-87-6)*	50mg	See page 251
15-2212	1-[(2S)-1-(Di-o-tolylphosphinooxy)propan-2-yl]-3-phenylurea, min. 97%	50mg	See page 312
15-2214	1-[(1R,2S)-1-(Di-o-tolylphosphinooxy)-1-phenylpropan-2-yl]-3-phenylurea, min. 97% *(1391410-56-2)*	50mg	See page 312
15-2216	1-{2S)-1-[(11bR)-2,6-Bis(trimethylsilyl)dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% *(1357562-70-9)*	50mg	See page 281
15-2218	4-Butyl-N-[(11bR)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl]benzenesulfonamide triethylamine adduct, min. 97% *(1150592-91-8)*	50mg	See page 282
15-2220	4-Butyl-N-(diphenylphosphino)benzenesulfonamide, min. 97% *(1025096-61-0)*	50mg	See page 282
15-2222	1-{(2R)-1-[(11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% *(1858223-90-1)*	50mg	See page 316
15-2224	1-{(1S,2R)-1-[(11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97% *(1858224-21-1)*	50mg	See page 316
15-2228	N-[(11bS)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl]-1,1,1-trifluoromethanesulfonamide triethylamine adduct, min. 97% METAMORPhos *(1493790-73-0)*	50mg	See page 301

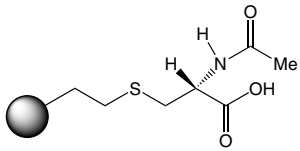
METAL SCAVENGING KITS - BASF Metals Scavenging Agent Kit (MSA Kit)

96-6700 **BASF Metals Scavenging Agent Kit (MSA Kit)**
Sold in collaboration with BASF for research purposes only. .
Components also available for individual sale.
Contains the following:

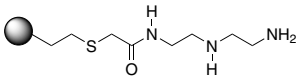
06-0805	Metals scavenging agent, Phosphotungstic acid modified activated carbon (BASF MSA-FC C-1) *(7440-44-0)*	10g	See page 133
13-6300	Metals scavenging agent, Phosphotungstic acid modified alumina (BASF MSA-FC Al-1) *(1344-28-1)*	10g	See page 133
14-4353	Metals scavenging agent, Mercaptopropyl modified silica (BASF MSA-FC Si-3) *(112926-00-8)*	10g	See page 133

METAL SCAVENGING KITS - PhosphonicS Metals Scavenging Kit

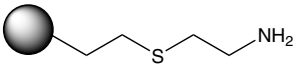
96-6750 **PhosphonicS Metals Scavenging Kit**
Sold in collaboration with PhosphonicS Ltd. for research purposes only.
Components also available for individual sale.
Contains the following:



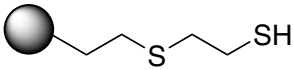
16-0200 10g



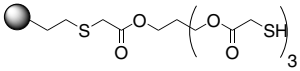
16-0210 10g



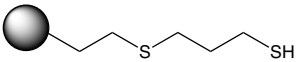
16-0215 10g



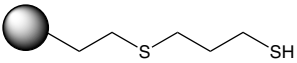
16-0650 10g



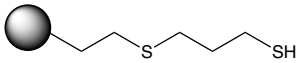
16-1540 10g



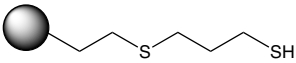
16-1700 10g



16-1702 10g



16-1704 10g



16-1706 10g

METAL SCAVENGING KITS - PhosphonicS Metals Scavenging Kit

16-0200	N-Acetyl-L-cysteine ethyl Silica (PhosphonicS SCYT1) *(7631-86-9)*	10g	See page 128
16-0210	Triamine ethyl sulfide amide Silica (PhosphonicS STA3)	10g	See page 134
16-0215	2-Aminoethyl sulfide ethyl Silica (PhosphonicS SEA)	10g	See page 128
16-0650	2-Mercaptoethyl ethyl sulfide Silica (PhosphonicS SEM26) *(7631-86-9)*	10g	See page 132
16-1540	Pentaerythritol 2-mercaptoacetate ethyl sulfide Silica (PhosphonicS SET)	10g	See page 134
16-1700	3-Mercaptopropyl ethyl sulfide Silica (60+, high-cross linking) (PhosphonicS SPM36) *(7631-86-9)*	10g	See page 132
16-1702	3-Mercaptopropyl ethyl sulfide Silica (90+, high-cross linking) (PhosphonicS SPM36f)	10g	See page 133
16-1704	3-Mercaptopropyl ethyl sulfide Silica (90+, low-cross linking) (PhosphonicS SPM32f)	10g	See page 133
16-1706	3-Mercaptopropyl ethyl sulfide Silica (60+, low-cross linking) (PhosphonicS SPM32)	10g	See page 133

Metal scavengers are increasingly used as an effective way to solve metal removal problems associated with Active Pharmaceutical Ingredients (API's) and synthetic intermediates. This is an often complex technical challenge, influenced by a number of factors including the significant structural variations with API's, the polar functional groups which APIs tend to contain, the environment (solvent and pH) and potential incompatibilies within the API. PhosphincS has designed a portfolio of silica-based materials containing a diverse range of functional groups to address effective metal scavenging.

Properties of PhosphonicS' Broad Portfolio of Metal Scavengers

- High affinity for a wide range of metals, in different oxidation states
- Fast kinetics - highly active at ambient temperatures
- High selectivity for the metal, meaning minimal loss of the API/compound
- Broad solvent and pH compatibility with both organic and aqueous formulations, reducing the requirements of time-consuming and costly solvent switches
- No swelling of the materials are required
- Excellent stability - thermal, physical, chemical and mechanical
- Very high purity - eliminating issues of extractable impurities
- Enhanced performance, due to multiple functional groups and higher effective loadings
- Metal recycling options
- Availability on process scale

Performance Benefits from using PhosphonicS' Metal Scavengers

- **Faster:** purification, batch processing, problem-solving, market introduction
- **Reduced:** development time, valuable API losses, total manufacturing costs, environmental burden
- **Enhanced:** process, productivity, compliance

NANOMATERIAL KITS - Cadmium selenide CANdot® Quantum Dot (CdSe core) Kit

96-0800 HAZ	**Cadmium selenide CANdot® quantum dot (CdSe core) kit, 50umol/L in hexanes, 525-625nm peak emissions** Sold in collaboration with CAN for research purposes. Components also available for individual sale. Contains the following:		
48-1011	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 525nm peak emission *(1306-24-7)*	5ml	See page 139
48-1017	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 550nm peak emission *(1306-24-7)*	5ml	See page 139
48-1023	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 575nm peak emission *(1306-24-7)*	5ml	See page 139
48-1030	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 600nm peak emission *(1306-24-7)*	5ml	See page 139
48-1035	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 625nm peak emission *(1306-24-7)*	5ml	See page 139

Item #	Peak Emission	Particle size (diameter)	Quantum Yield
48-1011	525nm	2.8nm	>20%
48-1017	550nm	3.5nm	>10%
48-1023	575nm	3.9nm	>10%
48-1030	600nm	4.7nm	>20%
48-1035	625nm	5.3nm	>20%

Kit contains 5ml of each of the above 5 products. Ligand capping agent oleylamine. Stable in dispersions > 6 months.
*Particle size reported excludes ligand capping agent. All sizes determined by TEM.
† Available at nanoparticle concentration of 50µmol per liter.

NANOMATERIAL KITS - Cadmium selenide/cadmium sulfide CANdot® Quantum Rod Kit

96-0813 HAZ	**Cadmium selenide/cadmium sulfide CANdot® quantum rod kit (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 560nm, 590nm, 620nm peak emissions** Sold in collaboration with CAN for research purposes. Components also available for individual sale. Contains the following:		
48-1053	Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 560nm peak emission *(1306-24-7)*	0.5ml	See page 139
48-1056	Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 590nm peak emission *(1306-24-7)*	0.5ml	See page 139
48-1059	Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 620nm peak emission *(1306-24-7)*	0.5ml	See page 139

NANOMATERIAL KITS - Gold Gemini Nanorods Kit, CTAB Free

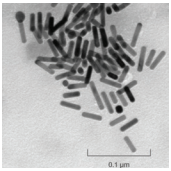
96-1549 NEW

Gold Gemini Nanorods Kit, CTAB Free (Wavelength 650-850 nm)
Rods are synthesized without CTAB. Store at 4°C - 8°C. Do not freeze. At storage temperature the product may appear opaque. Follow the procedure for re-dispersing surfactants as described in the technical note. Complete this process before use to dissolve precipitated stabilizer.
Sold in collaboration with SONA Nanotech for research purposes only.
Components also available for individual sale.
Contains the following:

79-7010	Gold Gemini Nanorods, CTAB Free (Wavelength 650 nm) *(7440-57-5)*	5ml	See page 157
79-7015	Gold Gemini Nanorods, CTAB Free (Wavelength 700 nm) *(7440-57-5)*	5ml	See page 157
79-7020	Gold Gemini Nanorods, CTAB Free (Wavelength 750 nm) *(7440-57-5)*	5ml	See page 157
79-7025	Gold Gemini Nanorods, CTAB Free (Wavelength 800 nm) *(7440-57-5)*	5ml	See page 157
79-7030	Gold Gemini Nanorods, CTAB Free (Wavelength 850 nm) *(7440-57-5)*	5ml	See page 157

Item #	LPSR Maximum (nm)	Length (nm)	Width (nm)	Aspect Ratio	Color & Form
79-7010	640 - 670	25 - 31	13 - 18	1.7 - 1.9	violet liq.
79-7015	685 - 715	37 - 43	13 - 18	2.4 - 2.8	blue liq.
79-7020	735 - 765	37 - 44	10 - 13	3.4 - 3.7	red-purple liq.
79-7025	785 - 815	40 - 50	10 - 13	3.8 - 4.1	red-orange liq.
79-7030	835 - 865	48 - 55	9 - 12	4.6 - 5.3	maroon-purple liq.

Concentration: >30 µg/ml
pH: 5.5 - 7.5
Stabilizer: Amphiphilic Agents
Solvent: Stabilized with amphiphilic agents in conductivity grade water (18.0 MΩ cm^{-1})
Optical Density: 1.0 - 1.2
Shelf Life: 12 months



NANOMATERIAL KITS - Gold Nanoparticles Kit

96-1547

Gold Nanoparticles Kit (5nm-40nm diameter, OD 1, stabilized suspension citrate buffer)
Components also available for individual sale.
Contains the following:

79-0182	Gold Nanoparticles (5nm, 1 OD, supplied in 0.1mM stabilizing surfactant, 515-520nm abs. max.) *(7440-57-5)*	25ml	See page 153
79-0210	Gold Nanoparticles (10nm, 1 OD, supplied in 0.1mM stabilizing surfactant, 515-520nm abs. max.) *(7440-57-5)*	25ml	See page 153
79-0212	Gold Nanoparticles (15nm, 1 OD, supplied in 0.1mM stabilizing surfactant, 520nm abs. max.) *(7440-57-5)*	25ml	See page 153
79-0214	Gold Nanoparticles (20nm, 1 OD, supplied in 0.1mM stabilizing surfactant, 524nm abs. max.) *(7440-57-5)*	25ml	See page 153
79-0216	Gold Nanoparticles (30nm, 1 OD, supplied in 0.1mM stabilizing surfactant, 526nm abs. max.) *(7440-57-5)*	25ml	See page 153
79-0218	Gold Nanoparticles (40nm, 1 OD, supplied in 0.1mM stabilizing surfactant, 530nm abs. max.) *(7440-57-5)*	25ml	See page 153

NANOMATERIAL KITS - Gold Nanoparticles Kit, Reactant Free

96-1545	**Gold Nanoparticles Kit, Reactant-Free (5nm-40nm diameter, OD 1, suspension in phosphate-buffered saline, 515-530nm abs. max.)** Components also available for individual sale. Contains the following:		
79-0180	Gold Nanoparticles (5 nm diameter, 1 OD, stabilized suspension in phosphate-buffered saline, 515-520 nm abs. max.) reactant free *(7440-57-5)*	25ml	See page 152
79-0184	Gold Nanoparticles (10nm diameter, 1 OD, stabilized suspension in phosphate-buffered saline, 520nm abs. max.) reactant free *(7440-57-5)*	25ml	See page 152
79-0186	Gold Nanoparticles (15nm diameter, 1 OD, stabilized suspension in phosphate-buffered saline, 520nm abs. max.) reactant free *(7440-57-5)*	25ml	See page 152
79-0188	Gold Nanoparticles (20nm diameter, 1 OD, stabilized suspension in phosphate-buffered saline, 524nm abs. max.) reactant free *(7440-57-5)*	25ml	See page 152
79-0190	Gold Nanoparticles (30nm diameter, 1 OD, stabilized suspension in phosphate-buffered saline, 526nm abs. max.) reactant free *(7440-57-5)*	25ml	See page 152
79-0192	Gold Nanoparticles (40nm diameter, 1 OD, stabilized suspension in phosphate-buffered saline, 530nm abs. max.) reactant free *(7440-57-5)*	25ml	See page 152

NANOMATERIAL KITS - Gold Nanorods Kit (Axial Diameter - 25nm)

96-1530	**Gold Nanorods Kit (Axial Diameter - 25 nm, wavelength 550-700 nm)** Components also available for individual sale. Contains the following:		
79-6000	Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 550 nm) *(7440-57-5)*	25ml	See page 156
79-6005	Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 600 nm) *(7440-57-5)*	25ml	See page 156
79-6010	Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 650 nm) *(7440-57-5)*	25ml	See page 156
79-6015	Gold Nanorods (Axial Diameter - 25 nm) (Wavelength 700 nm) *(7440-57-5)*	25ml	See page 156

NANOMATERIAL KITS - Gold Nanorods Kit (Axial Diameter - 10nm)

96-1535	**Gold Nanorods Kit (Axial Diameter - 10 nm, wavelength 700-808 nm)** Components also available for individual sale. Contains the following:		
79-6020	Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 700 nm) *(7440-57-5)*	25ml	See page 156
79-6025	Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 750 nm) *(7440-57-5)*	25ml	See page 156
79-6030	Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 780 nm) *(7440-57-5)*	25ml	See page 156
79-6035	Gold Nanorods (Axial Diameter - 10 nm) (Wavelength 808 nm) *(7440-57-5)*	25ml	See page 156

NANOMATERIAL KITS - Gold Nanospheres Kit

96-1540	**Gold Nanospheres Kit (30-90 nm)** Components also available for individual sale. Contains the following:		
79-6040	Spherical Gold Nanoparticles (30 nm) *(7440-57-5)*	25ml	See page 154
79-6045	Spherical Gold Nanoparticles (50 nm) *(7440-57-5)*	25ml	See page 154
79-6050	Spherical Gold Nanoparticles (70 nm) *(7440-57-5)*	25ml	See page 154
79-6055	Spherical Gold Nanoparticles (90 nm) *(7440-57-5)*	25ml	See page 154

NANOMATERIAL KITS - Graphene Quantum Dots (GQDs) Master Kit

96-7410 NEW

Graphene Quantum Dots (GQDs) Master Kit
Sold in collaboration with Dotz Nano Ltd. for research purposes only.
Suggested use within 6 months of purchase. Do not freeze. Store in DARK.
Components also available for individual sale.
Contains the following:

06-0330	Graphene Quantum Dots (GQDs), Aqua-Green Luminescent *(1034343-98-0)*	100mg	See page 147
06-0332	Graphene Quantum Dots (GQDs) in water, Aqua-Green Luminescent *(1034343-98-0)*	100ml	See page 147
06-0334	Graphene Quantum Dots (GQDs), Blue Luminescent *(1034343-98-0)*	100mg	See page 147
06-0336	Graphene Quantum Dots (GQDs) in water, Blue Luminescent *(1034343-98-0)*	100ml	See page 148
06-0338	Graphene Quantum Dots (GQDs), Cyan Luminescent *(1034343-98-0)*	100mg	See page 148
06-0340	Graphene Quantum Dots (GQDs) in water, Cyan Luminescent *(1034343-98-0)*	100ml	See page 148

Item #	Photoluminescence			
	QY⁺ *	λ max *	Max emission	FWHM *
06-0330 / 06-0332	>17%	485 nm	525 nm	70 nm
06-0334 / 06-0336	>65%	350 nm	445 nm	65 nm
06-0338 / 06-0340	>25%	420 nm	490 nm	80 nm

Particle diameter: <5 nm
Topographic height: 1.0 - 2.0 nm
Concentration: 1mg/ml (for liquid items)

Abbreviations: QY⁺ = *Quantum Yield*; λ max = *Maximum excitation wavelength*; FWHM = *Full width at half maximum*

NANOMATERIAL KITS - Graphene Quantum Dots (GQDs) Mini Kit (Powders)

96-7425 NEW

Graphene Quantum Dots (GQDs) Mini Kit (Powders)
Sold in collaboration with Dotz Nano Ltd. for research purposes only.
Suggested use within 6 months of purchase. Do not freeze. Store in DARK.
Components also available for individual sale.
Contains the following:

06-0330	Graphene Quantum Dots (GQDs), Aqua-Green Luminescent *(1034343-98-0)*	100mg	See page 147
06-0334	Graphene Quantum Dots (GQDs), Blue Luminescent *(1034343-98-0)*	100mg	See page 147
06-0338	Graphene Quantum Dots (GQDs), Cyan Luminescent *(1034343-98-0)*	100mg	See page 148

Item #	Color & Form	Photoluminescence			
		QY⁺ *	λ max *	Max emission	FWHM *
06-0330	dark red-brown pwdr.	>17%	485 nm	525 nm	70 nm
06-0334	dark brown pwdr.	>65%	350 nm	445 nm	65 nm
06-0338	dark brown pwdr.	>25%	420 nm	490 nm	80 nm

Particle diameter: <5 nm
Topographic height: 1.0 - 2.0 nm

Abbreviations: QY⁺ = *Quantum Yield*; λ max = *Maximum excitation wavelength*; FWHM = *Full width at half maximum*

NANOMATERIAL KITS - Graphene Quantum Dots (GQDs) Mini Kit (Liquids)

96-7420 **Graphene Quantum Dots in water (GQDs) Mini Kit (Liquids)**
NEW
Sold in collaboration with Dotz Nano Ltd. for research purposes only.
Suggested use within 6 months of purchase. Do not freeze. Store in DARK.
Components also available for individual sale.
Contains the following:

06-0332	Graphene Quantum Dots (GQDs) in water, Aqua-Green Luminescent *(1034343-98-0)*	100ml	See page 147
06-0336	Graphene Quantum Dots (GQDs) in water, Blue Luminescent *(1034343-98-0)*	100ml	See page 148
06-0340	Graphene Quantum Dots (GQDs) in water, Cyan Luminescent *(1034343-98-0)*	100ml	See page 148

Item #	Color & Form	Photoluminescence			
		QY+ *	λ max *	Max emission	FWHM *
06-0332	cloudy orange liq.	>17%	485 nm	525 nm	70 nm
06-0336	cloudy colorless liq.	>65%	350 nm	445 nm	65 nm
06-0340	cloudy brown liq.	>25%	420 nm	490 nm	80 nm

Particle diameter: <5 nm
Topographic height: 1.0 - 2.0 nm
Concentration: 1mg/ml

Abbreviations: QY+ = *Quantum Yield*; λ max = *Maximum excitation wavelength*; FWHM = *Full width at half maximum*

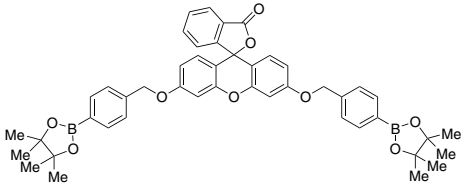
OTHER KITS - Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE)

96-0350 **Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE)**
Includes:
6 x 1.0ml Dimethylsulfoxide (ACS spectrophotometric grade): 97-4940
05-0058 FBBBE: 3 x 5mg
05-0054 CBBE: 3 x 5mg

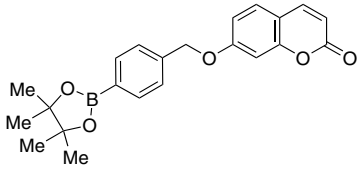
Sold under license from The Regents of the University of California. US Patent application 61/762,706.
Components also available for individual sale.
Contains the following:

05-0054	7-{[(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)benzyl]oxy}-2H-1-benzopyran-2-one CBBE *(1522117-80-1)*	5mg	See page 29
05-0058	3',6'-Bis{[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)oxy]-3H-[spiro(isobenzofuran-1,9,-xanthen]-3-one} FBBBE *(1522117-83-4)*	5mg	See page 25

Active Ingredients: Catalog # 05-0058 Fluoroscein bis(benzyl boronic ester) **FBBE**
Catalog # 05-0054 Coumarin benzyl boronic ester **CBBE**



05-0058 FBBE



05-0054 CBBE

OTHER KITS - Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE)

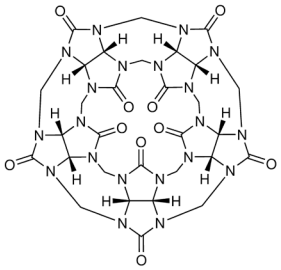
96-0350 Biological Hydrogen Peroxide Imaging Kit (FBBBE, CBBE) ***(continued)***

Introduction:	**FBBBE** and **CBBE** are robust fluorescent probes, effective for imaging hydrogen peroxide in biological settings. In the supplied form, the fluorescence signal is effectively quenched by the addition of the benzyl ether boronic ester protecting groups to the fluorophores. In the presence of biologically relevant levels of hydrogen peroxide (10-200 :M), the protecting groups cleave and a strong fluorescent signal is observed. (FBBBE: l_{exc}= 480 nm, l_{em}= 512 nm; CBBE: l_{exc} = 370 nm, l_{em} = 450 nm) 1. *ChemBioChem*, **2013**, 14, 593.
Contents:	**FBBBE**: 3x5mg **CBBE**: 3x5mg Dimethylsulfoxide (ACS spectrophotometric grade): 6 x 1.0mL
SDS:	The Safety Data Sheets for the three products contained in this kit can be downloaded from the Strem Chemicals Web Site at www.strem.com. Locate the SDS using the following catalog numbers: **FBBBE**: 05-0058 **CBBE**: 05-0054 Dimethylsulfoxide (ACS spectrophotometric grade): 97-4940
Storage Conditions:	Both compounds are stable at ambient conditions for several days. For long term storage, the kit should be stored at -20°C and protected from light.

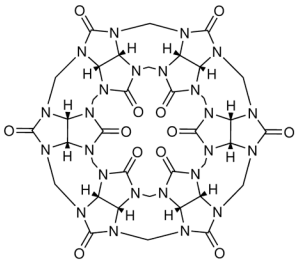
Preparation of FBBBE:	**Step 1:** Add 654 µL of DMSO to 5.0mg of FBBE (MW: 764.3 g/mol) (resulting concentration = 10 mM). FBBBE is readily soluble in DMSO. The solution can be portioned into 50 µL aliquots as needed. These solutions must be stored in the freezer at < -20°C. **Step 2:** Add 50 µL of 10 mM stock to 50 µL DMSO (resulting concentration = 5 mM). This stock solution can be stored in the freezer at < -20°C. **Step 3:** This solution can be further diluted to the desired concentration in buffer. For example add 10µL of the 5 mM stock solution to 990µL 1X PBS, resulting in a 50 µM solution (this solution should be used the same day in which it was prepared). This will result in a solution containing only 1% DMSO (v/v). This solution can then be used in the biological setting to image H_2O_2.
Preparation of CBBE:	**Step 1:** Add 661 L of DMSO to 5.0 mg CBBE (MW: 378.2 g/mol) (resulting concentration = 20 mM). Vortex until all solid has been thoroughly dissolved. The solution can be portioned into 50 µL aliquots as needed. These solutions must be stored in the freezer at < -20°C. **Step 2:** Add 50 µL of 20 mM stock to 150 µL DMSO (resulting concentration = 5 mM). This stock solution can be stored in the freezer at < -20°C. **Step 3:** The solution can be further diluted to the desired concentration in buffer. For example add10 µL of the 5 mM stock solution to 990 µL 1X PBS, resulting in a 50µM solution (this solution should be used the same day in which it was prepared). This will result in a solution containing only 1% DMSO (v/v). This solution can then be used to image H_2O_2 in the biological setting.

OTHER KITS - Cucurbituril Kit

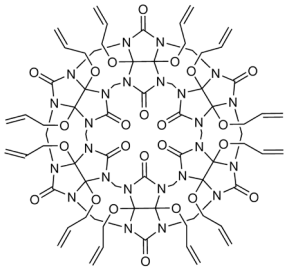
96-7054 **Cucurbituril Kit**
Sold for research purposes only. US 6365734, US 7388099.
Components also available for individual sale.
Contains the following:



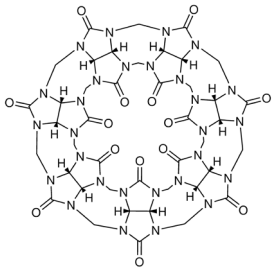
07-1310 100mg



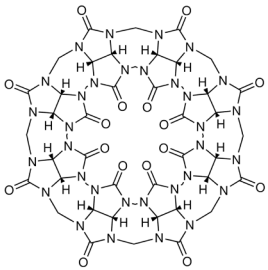
07-1320 500mg



07-1322 25mg



07-1325 50mg



07-1330 25mg

07-1310	Cucurbit[5]uril (CB[5]) ammonium sulfate hydrate, 99+% *(259886-49-2)*	100mg	See page 192
07-1320	Cucurbit[6]uril (CB[6]) hydrate, 99+% *(80262-44-8)*	500mg	See page 192
07-1322	Perallyloxycucurbit[6]uril (AOCB[6]) potassium sulfate, 94+% *(558445-90-2)*	25mg	See page 205
07-1325	Cucurbit[7]uril (CB[7]) hydrate, 99+% *(259886-50-5)*	50mg	See page 192
07-1330	Cucurbit[8]uril (CB[8]) hydrate, 99+% *(259886-51-6)*	25mg	See page 192

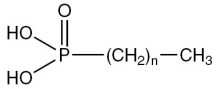
OTHER KITS - Enzyme Carrier Lifetech™ ECRKIT1

96-0255 NEW	**Enzyme carrier Lifetech™ ECRKIT1** Store in dry conditions (2-20°C). Do not freeze. Shelf Life: 5 years; This enzyme carrier kit allows rapid screening of different methods of enzyme immobilization. Sold in collaboration with Purolite for research purposes only. Components also available for individual sale. Contains the following:		
06-0810	Enzyme carrier Lifetech™ ECR8204F	50g	See page 16
06-0828	Enzyme carrier Lifetech™ ECR8285	50g	See page 20
06-0913	Enzyme carrier Lifetech™ ECR1090M	50g	See page 16
06-0925	Enzyme carrier Lifetech™ ECR1030M	50g	See page 15
07-1512	Enzyme carrier Lifetech™ ECR8309F	50g	See page 17
07-1532	Enzyme carrier Lifetech™ ECR8806F	50g	See page 19

OTHER KITS - Long-Chain n-Alkylphosphonic Acid Kit

96-1525	**Long-Chain n-Alkylphosphonic Acid Kit** Components also available for individual sale. Contains the following:		
15-0958	n-Decylphosphonic acid, min. 97% *(6874-60-8)*	1g	See page 284
15-1835	n-Dodecylphosphonic acid, min. 97% DDPA *(5137-70-2)*	1g	See page 312
15-2400	n-Hexadecylphosphonic acid, min. 97% HDPA *(4721-17-9)*	1g	See page 313
15-2410	n-Hexylphosphonic acid, min. 97% HPA *(4721-24-8)*	1g	See page 313
15-3510	n-Octadecylphosphonic acid, min. 97% ODPA *(4724-47-4)*	1g	See page 316
15-3520	n-Octylphosphonic acid, min. 97% OPA *(4724-48-5)*	1g	See page 318
15-5145	n-Tetradecylphosphonic acid, min. 97% TDPA *(4671-75-4)*	1g	See page 321

General Use:
Linear alkyl Phosphonic acids and their phosphonate salts are surfactants because of their classic bifunctional chemical structure, $RP(O)(OH)_2$, consisting of both non-polar organic hydrophobic groups and anionic inorganic hydrophilic groups. Like the related alkyl sulfonates, they are used as detergents, dispersants, emulsifiers, and chelating agents. Alkyl phosphonic acids are typically sparingly soluble in both organic solvents and water, but become more soluble in water when neutralized to phosphonates at neutral to high pH.



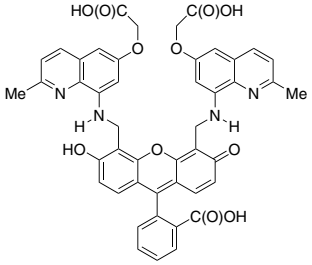
n=5-17

OTHER KITS - Nitric Oxide Sensor (Extracellular) Kit ("NO-ON") (FL2A)

96-0397 NEW	**Nitric Oxide Sensor (Extracellular) Kit ("NO-ON") (FL2A) (Cell-impermeable NO fluorescent probe)** Includes: 5 x 1ml Dimethylsulfoxide (ACS spectrophotometric grade): 97-4940 5 x 1ml Copper (II) chloride as a 1.0 mM solution in water: 97-3060 07-0287 packaged as 5 x 0.5mg Contains the following:		
07-0287	2-{4,5-Bis[(6-(2-ethoxy-2-oxohydroxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2A *(1239877-07-6)*	0.5mg	See page 185

OTHER KITS - Nitric Oxide Sensor (Extracellular) Kit ("NO-ON") (FL2A)

Active Ingredients: 2-{4,5-Bis[(6-(2-ethoxy-2-oxoethoxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2A



07-0287

Introduction:	The copper complex of FL2A is a novel, cell-trappable fluorescent NO probe, that allows direct imaging of nitric oxide produced in living cells through fluorescence turn on. The FL2A ligand is trapped in the cell. A solution of the copper (II) complex of FL2A can be readily prepared using this kit. For additional information, consult the following references: 1. *Inorg. Chem.,* **2010,** *49,* 7464. 2. *PNAS,* **2010**, *107, 8525.*
Contents:	Ligand **FL2A**: 5 x 0.5mg Dimethylsulfoxide (ACS spectrophotometric grade): 5 x 1.0ml Copper (II) chloride (1.0 mM solution in water): 5 x 1.0ml
SDS:	The Safety Data Sheets for the three products contained in this kit can be downloaded from the Strem Chemical website, www.strem.com. Locate the SDS using the following catalog numbers: 07-0287: FL2A 97-4940: Dimethylsulfoxide (ACS spectrophotometric grade) 97-3060: Copper (II) chloride as a 1.0 mM solution in water

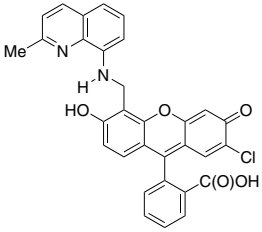
Storage Conditions:	This kit should be stored at -20°C and protected from light.
Preparation of the active copper complex of FL2A:	**Step 1:** Allow the kit to warm to room temperature. Add 589 microliters of DMSO to a 0.5mg vial of FL2A (resulting concentration -1.0 mM). The FL2A is readily soluble in the DMSO. The solution can be partitioned into aliquots of 40-300 µL as required.These solutions must be stored in the freezer at <-20°C. The DMSO solution of FL2A is stable for three months at -80°C. It is advisable to check the extinction coefficient of the solution before preparing the copper complex. (log ε(499 nm) = 4.66) **Step 2:** A CuFL2A solution should be freshly prepared by adding 1:2 FL2A solution (1.0 mM) to the copper (II) solution (1.0 mM) at room temperature. Note: The prepared DMSO/water stock solution of CuFL2A solution [log ε(495 nm) = 4.19] can be kept at room temperature, but should be protected from light. The solution can be diluted with media to provide the concentration required for cell sensing experiments. When the extinction coefficient of the red solution of CuFL2A diminishes by 20% of the original value, the solution should be discarded. Do not use the solution after 1 hour and do not freeze the solution.

OTHER KITS - Nitric Oxide Sensor (Intracellular) Kit ("NO-ON") (FL)

96-0293 **Nitric Oxide Sensor (Intracellular) Kit ("NO-ON") (FL) (Cell-trappable NO fluorescent probe)**
Includes:
5 x 1ml Dimethylsulfoxide (ACS spectrophotometric grade): 97-4940
5 x 1ml Copper (II) chloride as a 1.0 mM solution in water: 97-3060
07-0293 packaged as 5 x 0.5mg
Contains the following:

07-0293	2-{2-Chloro-6-hydroxy-5-[2-methylquinolin-8-ylaminomethyl]-3-oxo-3H-xanthen-9-yl}benzoic acid FL *(905982-78-7)*	0.5mg	See page 191

Active Ingredients: 2-{2-Chloro-6-hydroxy-5-[2-methylquinolin-8-ylamino)methyl]-3-oxo-3H-xanthen-9-yl} benzoic acid **(FL)**



07-0293

Introduction:	The copper complex of FL is a novel, cell-trappable fluorescent NO probe that allows direct imaging of nitric oxide produced in living cells through fluorescence turn on. A solution of the copper (II) complex of FL can be readily prepared using this kit. For additional information, consult the following references: 1. *Nature Chemical Biology,* **2006**, *2,* 375. 2. *Nature Protocols*, **2007**, *2*, 408. 3. *J. Am. Chem. Soc.*, **2006**, *128*, 14364
Contents:	Ligand **FL**: 5 x 0.5mg Dimethylsulfoxide (ACS spectrophotometric grade): 5 x 1.0ml Copper (II) chloride (1.0 mM solution in water): 5 x 1.0ml
SDS:	The Safety Data Sheets for the three products contained in this kit can be downloaded from the Strem Chemical website, www.strem.com. Locate the SDS using the following catalog numbers: 07-0293: FL 97-4940: Dimethylsulfoxide (ACS spectrophotometric grade) 97-3060: Copper (II) chloride as a 1.0 mM solution in water

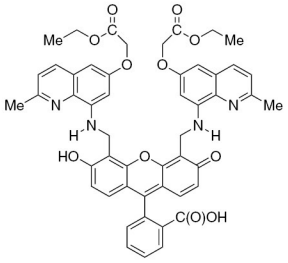
Storage Conditions:	This kit should be stored at -20°C and protected from light.
Preparation of the active copper complex of FL:	**Step 1:** Allow the kit to warm to room temperature. Add 931 microliters of DMSO to a 0.5mg vial of FL (resulting concentration -1.0 mM). The FL is readily soluble in the DMSO. The solution can be partitioned into aliquots of 40-300 µL as required. These solutions must be stored in the freezer at <-20°C. The DMSO solution of FL is stable for three months at -80°C. It is advisable to check the extinction coefficient of the solution before preparing the copper complex. (log ε(504 nm) = 4.62) **Step 2:** A CuFL soluton should be freshly prepared by adding 1:1 FL solution (1.0 mM) to the copper (II) solution (1.0 mM) at room temperature. Note: The prepared DMSO/water stock solution of CuFL solution [log ε(499 nm) = 4.60] can be kept at room temperature, but should be protected from light. The solution can be diluted with media to provide the concentration required for cell sensing experiments. When the extinction coefficient of the red solution of CuFL diminishes by 20% of the original value, the solution should be discarded. Do not use the solution after 1 hour, and do not freeze the solution.

OTHER KITS - Nitric Oxide Sensor (Intracellular) Kit (“NO-ON”) (FL2E)

96-0396 **Nitric Oxide Sensor (Intracellular) Kit (”NO-ON”) (FL2E) (Cell-trappable NO fluorescent probe)**
Includes:
5 x 1ml Dimethylsulfoxide (ACS spectrophotometric grade): 97-4940
5 x 1ml Copper (II) chloride as a 1.0 mM solution in water: 97-3060
07-0291 packaged as 5 x 0.5mg
Contains the following:

07-0291	2-{4,5-Bis[(6-(2-ethoxy-2-oxoethoxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2E *(1239877-06-5)*	0.5mg	See page 184

Active Ingredients: 2-{4,5-Bis[(6-(2-ethoxy-2-oxoethoxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2E



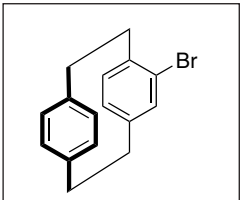
07-0291

Introduction:	The copper complex of FL2E is a novel, cell-trappable fluorescent NO probe, that allows direct imaging of nitric oxide produced in living cells through fluorescence turn on. The FL2E ligand is trapped in the cell. A solution of the copper (II) complex of FL2E can be readily prepared using this kit. For additional information, consult the following references: 1. *Inorg. Chem.,* **2010,** *49,* 7464.
Contents:	Ligand **FL2E**: 5 x 0.5mg Dimethylsulfoxide (ACS spectrophotometric grade): 5 x 1.0ml Copper (II) chloride (1.0 mM solution in water): 5 x 1.0ml
SDS:	The Safety Data Sheets for the three products contained in this kit can be downloaded from the Strem Chemical website, www.strem.com. Locate the SDS using the following catalog numbers: 07-0291: FL2E 97-4940: Dimethylsulfoxide (ACS spectrophotometric grade) 97-3060: Copper (II) chloride as a 1.0 mM solution in water
Storage Conditions:	This kit should be stored at -20°C and protected from light.

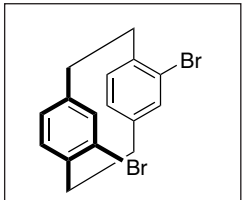
Preparation of the active copper complex of FL2E:	**Step 1:** Allow the kit to warm to room temperature. Add 571 microliters of DMSO to a 0.5mg vial of FL2E (resulting concentration -1.0 mM). The FL2E is readily soluble in the DMSO. The solution can be partitioned into aliquots of 40-300 µL as required. These solutions must be stored in the freezer at <-20°C. The DMSO solution of FL2E is stable for three months at -80°C. It is advisable to check the extinction coefficient of the solution before preparing the copper complex. (log ε(500 nm) = 4.25) **Step 2:** A CuFL2E soluton should be freshly prepared by adding 1:1 FL2E solution (1.0 mM) to the copper (II) solution (1.0 mM) at room temperature. Note: The prepared DMSO/water stock solution of CuFL2E solution [log ε(496 nm) = 4.05] can be kept at room temperature, but should be protected from light. The solution can be diluted with media to provide the concentration required for cell sensing experiments. When the extinction coefficient of the red solution of CuFL2E diminishes by 20% of the original value, the solution should be discarded. Do not use the solution after 1 hour, and do not freeze the solution.

OTHER KITS - Paracyclophane Kit

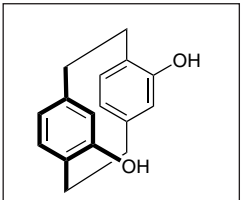
96-7052 **Paracyclophane Kit**
Components also available for individual sale. Contains the following:



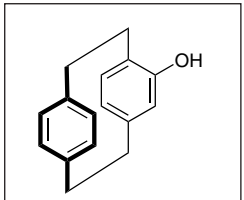
06-0104 500mg



06-0460 250mg



08-0700 100mg

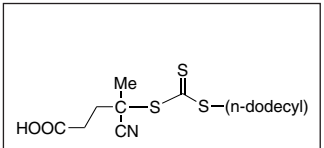


08-2027 250mg

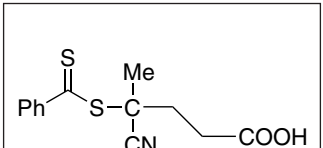
06-0104	racemic-4-Bromo[2.2]paracyclophane, min. 95% *(1908-61-8)*	500mg	See page 38
06-0460	racemic-4,12-Dibromo[2.2]paracyclophane, min. 95% *(23927-40-4)*	250mg	See page 39
08-0700	racemic-4,12-Dihydroxy[2.2]paracyclophane, min. 97% *(612492-27-0)*	100mg	See page 217
08-2027	racemic-4-Hydroxy[2.2]paracyclophane, min. 97% *(157018-15-0)*	250mg	See page 219

OTHER KITS - RAFT Agent Kit

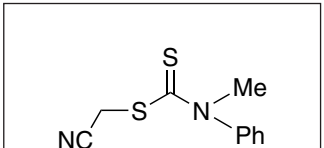
96-4700 **RAFT Agent Kit for controlling polymerizations at the molecular level**
Sold for research purposes only under license from CSIRO.
Components also available for individual sale. Contains the following:



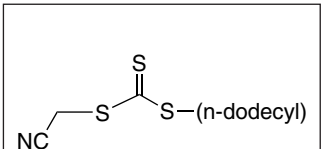
16-0415 500mg



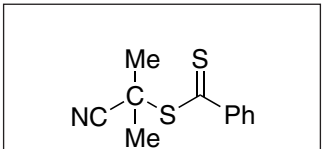
16-0422 500mg



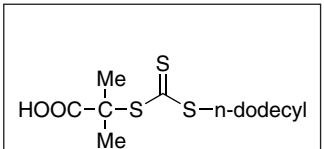
16-0423 500mg



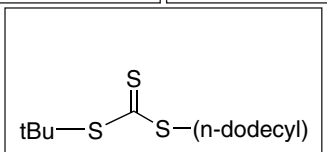
16-0425 500mg



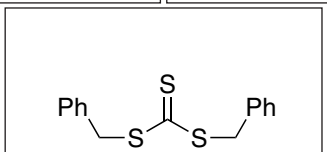
16-0430 500mg



16-0460 500mg



16-0610 500mg



16-0617 500mg

16-0415	4-Cyano-4-(dodecylsulfanylthiocarbonyl)sulfanylpentanoic acid, min. 97% *(870196-80-8)*	500mg	See page 424
16-0422	4-Cyano-4-(thiobenzoylthio)pentanoic acid, min. 97% *(201611-92-9)*	500mg	See page 425
16-0423	2-Cyanomethyl-N-methyl-N-phenyldithiocarbamate, min. 97% *(76926-16-4)*	500mg	See page 425
16-0425	2-Cyanomethyl-S-dodecyltrithiocarbonate, min. 97% *(796045-97-1)*	500mg	See page 425
16-0430	2-Cyanoprop-2-yl-dithiobenzoate, min. 97% *(201611-85-0)*	500mg	See page 425
16-0460	2-Methyl-2-[(dodecylsulfanylthiocarbonyl) sulfanyl]propanoic acid, min. 97% *(461642-78-4)*	500mg	See page 426
16-0610	2-(2-Cyanoprop-2-yl)-S-dodecyltrithiocarbonate, min. 97% *(870196-83-1)*	500mg	See page 425
16-0617	S,S-Dibenzyltrithiocarbonate, min. 97% *(26504-29-0)*	500mg	See page 425

Formula	Description	Page
$AgAsF_6$	Silver hexafluoroarsenate(V), 98.5%	414
$AgBF_4$	Silver tetrafluoroborate, 99%	415
AgBr	Silver bromide (99.9%-Ag)	414
AgCl	Silver chloride (99.9%-Ag)	414
$AgClO_4$	Silver perchlorate, anhydrous, min. 97%	415
	Silver perchlorate monohydrate, 99%	415
AgF	Silver(I) fluoride, 98%	414
AgF_2	Silver(II) fluoride, 98%	414
AgF_6P	Silver hexafluorophosphate, 99%	414
AgF_6Sb	Silver hexafluoroantimonate(V), 98%	414
AgI	Silver iodide (99.9%-Ag)	414
$AgNO_2$	Silver nitrite, 99%	414
$AgNO_3$	Silver nitrate (99.9995%-Ag) PURATREM	414
	Silver nitrate (99.9%-Ag) (ACS)	414
AgO	Silver(II) oxide (99.9%-Ag)	415
AgO_4Re	Silver perrhenate, 99% (99.995+%-Re) PURATREM	415
Ag_2CrO_4	Silver chromate, 99%	414
Ag_2O	Silver(I) oxide, 99+% (99.99%-Ag) PURATREM	414
Ag_2O_4S	Silver sulfate, 98+% (ACS)	415
Ag_2O_4W	Silver tungstate, 99%	415
Ag_2Te	Silver telluride (99.99%-Ag/Te) PURATREM	415
Ag_3O_4P	Silver phosphate, 99+%	415
$AlBr_3$	Aluminum bromide, 99%	1
$AlCl_3$	Aluminum chloride hexahydrate (99.999%-Al) PURATREM	2
	Aluminum chloride hexahydrate (99.9995%-Al) PURATREM	2
	Aluminum chloride, anhydrous (99.99+%-Al) PURATREM	1
	Aluminum chloride, anhydrous, reagent, 99%	1
	Aluminum chloride hexahydrate, reagent, 99%	2
$AlCl_3O_{12}$	Aluminum perchlorate nonahydrate, reagent	3
AlD_4Li	Lithium aluminum deuteride, 98% isotopic purity	115
AlF_3	Aluminum fluoride, anhydrous, 99+%	2
	Aluminum fluoride, anhydrous, 98.5%	2
$AlF_6H_{12}N_3$	Ammonium hexafluoroaluminate, min. 98%	5
AlF_6Na_3	Sodium hexafluoroaluminate (99.9+%-Al)	418
AlH_3O_3	Aluminum hydroxide, dried gel, 99%	2
AlH_4Li	Lithium aluminum hydride, powder, 95%	115
	Lithium aluminum hydride 2.2M (10wt% ±1wt%) in 2-methyltetrahydrofuran	116
AlI_3	Aluminum iodide, 95%	2
$AlLaO_3$	Lanthanum(III) aluminum oxide	112
AlN	Aluminum nitride, agglomerated powder	2
	Aluminum nitride, deglomerated powder, high purity	2
	Aluminum nitride, agglomerated powder, high purity	2
AlN_3O_9	Aluminum nitrate nonahydrate, 98+% (ACS)	2
$AlNaO_2$	Sodium aluminate, contains ~8% H_2O (99.9%-Al)	416
Al_2O_3	Aluminum oxide (99.999%-Al) PURATREM	2
	α-Alumina, 99.5+%	1
	α-Alumina trihydrate, 65% Al_2O_3, 34.8% H_2O, 0.15% Na_2O	1
	gamma-Alumina, min. 97%	1
	gamma-Alumina, low soda	1
	Aluminum oxide, activated, acidic, gamma, 96%	2
	Aluminum oxide, activated, basic, gamma, 96%	2
	Aluminum oxide, activated, neutral, gamma, 96%	2
	Aluminum oxide, 1-5 micron powder, 99+%	2
	Aluminum oxide nanopowder	138
	gamma-Alumina, 1/16" spheres	1
	Aluminum oxide powder, surface area 6 m^2/g, 99% (Grade APS 1 micron)	3
$Al_2O_7Si_2$	Aluminum silicate dihydrate, 98%	3
$Al_2O_{12}S_3$	Aluminum sulfate octadecahydrate, 98+% (ACS)	3
Al_2S_3	Aluminum sulfide (99+%-Al) (1/4" and down pieces)	3
Al_2Se_3	Aluminum selenide, min. 95% (99.5%-Al)	3
$AsBr_3$	Arsenic(III) bromide (99.9%-As)	9
$AsCl_3$	Arsenic(III) chloride (99.999%-As) PURATREM	10
	Arsenic(III) chloride, 99%	9
$AsCr_2$	Chromium arsenide (99%-Cr)	45
AsF_6Li	Lithium hexafluoroarsenate(V) (99.9+%-As)	117
AsF_6Na	Sodium hexafluoroarsenate(V), 99%	418
AsGa	Gallium arsenide (99.9999%-Ga) PURATREM	67
AsI_3	Arsenic(III) iodide, 98%	10
$As_2Ca_3O_8$	Calcium arsenate, min. 95%	34
As_2O_3	Arsenic(III) oxide, primary standard, 99.95+% (ACS)	10
	Arsenic(III) oxide, tech. gr.	10
	Arsenic(III) oxide, elec. gr. (99.999%-As) PURATREM	10
As_2O_5	Arsenic(V) oxide (99.9+%-As)	10
As_2S_3	Arsenic(III) sulfide, fused lumps (99.999%-As) PURATREM	10
	Arsenic(III) sulfide (99.9%-As)	10
As_2Se_3	Arsenic(III) selenide (99.999%-As) PURATREM	10
As_2Zn_3	Zinc arsenide (99.5%-Zn)	452
$AuBr_3$	Gold(III) bromide, anhydrous, 99% (99.9+%-Au)	75
$AuBr_4H$	Hydrogen tetrabromoaurate(III) hydrate (99.9%-Au)	75
$AuBr_4K$	Potassium tetrabromoaurate(III) dihydrate, 99%	344
$AuBr_4Na$	Sodium tetrabromoaurate(III) hydrate (99.9+%-Au)	421
AuCl	Gold(I) chloride, 97% (99.99%-Au) PURATREM	75
$AuCl_3$	Gold(III) chloride, 99% (99.9%-Au)	75
$AuCl_4H$	Hydrogen tetrachloroaurate(III) hydrate (99.9985%-Au) (49% Au) PURATREM	75
	Hydrogen tetrachloroaurate (III) hydrate (99.8%-Au) (min. 49% Au)(Chloroauric acid)	75
$AuCl_4H_4N$	Ammonium tetrachloroaurate(III) hydrate (99.9985%-Au) PURATREM	6
$AuCl_4K$	Potassium tetrachloroaurate(III) hydrate (99.99%-Au) (51%-Au) PURATREM	344
AuI	Gold(I) iodide, 99% (99.9+%-Au)	75
Au_2O_3	Gold(III) oxide, 99%	75
BBr_3	Boron bromide, 99+%	25
	Boron bromide, elec. gr. (99.999%-B) PURATREM	25
BD_4Na	Sodium borodeuteride, 96 atom% D	416
BF_3	Boron fluoride, acetic acid complex, min. 97%	25
	Boron fluoride, ethyl ether complex (47-48% Boron fluoride)	25
BF_4H_4N	Ammonium tetrafluoroborate, 99%	7
BF_4K	Potassium tetrafluoroborate	344
BF_4Li	Lithium tetrafluoroborate, 98%	118
BF_4NO	Nitrosonium tetrafluoroborate, min. 97%	204
BF_4NO_2	Nitronium tetrafluoroborate, min. 97%	204
BF_4Na	Sodium tetrafluoroborate, 98%	421
BHF_4	Tetrafluoroboric acid, 48% aqueous solution	28
BH_3	Borane, pyridine complex, min. 93%	25
BH_3O_3	Boric acid, 99.8%	25
	Boric acid (99.99%-B) PURATREM	25
	Boric acid (99.9995%-B) PURATREM	25
BH_4K	Potassium borohydride, 98%	340
BH_4Li	Lithium borohydride, 95%	116
BH_4Na	Sodium borohydride, 98%	416
$BLiO_2$	Lithium metaborate, anhydrous, (99.9%-Li)	117
	Lithium metaborate dihydrate	117
BN	Boron nitride, 99+%	26
	Boron nitride, hexagonal crystalline solid, min. 99%	26
BNi	Nickel boride (99%-Ni)	174
BW	Tungsten boride (99.5%-W) (WB)	444
B_2CuF_8	Copper(II) tetrafluoroborate hydrate, 99%	58
B_2F_8Fe	Iron(II) tetrafluoroborate, 40-45% aqueous solution	109

Formula	Description	Page
B_2F_8Ni	Nickel(II) tetrafluoroborate hexahydrate, 99%	176
B_2F_8Zn	Zinc tetrafluoroborate hydrate, 98%	454
$B_2H_4O_4$	Tetrahydroxydiboron, min. 95%	29
B_2O_3	Boron oxide (99.6%-B)	26
	Boron oxide (99.9+%-B)	26
B_2Ti	Titanium boride, 99%	441
$B_3Br_3H_3N_3$	B-Tribromoborazine, min. 95%	30
$B_3Cl_3H_3N_3$	B-Trichloroborazine, min. 95%	30
B_4C	Boron carbide, 0.1-1.5 microns (99.9+%-B)	25
$B_4H_8N_2O_7$	Ammonium tetraborate tetrahydrate, 99%	6
$B_4K_2O_7$	Potassium tetraborate tetrahydrate, 99+%	344
$B_4Li_2O_7$	Lithium tetraborate, 99%	118
	Lithium tetraborate (99.998%-Li) PURATREM	118
$B_4Na_2O_7$	Sodium tetraborate, anhydrous, 99+%	421
	Sodium tetraborate decahydrate, 99.5+% (ACS)	421
	Sodium tetraborate, anhydrous (99.998%-B) (50 ppm K) PURATREM	421
B_6La	Lanthanum boride (99%-La)	112
$B_{10}H_{14}$	Decaborane, min. 97%	26
$B_{10}K_2O_{16}$	Potassium pentaborate octahydrate, 97%	343
$B_{12}Cs_2H_{12}$	Cesium dodecahydrododecaborate, min. 98%	43
$B_{12}H_{12}K_2$	Potassium dodecahydrododecaborate hydrate, min. 98%	341
$BaBr_2$	Barium bromide, anhydrous, min. 95%	11
$BaCl_2$	Barium chloride dihydrate (99.999%-Ba) PURATREM	11
	Barium chloride, anhydrous, 98+%	11
	Barium chloride dihydrate, 99% (ACS)	11
$BaCl_2O_8$	Barium perchlorate trihydrate (99.9%-Ba)	12
BaF_2	Barium fluoride, 99%	11
	Barium fluoride (99.99+%-Ba) PURATREM	11
BaH_2	Barium hydride (99.5%-Ba)	11
BaH_2O_2	Barium hydroxide, anhydrous, min. 95%	11
	Barium hydroxide octahydrate, 98+% (ACS)	11
BaI_2	Barium iodide, anhydrous, min. 97%	11
$BaMnO_4$	Barium manganate, 90%	11
BaN_2O_6	Barium nitrate (99.999%-Ba) PURATREM	12
	Barium nitrate (99.95%-Ba)	12
	Barium nitrate, 99.5%	12
BaO	Barium oxide (99.5%-Ba)	12
BaO_2	Barium peroxide, min. 84% (99%-Ba)	12
BaO_3Ti	Barium titanate, sintered lump (99.9%-Ba)	12
	Barium titanate, 99%	12
BaS	Barium sulfide, 75%	12
Ba_3N_2	Barium nitride (99.7%-Ba)	12
BeO	Beryllium oxide (99.95+%-Be)	13
$BiBr_3$	Bismuth(III) bromide, 98+%	23
$BiCl_3$	Bismuth(III) chloride, anhydrous, 99+% (99.9+%-Bi)	23
	Bismuth(III) chloride, anhydrous (99.999%-Bi) PURATREM	23
BiF_3	Bismuth(III) fluoride (99.99+%-Bi) PURATREM	23
	Bismuth(III) fluoride anhydrous, 99%	23
BiI_3	Bismuth(III) iodide (99.999%-Bi) PURATREM	23
BiN_3O_9	Bismuth(III) nitrate pentahydrate (99.999%-Bi) PURATREM	23
	Bismuth(III) nitrate pentahydrate, 98% (ACS)	23
Bi_2O_3	Bismuth(III) oxide (99.9998%-Bi) PURATREM	23
	Bismuth(III) oxide (99.9%-Bi)	23
	Bismuth(III) oxide (99.999%-Bi) PURATREM	23
$Bi_2O_7Ti_2$	Bismuth(III) titanate, 98%	24
Bi_2S_3	Bismuth(III) sulfide (99.999%-Bi) PURATREM	24
	Bismuth(III) sulfide (99.9%-Bi)	23
Bi_2Te_3	Bismuth(III) telluride (99.99%-Bi) PURATREM	24
Br	Bromine (99.5%)	31
BrC_2CuH_6S	Copper(I) bromide, dimethyl sulfide complex, 99%	56
BrCs	Cesium bromide (99.9%-Cs)	43
	Cesium bromide (99%-Cs)	42
BrCu	Copper(I) bromide, min. 98%	56
BrH	Hydrobromic acid, 48%	31
BrK	Potassium bromide (99.999%-K) PURATREM	340
	Potassium bromide, 99+% (ACS)	340
BrLi	Lithium bromide hydrate, 99%	116
	Lithium bromide, anhydrous, 99+%	116
	Lithium bromide (99.95%-Li) (0.2% H_2O)	116
BrNa	Sodium bromide, 99+% (ACS)	416
	Sodium bromide (99.999%-Na) PURATREM	416
BrRb	Rubidium bromide (99.9%-Rb)	361
	Rubidium bromide (99%-Rb)	361
BrTl	Thallium(I) bromide (99.999%-Tl) PURATREM	432
Br_2Ca	Calcium bromide hydrate, 98%	35
	Calcium bromide, anhydrous (99.5%-Ca)	35
Br_2Cd	Cadmium bromide, anhydrous, 99%	32
Br_2Co	Cobalt(II) bromide hydrate	48
Br_2Cu	Copper(II) bromide, 99%	56
Br_2Fe	Iron(II) bromide hydrate	107
	Iron(II) bromide, anhydrous, 98%	107
Br_2Hg	Mercury(II) bromide (ACS)	127
Br_2Mg	Magnesium bromide, anhydrous, 98%	122
	Magnesium bromide hexahydrate, 98+%	122
Br_2Mn	Manganese(II) bromide, anhydrous, min. 97% (99.9%-Mn)	125
	Manganese(II) bromide tetrahydrate, 98%	125
Br_2Ni	Nickel(II) bromide, anhydrous (99+%-Ni)	175
	Nickel(II) bromide hydrate	175
Br_2Pb	Lead(II) bromide, 98+%	114
Br_2Pd	Palladium(II) bromide, 99%	248
Br_2Pt	Platinum(II) bromide, 98%	338
Br_2Sn	Tin(II) bromide, 99%	436
Br_2Sr	Strontium bromide, anhydrous, 99%	422
Br_2Zn	Zinc bromide (99.9%-Zn)	452
	Zinc bromide (99.999%-Zn) PURATREM	452
	Zinc bromide, 98+%	452
Br_3Ce	Cerium(III) bromide hydrate (99.9%-Ce) (REO)	40
	Cerium(III) bromide, anhydrous (99.9%-Ce) (REO)	40
Br_3Cr	Chromium(III) bromide hexahydrate	45
	Chromium(III) bromide, anhydrous flakes, 99%	45
Br_3Fe	Iron(III) bromide, anhydrous, 99%	107
Br_3Ga	Gallium(III) bromide, anhydrous, granular (99.999%-Ga) PURATREM	67
Br_3In	Indium(III) bromide, anhydrous (99.999%-In) PURATREM	80
Br_3Ir	Iridium(III) bromide tetrahydrate, 99%	92
Br_3La	Lanthanum(III) bromide heptahydrate (99.9%-La) (REO)	112
Br_3Nd	Neodymium(III) bromide, anhydrous (99.9%-Nd) (REO)	169
Br_3OP	Phosphorus oxybromide, 99%	320
Br_3P	Phosphorus(III) bromide, 97+%	320
Br_3Rh	Rhodium(III) bromide dihydrate	359
Br_3Ru	Ruthenium(III) bromide hydrate	398
Br_3Sb	Antimony(III) bromide, 99%	8
Br_3V	Vanadium(III) bromide (99.7%-V)	445
Br_4C	Carbon tetrabromide, vacuum sublimed (99.998%-C) PURATREM	38
Br_4Ge	Germanium(IV) bromide (99.99+%-Ge) PURATREM	69
Br_4Hf	Hafnium(IV) bromide, anhydrous, 98% (99.7%-Hf)	77
Br_4K_2Pd	Potassium tetrabromopalladate(II), 98%	344
Br_4K_2Pt	Potassium tetrabromoplatinate(II), 99%	344
Br_4Se	Selenium(IV) bromide, 99%	404
Br_4Si	Silicon(IV) bromide, 99+%	409
Br_4Sn	Tin(IV) bromide, 99%	436
Br_4Te	Tellurium(IV) bromide (99.9%-Te)	430
Br_4Ti	Titanium(IV) bromide, min. 98%	441
Br_4Zr	Zirconium(IV) bromide, 98% (99+%-Zr)	457
Br_5Nb	Niobium(V) bromide (99.9%-Nb)	177
Br_5Ta	Tantalum(V) bromide (99.9%-Ta)	429
$Br_8H_8N_2Os$	Ammonium hexabromoosmate(IV), 99%	5

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Formula	Description	Page
Br_6K_2Pt	Potassium hexabromoplatinate(IV), 99%	341
$CAgF_3O_3S$	Silver trifluoromethanesulfonate, 99% (Silver triflate)	415
	Silver trifluoromethanesulfonate (99.95%-Ag) (Silver triflate)	415
CAgN	Silver cyanide, 99%	414
CAgNS	Silver thiocyanate, 99%	415
CAg_2O_3	Silver carbonate (99+%-Ag)	414
CAuClO	Chlorocarbonylgold(I), min. 97%	73
CAuN	Gold(I) cyanide (99.9%-Au)	75
CB_4	Boron carbide, powder, 99+%	25
$CBaO_3$	Barium carbonate (99.9%-Ba, Sr < .03%)	11
	Barium carbonate (99.999%-Ba) PURA-TREM	11
CBrN	Cyanogen bromide, min. 97%	193
$CCaO_3$	Calcium carbonate, 98%	35
	Calcium carbonate (99.95%-Ca)	35
	Calcium carbonate (99.999%-Ca) PURA-TREM	35
$CCoO_3$	Cobalt(II) carbonate hydrate (99%-Co) (Co min. 45.5%)	48
$CCsO_3$	Cesium carbonate (99+%-Cs)	43
CCuN	Copper(I) cyanide, 99%	56
CCuNS	Copper(I) thiocyanate, 99%	58
CF_3I	Trifluoromethyliodide, min. 97%	66
CF_3LiO_3S	Lithium trifluoromethanesulfonate, 99% (Lithium triflate)	118
CF_3O_3STl	Thallium(I) trifluoromethanesulfonate, 99% (Thallium triflate)	433
$CFeO_3$	Iron(II) carbonate, tech. gr. (Siderite)	107
CHF_3O_3S	Trifluoromethanesulfonic acid, 99+%	66
$CHLiO_2$	Lithium formate hydrate	117
$CHNaO_3$	Sodium hydrogen carbonate, 99.7+% (ACS)	419
$CH_2Cl_4P_2$	Bis(dichlorophosphino)methane, min. 90%	258
$CH_2Cu_2O_5$	Copper(II) carbonate, basic	56
CH_3BNNa	Sodium cyanoborohydride, 95%	417
CH_3BrMg	Methylmagnesium bromide, 3M in ether	123
CH_3ClMg	Methylmagnesium chloride, 3M in THF	123
CH_3Cl_2P	Methyldichlorophosphine, 97%	315
CH_3Cl_3Si	Trichloromethylsilane, min. 97%	411
CH_3Cl_3Sn	Methyltin trichloride, 98+%	435
$CH_3Cl_4NP_2$	Bis(dichlorophosphino)methylamine, min. 97%	258
CH_3HgI	Methylmercury(II) iodide, 98+%	128
CH_3I_3NPb	Methylammonium triiodoplumbate(II) (40wt% solution in DMF) (99.99+%-Pb)	115
$CH_3Li{\cdot}LiBr$	Methyllithium, complexed with lithium bromide in ethyl ether (1.5M)	119
CH_3LiO	Lithium methoxide, 10% in methanol	117
	Lithium methoxide, min. 95%	117
CH_3MgBr	Methylmagnesium bromide, 3.2M (35wt% ±1wt%) in 2-methyltetrahydrofuran	123
CH_3NaO	Sodium methoxide, 98+%	419
CH_3O_3Re	Methyltrioxorhenium(VII), 98%	347
CH_4Cl_2Si	Methyldichlorosilane, min. 97%	408
CH_4HgO	Methylmercury(II) hydroxide, ~1M aqueous solution	128
CH_4N_2Se	Selenourea, 99+%	404
CH_5N_2	Methylhydrazine, 98%	202
$CH_{12}B_{11}Cs$	Cesium carborane	43
CKN	Potassium cyanide, 96% (ACS)	341
CKNS	Potassium thiocyanate, 99+% (ACS)	344
CK_2O_3	Potassium carbonate (99.997%-K) PURA-TREM	341
	Potassium carbonate, 99+% (ACS)	341
CLi_2O_3	Lithium carbonate, 99%	116
	Lithium carbonate (99.99%-Li) PURATREM	116
	Lithium carbonate (99.999%-Li) PURATREM	116
$CMgO_3$	Magnesium carbonate, basic pentahydrate, 99%	122
$CMnO_3$	Manganese(II) carbonate, min. 90%	125
CMo_2	Molybdenum carbide (99.5%-Mo)	137
CNNa	Sodium cyanide, min. 98%	417
CNa_2O_3	Sodium carbonate, anhydrous, 99.5+% (ACS)	417
$CNiO_3$	Nickel(II) carbonate, basic hydrate	175
CO_3Rb_2	Rubidium carbonate (99%-Rb)	361
	Rubidium carbonate (99.8+%-Rb)	361
CO_3Sr	Strontium carbonate (99.995%-Sr) PURA-TREM	422
	Strontium carbonate (low alkali and heavy metals) (99.9%-Sr)	422
	Strontium carbonate, min. 97% (contains ~1.0-2.5% barium carbonate)	422
CO_8Zr_3	Zirconium(IV) carbonate, basic hydrate	457
CSi	Silicon carbide, -100 mesh	409
CTa	Tantalum carbide (99.5%-Ta)	429
CTi	Titanium carbide, 99%	441
CW	Tungsten carbide (99.5%-W)	444
CZr	Zirconium carbide (99+%-Zr)	457
$C_2AgF_3O_2$	Silver trifluoroacetate, min. 98%	415
$C_2AgF_6NO_4S_2$	Silver bis(trifluoromethanesulfonyl)imide acetonitrile adduct, min. 97%	414
C_2AgKN_2	Potassium silver cyanide (99.9%-Ag)	344
C_2AuKN_2	Potassium dicyanoaurate(I), 99%	341
$C_2BaF_6O_6S_2$	Barium trifluoromethanesulfonate, 99% (Barium triflate)	12
$C_2Br_2ClF_3$	2-Chloro-1,2-dibromo-1,1,2-trifluoroethane, min. 97%	63
$C_2CaF_6O_6S_2$	Calcium trifluoromethanesulfonate, min. 96% (Calcium triflate)	36
$C_2Cl_2F_2$	1,1-Dichloro-2,2-difluoroethylene, min. 97%	63
$C_2CoN_2S_2$	Cobalt(II) thiocyanate, min. 95%	50
C_2Cr_3	Chromium carbide, 99.7%	45
$C_2CuF_6O_6S_2$	Copper(II) trifluoromethanesulfonate, 98% (Copper triflate)	58
C_2CuKN_2	Potassium dicyanocuprate	341
C_2CuO_4	Copper(II) oxalate hemihydrate	57
$C_2F_3LiO_2$	Lithium trifluoroacetate monohydrate, min. 97%	118
$C_2F_3NaO_2$	Sodium trifluoroacetate, 97+%	421
C_2F_5I	Pentafluoroethyliodide, min. 97%	64
$C_2F_6FeO_6S_2$	Iron(II) trifluoromethanesulfonate, 98% (Iron triflate)	109
$C_2F_6HgO_6S_2$	Mercury(II) trifluoromethanesulfonate, 98% (Mercury triflate)	128
$C_2F_6KNO_4S_2$	Potassium trifluoromethanesulfonimide, min. 97%	345
$C_2F_6MgO_3S_2$	Magnesium trifluoromethanesulfonate, min. 98% (Magnesium triflate)	123
$C_2F_6NNaO_4S_2$	Sodium trifluoromethanesulfonimide, min. 97%	421
$C_2F_6NiO_6S_2$	Nickel(II) trifluoromethanesulfonate, min. 98% (Nickel triflate)	176
$C_2F_6O_5S$	Trifluoromethanesulphonic anhydride, min. 97%	66
$C_2F_6O_6S_2Zn$	Zinc trifluoromethanesulfonate, min. 98% (Zinc triflate)	454
$C_2F_6S_2SnO_6$	Tin(II) trifluoromethanesulfonate, 99% (Tin triflate)	437
C_2FeO_4	Iron(II) oxalate dihydrate, min. 95%	108
$C_2HF_3O_2$	Trifluoroacetic acid, 99%	65
$C_2HF_5O_2$	Pentafluoropropionic acid, min. 97%	64
C_2HNa	Sodium acetylide (18% suspension in xylene)	416
$C_2H_2ClF_3O_2S$	2,2,2-Trifluoroethanesulphonylchloride, 97+%	65
$C_2H_2CuO_4$	Copper(II) formate hydrate	57
$C_2H_2F_3I$	2,2,2-Trifluoroethyliodide, 99%	66
$C_2H_3AgO_2$	Silver acetate, 99%	414
$C_2H_3Cl_3Si$	Vinyltrichlorosilane, min. 97%	412
$C_2H_3CsO_2$	Cesium acetate (99.9%-Cs)	42
$C_2H_3CuO_2$	Copper(I) acetate, 97%	56
$C_2H_3F_3O$	2,2,2-Trifluoroethanol, 99%	66
$C_2H_3KO_2$	Potassium acetate, 99+% (ACS)	340
$C_2H_3LiO_2$	Lithium acetate dihydrate, 98% (99.9%-Li)	115
$C_2H_3NaO_2$	Sodium acetate, anhydrous, 99+% (ACS)	416
$C_2H_3O_2Rb$	Rubidium acetate (99%-Rb)	361
$C_2H_3O_2Tl$	Thallium(I) acetate (99.9985%-Tl) PURATREM	431
$C_2H_4Cl_3KPt$	Potassium trichloro(ethylene)platinate(II) monohydrate	344
$C_2H_4Cl_4P_2$	1,2-Bis(dichlorophosphino)ethane, min. 97%	258
$C_2H_4AlO_4$	Aluminum acetate, basic (boric acid adduct)	1
C_2H_5BrMg	Ethylmagnesium bromide, 3M in ether	121

Formula	Description	Page
	Ethylmagnesium bromide, 3.4M (40wt% ±1wt%) in 2-methyltetrahydrofuran	121
C_2H_5ClMg	Ethylmagnesium chloride, 2M in ether	121
$C_2H_5Cl_2P$	Ethyldichlorophosphine, 98%	312
$C_2H_5Cl_3Ge$	Ethylgermanium trichloride, min. 97%	69
$C_2H_5Cl_3Si$	Ethyltrichlorosilane, 98%	408
C_2H_5KO	Potassium ethoxide, 95+%	341
C_2H_5NaO	Sodium ethoxide, 96%	418
C_2H_5OTl	Thallium(I) ethoxide, min. 95%	432
$C_2H_5O_3P$	Vinylphosphonic acid, min. 90%	333
$C_2H_6AsNaO_2$	Sodium cacodylate trihydrate, 98%	417
C_2H_6AuClS	Chloro(dimethylsulfide)gold(I), min. 97%	74
$C_2H_6CaO_2$	Calcium methoxide, min. 90% (balance methanol)	35
C_2H_6Cd	Dimethylcadmium, min. 97%	34
	Dimethylcadmium, min. 97% (10 wt% in hexanes)	34
	Dimethylcadmium, elec. gr. (99.995+%-Cd) PURATREM	34
C_2H_6ClP	Dimethylchlorophosphine, min. 97%	298
$C_2H_6Cl_2Ge$	Dimethylgermanium dichloride, 99%	69
$C_2H_6Cl_2Si$	Dimethyldichlorosilane, 99%	407
$C_2H_6Cl_2Sn$	Dimethyltin dichloride, min. 95%	435
$C_2H_6Cl_4N_2P_2$	1,2-Bis(dichlorophosphino)-1, 2-dimethylhydrazine, min. 98%	258
$C_2H_6CuO_2$	Copper(II) methoxide, 99%	57
C_2H_8LiN	Lithium dimethylamide, 95%	116
$C_2H_6NiO_6$	Nickel(II) hydroxyacetate	175
C_2H_6OSn	Dimethyltin oxide, min. 97%	435
$C_2H_6O_{12}Zn_5$	Zinc carbonate hydroxide	452
C_2H_6Se	Dimethylselenide, 99%	404
C_2H_6Si	Dimethylpolysilane	407
C_2H_6Zn	Dimethylzinc, elec. gr. (99.999%-Zn) PURATREM	451
C_2H_6Zn	Dimethylzinc, min. 99% (10 wt% in hexanes) (Sure/Seal™ bottle)	451
	Dimethylzinc, 99%	451
	Dimethylzinc, elec. gr. (99.999%-Zn) PURATREM, 97-5060, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD	451
	Dimethylzinc, 99%, 97-5061, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	451
$C_2H_7AsO_2$	Dimethylarsinic acid (Cacodylic acid), 98%	10
$C_2H_7NO_2$	Ammonium acetate, anhydrous, 97+% (ACS)	5
C_2H_7OP	Dimethylphosphine oxide, min. 97%	299
$C_2H_8N_2$	Ethylenediamine, 99%	199
$C_2H_8O_7P_2$	1-Hydroxyethylidene-1,1-diphosphonic acid, min. 95% HEDP	314
$C_2H_8P_2$	1,2-Bis(phosphino)ethane, 99%	279
C_2H_9BS	Borane, dimethylsulfide complex (contains 5-6% excess dimethylsulfide)	25
$C_2H_{10}BN$	Borane, dimethylamine complex, min. 97%	25
$C_2H_{10}N_2O_6S_2$	Ammonium 2-aminoethane-1,1-disulfonic acid hydrate, min. 95%	5
$C_2H_{12}B_{10}$	o-Carborane, min. 95%	26
C_2HgN_2	Mercury(II) cyanide, 99%	127
C_2N_2Pd	Palladium(II) cyanide, 98+%	248
C_2N_2Pt	Platinum(II) cyanide, min. 98%	338
$C_2Na_2O_4$	Sodium oxalate, 99+%	419
C_2NiO_4	Nickel(II) oxalate dihydrate (99.998%-Ni) PURATREM	176
	Nickel(II) oxalate dihydrate	176
C_2O_4Sn	Tin(II) oxalate	437
C_2O_4Sr	Strontium oxalate, min. 95%	423
$C_3AlF_9O_9S_3$	Aluminum trifluoromethanesulfonate, 99% (Aluminum triflate)	3
C_3Al_4	Aluminum carbide, 98%	1
$C_3BiF_9O_9S_3$	Bismuth(III) trifluoromethanesulfonate, min. 98% (Bismuth triflate)	24
$C_3CeF_9O_9S_3$	Cerium(III) trifluoromethanesulfonate, min. 98% (Cerium triflate)	42
$C_3Ce_2O_9$	Cerium(III) carbonate hydrate (96%-Ce) (REO)	40
	Cerium(III) carbonate hydrate (99+%-Ce) (REO)	40

Formula	Description	Page
C_3CoNO_4	Cobalt tricarbonyl nitrosyl	50
$C_3DyF_9O_9S_3$	Dysprosium(III) trifluoromethanesulfonate, min. 98% (Dysprosium triflate)	60
$C_3Dy_2O_9$	Dysprosium(III) carbonate tetrahydrate (99.9%-Dy) (REO)	60
$C_3ErF_9O_9S_3$	Europium(III) trifluoromethanesulfonate, min. 98% (Europium triflate)	63
	Erbium(III) trifluoromethanesulfonate, min. 98% (Erbium triflate)	61
$C_3Er_2O_9$	Erbium(III) carbonate hydrate (99.9%-Er) (REO)	61
$C_3Eu_2O_9$	Europium(III) carbonate hydrate (99.9%-Eu) (REO)	62
C_3F_6O	Hexafluoroacetone trihydrate, min. 97%	64
	Hexafluoroacetone, anhydrous, 97%	64
$C_3F_9GaO_9S_3$	Gallium(III) trifluoromethanesulfonate, 98% (Gallium triflate)	68
$C_3F_9GdO_9S_3$	Gadolinium(III) trifluoromethanesulfonate, min. 98% (Gadolinium triflate)	67
$C_3F_9HoO_9S_3$	Holmium(III) trifluoromethanesulfonate, min. 98% (Holmium triflate)	79
$C_3F_9InO_9S_3$	Indium(III) trifluoromethanesulfonate, 99% (Indium triflate)	80
$C_3F_9LaO_9S_3$	Lanthanum(III) trifluoromethanesulfonate, min. 97% (Lanthanum triflate)	113
$C_3F_9LuO_9S_3$	Lutetium(III) trifluoromethanesulfonate, min. 98% (Lutetium triflate)	119
$C_3F_9NdO_9S_3$	Neodymium(III) trifluoromethanesulfonate, min. 98% (Neodymium triflate)	170
$C_3F_9O_9PrS_3$	Praseodymium(III) trifluoromethanesulfonate, min. 98% (Praseodymium triflate)	346
$C_3F_9O_9S_3Sc$	Scandium(III) trifluoromethanesulfonate, min. 98% (Scandium triflate)	403
	Scandium(III) trifluoromethanesulfonate (Scandium triflate), Microencapsulated in a Styrene Polymer [~13% $Sc(SO_3CF_3)_3$]	403
$C_3F_9O_9S_3Sm$	Samarium(III) trifluoromethanesulfonate, min. 98% (Samarium triflate)	402
$C_3F_9O_9S_3Tb$	Terbium(III) trifluoromethanesulfonate, min. 98% (Terbium triflate)	431
$C_3F_9O_9S_3Tm$	Thulium(III) trifluoromethanesulfonate, min. 98% (Thulium triflate)	433
$C_3F_9O_9S_3Y$	Yttrium(III) trifluoromethanesulfonate, min. 98% (Yttrium triflate)	450
$C_3F_9O_9S_3Yb$	Ytterbium(III) trifluoromethanesulfonate hydrate (Ytterbium triflate)	448
$C_3Gd_2O_9$	Gadolinium(III) carbonate hydrate (99.99%-Gd) (REO) PURATREM	66
$C_3H_2BrF_3O$	3-Bromo-1,1,1-trifluoroacetone, min. 97%	63
$C_3H_2F_6O$	Hexafluoroisopropanol, 99+%	64
$C_3H_2BF_3K$	Potassium allyltrifluoroborate, 99%	340
C_3H_5BrMg	Allylmagnesium bromide, 0.95-1.1 M in ether	120
$C_3H_7BO_2$	Cyclopropylboronic acid, min. 97%	26
C_3H_7BrMg	i-Propylmagnesium bromide, 2.9M (35wt% ±1wt%) in 2-methyltetrahydrofuran	124
C_3H_7ClMg	i-Propylmagnesium chloride, 2-3M in ether	124
	i-Propylmagnesium chloride, lithium chloride complex 1.3M (14wt% ±1wt%) in tetrahydrofuran	124
$C_3H_7Cl_2P$	n-Propyldichlorophosphine, min. 98%	320
$C_3H_8O_2$	(S)-(+)-1,2-Propanediol, 99%	220
C_3H_9Al	Trimethylaluminum, min. 98%	4
	Trimethylaluminum, elec. gr. (99.999+%-Al) PURATREM	4
	Trimethylaluminum, min. 98%, 93-1360, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	4
	Trimethylaluminum, elec. gr. (99.999+%-Al) PURATREM, 98-1955, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD	4
	Trimethylaluminum, elec. gr. (99.999+%-Al) PURATREM, 98-1955, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	4
	Trimethylaluminum, min. 98%, 93-1360, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	4
C_3H_9As	Trimethylarsine, 99%	10

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Formula	Description	Page
	Trimethylarsine, elec. gr. (99.995%-As) PURATREM	10
C_3H_9AuClP	Chlorotrimethylphosphinegold(I), min. 98%	74
C_3H_9B	Trimethylborane, 98%	31
$C_3H_9BF_4O$	Trimethyloxonium tetrafluoroborate, min. 95%	221
$C_3H_9BO_3$	Trimethylborate, 98%	31
	Trimethylborate, 99.95+%	31
$C_3H_9B_3O_6$	Trimethoxyboroxine, min. 95%	31
C_3H_9BrGe	Trimethylgermanium bromide, 98+%	70
C_3H_9BrSn	Trimethyltin bromide, min. 97%	438
C_3H_9ClGe	Trimethylgermanium chloride, min. 98%	70
C_3H_9ClSi	Trimethylchlorosilane, min. 97%	411
C_3H_9ClSn	Trimethyltin chloride, min. 98%	438
C_3H_9Ga	Trimethylgallium, 99+%	68
	Trimethylgallium, elec. gr. (99.9999%-Ga) PURATREM	68
	Trimethylgallium, 99+%, 31-2000, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	68
	Trimethylgallium, elec. gr. (99.9999%-Ga) PURATREM, 98-2000, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD	68
C_3H_9IPt	Iodotrimethylplatinum(IV), 99%	338
C_3H_9In	Trimethylindium, 98+% (99.9+%-In)	80
	Trimethylindium, elec. gr. (99.999%-In) PURATREM	80
	Trimethylindium, elec. gr. (99.999%-In) PURATREM, 98-2010, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD	80
$C_3H_9O_3P$	Trimethylphosphite, 97%	328
	Tris(hydroxymethyl)phosphine, min. 85%	332
	Tris(hydroxymethyl)phosphine, min. 95%	332
	Dimethylmethylphosphonate, 97%	299
	Trimethylphosphite, 99%	328
$C_3H_9O_4P$	Trimethylphosphate, min. 97%	328
C_3H_9P	Trimethylphosphine, min. 98%	328
	Trimethylphosphine, min. 98% (Sure/Seal™ bottle)	328
$C_3H_{10}BF_4P$	Trimethylphosphonium tetrafluoroborate, 99%	328
$C_3H_{10}OSn$	Trimethyltin hydroxide, 98%	438
$C_3H_{10}Si$	Trimethylsilane, 97%	412
$C_3H_{16}BF_4P$	Triethylphosphonium tetrafluoroborate, 99%	327
$C_3La_2O_9$	Lanthanum(III) carbonate hydrate (99.9%-La) (REO)	112
$C_3Nd_2O_9$	Neodymium(III) carbonate hydrate (99.9%-Nd) (REO)	169
$C_3O_9Sc_2$	Scandium(III) carbonate hydrate (99.99%-Sc) (REO) PURATREM	403
$C_3O_9Sm_2$	Samarium(III) carbonate hydrate (99.9%-Sm) (REO)	402
$C_3O_9Tb_2$	Terbium(III) carbonate hydrate (99.9%-Tb) (REO)	431
$C_3O_9Y_2$	Yttrium(III) carbonate trihydrate (99.9%-Y) (REO)	449
$C_4BaF_{12}N_2O_8S_4$	Barium trifluoromethanesulfonimide, min. 97%	12
C_4BaN_4Pt	Barium tetracyanoplatinate(II) tetrahydrate, 99%	12
$C_4CaF_{12}N_2O_8S_4$	Calcium trifluoromethanesulfonimide, min. 97%	36
$C_4Cl_2O_4Rh_2$	Chlorodicarbonylrhodium(I) dimer	356
$C_4F_6O_3$	Trifluoracetic anhydride, min. 98%	65
$C_4F_6O_4Pd$	Palladium(II) trifluoroacetate, min. 97%	248
$C_4F_{12}MgN_2O_8S_4$	Magnesium bis(trifluoromethylsulfonyl)imide, min. 97%	122
$C_4F_{12}N_2O_8S_4Zn$	Zinc bis(trifluoromethylsulfonyl)imide, min. 97%	452
C_4HF_9O	Perfluoro-t-butanol, min. 97%	65
$C_4H_3O_4Ru$	Acetatodicarbonylruthenium, polymer	363
$C_4H_4CuO_6$	Copper(II) tartrate hydrate	58
$C_4H_4F_6O$	Hexafluoro-2-methylisopropanol, min. 97%	64
$C_4H_4F_7N$	2,2,3,3,4,4,4-Heptafluorobutylamine, min. 97%	63
$C_4H_4KNaO_6$	Potassium sodium tartrate tetrahydrate, 99%	344
$C_4H_4O_6Sn$	Tin(II) tartrate hydrate, min. 95%	437
$C_4H_5BO_2S$	2-Thiopheneboronic acid, min. 97%	30
$C_4H_5F_3$	2-Trifluoromethylpropene, min. 97%	66
$C_4H_5F_3O_2$	Ethyltrifluoroacetate, 99%	63
$C_4H_6BaO_4$	Barium acetate, 99% (ACS)	11
$C_4H_6CaO_4$	Calcium acetate monohydrate, 98%	34
$C_4H_6CdO_4$	Cadmium acetate dihydrate, 98%	32
	Cadmium acetate, anhydrous (99.999%-Cd) PURATREM	32
$C_4H_6Cl_2N_2Pd$	Dichlorobis(acetonitrile)palladium(II), 99%	236
$C_4H_6Cl_2Sn$	Divinyltin dichloride, 98%	435
$C_4H_6CoO_4$	Cobalt(II) acetate tetrahydrate, 98+%	48
$C_4H_6CuO_4$	Copper(II) acetate, anhydrous, min. 97%	56
	Copper(II) acetate monohydrate, 98+% (ACS)	56
$C_4H_6FeO_4$	Iron(II) acetate, anhydrous, 97%	106
$C_4H_6HgO_4$	Mercury(II) acetate, 98%	127
$C_4H_6MgO_4$	Magnesium acetate tetrahydrate, 99%	121
$C_4H_6MnO_4$	Manganese(II) acetate tetrahydrate, 99+%	125
	Manganese(II) acetate tetrahydrate (99.999%-Mn) PURATREM	125
$C_4H_6NiO_4$	Nickel(II) acetate tetrahydrate (99.999%-Ni) PURATREM	174
	Nickel(II) acetate tetrahydrate, 98+%	174
$C_4H_6O_4Pb$	Lead(II) acetate trihydrate (99.999%-Pb) PURATREM	114
	Lead(II) acetate trihydrate, 99+% (ACS)	114
$C_4H_6O_4Sn$	Tin(II) acetate, 99%	436
$C_4H_6O_4Sr$	Strontium acetate, reagent	422
$C_4H_6O_4Zn$	Zinc acetate dihydrate, 98+% (ACS)	452
C_4H_7N	i-Propylisocyanide, min. 97%	40
C_4H_8AuClS	Chloro(tetrahydrothiophene)gold(I), min. 98%	74
$C_4H_8Cl_2GeO_2$	Germanium(II) chloride dioxane adduct	69
$C_4H_8Cl_4Pt_2$	Di-μ-chloro-dichlorobis(ethylene)diplatinum(II), min. 97% Zeise's dimer	337
C_4H_9ClMg	n-Butylmagnesium chloride, 1.5-3.0 M in THF	121
	sec-Butylmagnesium chloride, lithium chloride complex 1.2M (15wt% ±1wt%) in tetrahydrofuran	121
$C_4H_9Cl_2P$	t-Butyldichlorophosphine, 98%	282
$C_4H_9Cl_3Si$	n-Butyltrichlorosilane	406
$C_4H_9Cl_3Sn$	n-Butyltin trichloride, min. 95%	434
$C_4H_9F_3O_3SSi$	Trimethylsilyl trifluoromethanesulfonate, min. 97%	412
$C_4H_9F_3Si$	Trifluoromethyltrimethylsilane, min. 97%	411
C_4H_9KO	Potassium t-butoxide, min. 98%	340
C_4H_9Li	n-Butyllithium, 15% in hexanes (1.6M)	115
	t-Butyllithium 16% in pentane (1-2M)	115
	s-Butyllithium, 12% in cyclohexane (1.4M)	115
C_4H_9LiO	Lithium t-butoxide, 98+%	116
C_4H_9NaO	Sodium t-butoxide, min. 98%	417
$C_4H_9O_3P$	Vinylphosphonic acid dimethyl ester, min. 90%	333
$C_4H_{10}AlCl$	Diethylaluminum chloride, 97%	3
$C_4H_{10}Br_2CoO_2$	Cobalt(II) dibromo(1,2-dimethoxyethane), min. 98%	48
$C_4H_{10}Br_2FeO_2$	Iron(II) bromide, dimethoxyethane, min. 98%	107
$C_4H_{10}Br_2NiO_2$	Nickel(II) bromide, dimethoxyethane adduct, min. 97%	175
$C_4H_{10}ClP$	Diethylchlorophosphine, min. 95%	296
$C_4H_{10}Cl_2Ge$	Diethylgermanium dichloride, min. 97%	69
$C_4H_{10}Cl_2NiO_2$	Nickel(II) chloride, dimethoxyethane adduct, min. 97%	175
$C_4H_{10}LiN$	Lithium diethylamide, 95+%	116
$C_4H_{10}MgO_2$	Magnesium ethoxide, 98%	122
$C_4H_{10}O_2$	(S)-(+)-1,3-Butanediol, 98+%	215
	(2S,3S)-(+)-2,3-Butanediol, min. 97%	215
$C_4H_{10}O_2Sn$	Tin(II) ethoxide, min. 99%	436
	n-Butyltin hydroxide oxide hydrate, 97%	434
$C_4H_{10}Se_2$	Diethyldiselenide, min. 97%	404
$C_4H_{10}Zn$	Diethylzinc, min. 95% (10 wt% in hexanes) (Sure/Seal™ Bottle)	451
	Diethylzinc, min. 95%	451
	Diethylzinc, elec. gr. (99.9998%-Zn) PURATREM	451

Formula	Description	Page
	Diethylzinc, min. 95%, 93-3030, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	451
	Diethylzinc, min. 95%, 93-3030, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	451
$C_4H_{11}NOS$	(R)-(+)-t-Butylsulfinamide, min. 97%	424
	(S)-(-)-t-Butylsulfinamide, min. 97%	424
$C_4H_{11}O_3P$	Diethylphosphite, min. 95%	296
$C_4H_{11}P$	Diethylphosphine, 99%	296
	Diethylphosphine, 99% (10 wt% in hexanes)	296
	t-Butylphosphine, min. 95% TBP	282
	t-Butylphosphine, min. 95% TBP (10 wt% in hexanes)	283
$C_4H_{12}BF_4N$	Tetramethylammonium tetrafluoroborate, 97%	8
$C_4H_{12}BrP$	Tetramethylphosphonium bromide, 98%	325
$C_4H_{12}ClN_2OP$	Bis(dimethylamino)phosphoryl chloride, 95+%	263
$C_4H_{12}Ge$	Tetramethylgermane, 99%	69
$C_4H_{12}N_2$	N,N'-Dimethylethylenediamine, min. 98%	197
$C_4H_{12}O_3Si$	Methyltrimethoxysilane, min. 95%	408
$C_4H_{12}O_4Si$	Tetramethoxysilane, 98%	410
$C_4H_{12}P_2S_2$	Tetramethylbiphosphine disulfide, 99%	324
$C_4H_{12}Si$	Tetramethylsilane, 99.9+% (NMR grade)	411
$C_4H_{12}Sn$	Tetramethyltin, 98%	436
$C_4H_{13}NO$	Tetramethylammonium hydroxide pentahydrate, min. 95%	169
$C_4H_{13}N_3$	Diethylenetriamine, min. 95% DIEN	195
$C_4H_{14}BN$	Borane, t-butylamine complex, powder, min. 97%	25
$C_4H_{14}OSi_2$	1,1,3,3-Tetramethyldisiloxane, 99+% TMDSO (99.9999%-Si) PURATREM	411
$C_4H_{16}BN$	Tetramethylammonium borohydride, 95%	7
$C_4H_{16}Cl_2N_4Pt$	Bis(ethylenediamine)platinum(II) chloride, 99%	337
$C_4H_{16}I_2N_6O_6Pt_2$	Di-μ-iodobis(ethylenediamine)diplatinum(II) nitrate, 99% PIP	337
$C_4H_{22}B_{18}CoNa$	Sodium cobalticarborane	417
C_4KN_3	Potassium tricyanomethanide, min. 98%	345
$C_4K_2N_4Ni$	Potassium tetracyanonickelate(II) hydrate	344
$C_4K_2N_4Pt$	Potassium tetracyanoplatinate(II) hydrate	344
$C_4K_2O_8Pt$	Potassium bis(oxalato)platinate(II) dihydrate, 99%	340
C_4NiO_4	Nickel carbonyl	175
C_5BrMnO_5	Manganese pentacarbonyl bromide, min. 98%	126
C_5BrO_5Re	Rhenium pentacarbonyl bromide, 98%	347
C_5ClO_5Re	Rhenium pentacarbonyl chloride, 98%	347
C_5F_5N	Pentafluoropyridine, 99%	65
C_5F_{12}	Perfluoro-n-pentane, min. 98%	65
C_5FeO_5	Iron pentacarbonyl, 99.5% (99.9+%-Fe)	108
	Iron pentacarbonyl, 99.5% (99.9+%-Fe) (Sure/Seal™ bottle)	109
$C_5HF_6NaO_2$	Sodium hexafluoroacetylacetonate, 97%	418
$C_5HF_6O_2Tl$	Thallium(I) hexafluoroacetylacetonate, 99% (99.9%-Tl)	432
$C_5H_2F_6O_2$	Hexafluoroacetylacetone, min. 98% HFAA	64
$C_5H_2F_6O_4$	Hexafluoroglutaric acid, min. 97%	64
$C_5H_4F_6O$	1H,1H,5H-Octafluoro-1-pentanol, min. 98%	64
$C_5H_5AuCl_3N$	Trichloropyridinegold(III), min. 97%	76
$C_5H_5Cl_3Ti$	Cyclopentadienyltitanium trichloride, 99%	439
$C_5H_5Cl_3Zr$	Cyclopentadienylzirconium trichloride, min. 98%	455
$C_5H_5Cl_4Mo$	Cyclopentadienylmolybdenum(V) tetrachloride, min. 95%	137
$C_5H_5Cl_4Nb$	Cyclopentadienylniobium(V) tetrachloride, 98%	177
$C_5H_5F_3O_2$	1,1,1-Trifluoroacetylacetone, min. 98%	65
C_5H_5In	Cyclopentadienylindium(I), elec. gr. (99.99+%-In) PURATREM	79
	Cyclopentadienylindium (I), elec. gr. (99.99+%-In) PURATREM, 97-3425, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	79
C_5H_5Li	Lithium cyclopentadienide, 97%	116
$C_5H_5NO_4Os$	Tetraoxopyridineosmium(VIII) (~7.5% Os) polymer-bound FibreCat™	214
C_5H_5Na	Sodium cyclopentadienide, 2-3M in THF	417
C_5H_5Tl	Cyclopentadienylthallium, 95%	431
	Cyclopentadienylthallium, 99% (99.9%-Tl) sublimed	431
$C_5H_7LiO_2$	Lithium acetylacetonate, 98+%	115
$C_5H_7NaO_2$	Sodium acetylacetonate hydrate, min. 98%	416
$C_5H_7O_2Tl$	Thallium(I) acetylacetonate, 99%	432
C_5H_9N	n-Butylisocyanide, 97%	38
	t-Butylisocyanide, min. 98%	38
$C_5H_{10}Si$	Trimethylsilylacetylene, min. 97%	412
$C_5H_{11}BN_2$	1,3-Dimethylimidazol-2-ylidene borane, min. 97%	197
$C_5H_{11}Cl$	neo-Pentylchloride, 98%	39
$C_5H_{11}LiO$	Lithium 2-methyl-2-butoxide 3.1M (40wt% ±1wt%) in heptane	117
$C_5H_{11}NO$	(R)-(-)-2-Pyrrolidinemethanol, 99% (D-Prolinol)	207
$C_5H_{12}ClNO_2S$	L-Cysteine ethyl ester hydrochloride, 98%	167
$C_5H_{12}O_2$	(2R,4R)-(-)-2,4-Pentanediol, 99%	220
	(2S,4S)-(+)-2,4-Pentanediol, 99%	220
$C_5H_{13}AlO$	Dimethylaluminum i-propoxide, 98% (99.99+%-Al) PURATREM	3
$C_5H_{14}OSi$	Trimethylethoxysilane, min. 97%	411
$C_5H_{14}P_2$	Bis(dimethylphosphino)methane, min. 98%	265
$C_5H_{15}O_5Ta$	Tantalum(V) methoxide (99.99+%-Ta) PURATREM	429
C_6BrF_5	Bromopentafluorobenzene, 99%	63
$C_6Ce_2O_{12}$	Cerium(III) oxalate nonahydrate (99.9%-Ce) (REO)	41
C_6ClF_5	Chloropentafluorobenzene, 99%	63
$C_6Cl_4O_6Ru_2$	Dichlorotricarbonylruthenium(II) dimer, min. 98%	393
$C_6CoK_3N_6$	Potassium hexacyanocobaltate(III)	342
C_6CrO_6	Chromium carbonyl, sublimed, 99%	45
	Chromium carbonyl, 98+%	45
$C_6Eu_2O_{12}$	Europium(III) oxalate hydrate (99.9%-Eu) (REO)	62
C_6F_5I	Iodopentafluorobenzene, 97%	64
C_6F_6	Hexafluorobenzene, min. 99%	64
$C_6F_9InO_6$	Indium(III) trifluoroacetate, 99%	80
$C_6F_9O_6Tl$	Thallium(III) trifluoroacetate, tech. gr.	432
$C_6F_{10}O_3$	Pentafluoropropionic anhydride, min. 97%	65
$C_6F_{18}N_3O_{12}S_6Sc$	Scandium(III) trifluoromethanesulfonimide, min. 97%	403
$C_6FeK_3N_6$	Potassium hexacyanoferrate(III), 99+% (ACS)	342
$C_6FeK_3O_{12}$	Potassium tris(oxalato)ferrate(III) trihydrate	345
$C_6FeK_4N_6$	Potassium hexacyanoferrate(II) trihydrate, 98.5+% (ACS)	342
$C_6FeN_6Na_4$	Sodium hexacyanoferrate(II) decahydrate	418
$C_6Fe_2O_{12}$	Iron(III) oxalate hexahydrate, tech. gr.	108
C_6HF_5	Pentafluorobenzene, 99%	64
C_6HF_5O	Pentafluorophenol, 99%	64
C_6HF_5S	Pentafluorothiophenol, 97%	65
$C_6H_2F_4S$	2,3,5,6-Tetrafluorothiophenol, min. 98%	65
$C_6H_2F_5N$	Pentafluoroaniline, 99%	64
$C_6H_3Cl_2F_4NO_3S$	2,6-Dichloro-1-fluoropyridinium triflate, 95%	195
	2,6-Dichloro-1-fluoropyridinium triflate, 95%	195
C_6H_4ClFO	2-Chloro-5-fluorophenol, min. 97%	63
$C_6H_4Cl_4P_2$	1,2-Bis(dichlorophosphino)benzene, min. 97%	258
$C_6H_4FNO_2$	o-Fluoronitrobenzene	63
$C_6H_4S_4$	Tetrathiafulvalene, 98+% TTF	428
$C_6H_5BCl_2$	Phenylboron dichloride, min. 97%	27
C_6H_5BrMg	Phenylmagnesium bromide, 3M in ether	124
	Phenylmagnesium bromide, 2.9M (45wt% ±1wt%) in 2-methyltetrahydrofuran	124
C_6H_5ClMg	Phenylmagnesium chloride, 2-3M in THF	124
C_6H_5ClSe	Phenylselenium chloride	404
$C_6H_5Cl_2OP$	Phenyldichlorophosphine oxide, min. 94%	318
$C_6H_5Cl_2P$	Phenyldichlorophosphine, 97%	318
	Phenyldichlorophosphine, 99%	318
$C_6H_5Cl_3Si$	Phenyltrichlorosilane, 97+%	409
$C_6H_5Cl_3Sn$	Phenyltin trichloride, min. 98%	435
C_6H_5F	Fluorobenzene, 99%	63
C_6H_5FO	o-Fluorophenol, min. 98%	63
	p-Fluorophenol, 99%	63
$C_6H_5F_4NO_3S$	1-Fluoropyridinium triflate, 95%	200

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Formula	Description	Page
	1-Fluoropyridinium triflate, 95%	200
$C_6H_5F_9O$	1H,1H,2H,2H-Perfluorohexan-1-ol, 99%	65
$C_6H_6BClO_2$	4-Chlorophenylboronic acid, min. 97%	26
$C_6H_6BFO_2$	4-Fluorophenylboronic acid, min. 97%	27
$C_6H_6F_3NO_3S$	Pyridinium trifluoromethanesulfonate, min. 97%	207
C_6H_6Se	Phenylselenol, 97%	404
$C_6H_7AsO_3$	Phenylarsonic acid, 98%	10
$C_6H_7BO_2$	Phenylboronic acid, min. 97%	27
C_6H_7K	Potassium methylcyclopentadienide, 98%	343
$C_6H_7NNa_2O_6$	Nitrilotriacetic acid, disodium salt, 99%	204
$C_6H_7NO_3$	N-(2-Hydroxyethyl)maleimide, 99%	201
$C_6H_7O_2P$	Phenylphosphinic acid, 99%	319
$C_6H_7O_3P$	Phenylphosphonic acid, 98%	319
C_6H_7P	Phenylphosphine, 99%	319
	Phenylphosphine, 99% (Sure/Seal™ bottle)	319
	Phenylphosphine, 99% (10 wt% in hexanes)	319
$C_6H_8P_2$	1,2-Bis(phosphino)benzene, 98+%	279
	1,2-Bis(phosphino)benzene, 98+% (10 wt% in hexanes)	279
$C_6H_9BiO_6$	Bismuth(III) acetate, 99%	23
$C_6H_9CeO_6$	Cerium(III) acetate hydrate (99.999%-Ce) (REO) PURATREM	40
	Cerium(III) acetate hydrate (99.9%-Ce) (REO)	40
$C_6H_9CrO_6$	Chromium(III) acetate solution, 11.2-11.8% Cr	45
	Chromium(III) acetate, 97%	45
$C_6H_9DyO_6$	Dysprosium(III) acetate hydrate (99.9%-Dy) (REO)	60
$C_6H_9ErO_6$	Erbium(III) acetate hydrate (99.9%-Er) (REO)	61
$C_6H_9EuO_6$	Europium(III) acetate hydrate (99.9%-Eu) (REO)	62
$C_6H_9GdO_6$	Gadolinium(III) acetate tetrahydrate (99.9%-Gd) (REO)	66
$C_6H_9HoO_6$	Holmium(III) acetate monohydrate (99.9%-Ho) (REO)	78
$C_6H_9InO_6$	Indium(III) acetate (99.99%-In) PURATREM.	79
$C_6H_9LaO_6$	Lanthanum(III) acetate hydrate (99.9%-La) (REO)	112
$C_6H_9LuO_6$	Lutetium(III) acetate hydrate (99.9%-Lu) (REO)	119
$C_6H_9MnO_6$	Manganese(III) acetate dihydrate, 98%	125
$C_6H_9NdO_6$	Neodymium(III) acetate hydrate (99.9%-Nd) (REO)	169
$C_6H_9O_6Pr$	Praseodymium(III) acetate hydrate (99.9%-Pr) (REO)	345
$C_6H_9O_6Sb$	Antimony(III) acetate, 97%	8
$C_6H_9O_6Sc$	Scandium(III) acetate hydrate (99.9%-Sc) (REO)	403
$C_6H_9O_6Sm$	Samarium(III) acetate hydrate (99.9%-Sm) (REO)	402
$C_6H_9O_6Tl$	Thallium(III) acetate hydrate	432
$C_6H_9O_6Tm$	Thulium(III) acetate tetrahydrate (99.9%-Tm) (REO)	433
$C_6H_9O_6Y$	Yttrium(III) acetate hydrate (99.9%-Y) (REO)	449
$C_6H_9O_6Yb$	Ytterbium(III) acetate hydrate (99.9%-Yb) (REO)	447
$C_6H_{10}Cl_2Pd_2$	Allylpalladium chloride dimer, min. 98%	226
	Allylpalladium chloride dimer, supported on poly(ethylene glycol)polystyrene graft copolymer beads [~6% $(C_3H_5PdCl)_2$]	226
$C_6H_{10}INS$	3,4,5-Trimethylthiazolium iodide, 99%	428
$C_6H_{11}BNaO_6$	Sodium triacetoxyborohydride, min. 95%	421
$C_6H_{11}Cl_2P$	Cyclohexyldichlorophosphine, 98%	283
$C_6H_{11}NOS$	(R)-4-Isopropyl-2-oxazolidinethione, min. 98%	201
	(S)-4-Isopropyl-2-oxazolidinethione, min. 98%	201
$C_6H_{12}BNO_3$	Triethanolamineborate, min. 95%	30
$C_6H_{12}Cl_3O_4P$	Tris(2-chloroethyl)phosphate, 97%	331
$C_6H_{12}N_2O_4Pt$	1,1-Cyclobutanedicarboxylatodiammine-platinum(II), 99% CARBOPLATIN	337
$C_6H_{12}N_3P$	1,3,5-Triaza-7-phosphaadamantane, min. 97% PTA	325
$C_6H_{13}P$	Cyclohexylphosphine, min. 97%	283
	Cyclohexylphosphine, min. 97% (Sure/Seal™ bottle)	283
	Cyclohexylphosphine, min. 97% (10 wt% in hexanes)	283
C_6H_{14}	Perfluorohexane, 98+% (85% n-isomer)	65
$C_6H_{14}BaO_2$	Barium i-propoxide, dry powder	12
	Barium i-propoxide (~20% in isopropanol)	12
$C_6H_{14}ClP$	Di-i-propylchlorophosphine, min. 97%	310
$C_6H_{14}N_2$	(1R,2R)-(-)-1,2-Diaminocyclohexane, 99% (R,R)-DACH	193
	(1S,2S)-(+)-1,2-Diaminocyclohexane, 99% (S,S)-DACH	193
$C_6H_{14}O_2$	(2R,5R)-(-)-2,5-Hexanediol, 99%	219
	(2S,5S)-(+)-2,5-Hexanediol, 99%	219
$C_6H_{14}O_2Sr$	Strontium i-propoxide, min. 95%	423
$C_6H_{14}O_2Zn$	Zinc i-propoxide, 99%	453
$C_6H_{15}Al$	Triethylaluminum, min. 93%	4
	Triethylaluminum, elec. gr. (99.999+%-Al) PURATREM	4
$C_6H_{15}AlO_3$	Aluminum ethoxide, 99%	2
$C_6H_{15}As$	Triethylarsine, 99%	10
$C_6H_{15}AuClP$	Chlorotriethylphosphinegold(I), 99%	74
$C_6H_{15}B$	Triethylborane, 98%	31
$C_6H_{15}BO_2$	Hexylboronic acid, min. 97%	27
$C_6H_{15}BO_3$	Triethylborate, 98.5+%	31
$C_6H_{15}BrSn$	Triethyltin bromide, min. 97%	437
$C_6H_{15}ClGe$	Triethylgermanium chloride, 98%	69
$C_6H_{15}ClO_3Si$	3-Chloropropyltrimethoxysilane, min. 97%	406
$C_6H_{15}ClSi$	t-Butyldimethylchlorosilane, min. 97%	406
	Triethylchlorosilane, 99%	411
$C_6H_{15}ClSn$	Triethyltin chloride, 98%	437
$C_6H_{15}Ga$	Triethylgallium, elec. gr. (99.9999%-Ga) PURATREM	68
$C_6H_{15}N_3$	1,4,7-Triazacyclononane, 97%	210
$C_6H_{15}OP$	Triethylphosphine oxide, 98%	327
$C_6H_{15}O_3P$	Triethylphosphite, 98%	327
	Di-i-propylphosphite, min. 98%	310
	n-Hexylphosphonic acid, min. 97% HPA	313
$C_6H_{15}O_3Sb$	Antimony(III) ethoxide, 99%	8
$C_6H_{15}{}_4P$	Triethylphosphate, 99%	327
$C_6H_{15}P$	Di-i-propylphosphine, 98%	310
	Di-i-propylphosphine, 98% (10 wt% in hexanes)	310
	Triethylphosphine, 99%	327
	Triethylphosphine, 99% (Sure/Seal™ bottle)	327
	Triethylphosphine, 99% (20 wt% in ethanol)	327
	Triethylphosphine, 99% (10 wt% in hexanes)	327
$C_6H_{16}AlNaO_4$	Sodium dihydrobis(2-methoxyethoxy)aluminate, 70% in toluene	417
$C_6H_{16}BK$	Potassium triethylborohydride, 1.0M in THF, in Sure/Seal™ bottle	345
$C_6H_{16}Cl_2N_2Pd$	cis-Dichloro(N,N,N',N'-tetramethylethylenediamine)palladium(II), 99%	239
$C_6H_{16}FeN_{10}$	Ammonium hexacyanoferrate(II) hydrate	5
$C_6H_{16}N_2$	N,N,N',N'-Tetramethylethylenediamine, 99% TMEDA	209
$C_6H_{16}O_2Si$	Dimethyldiethoxysilane, 97%	407
$C_6H_{16}P_2$	1,2-Bis(dimethylphosphino)ethane, 98% DMPE	265
$C_6H_{16}Si$	Triethylsilane, 99%	411
$C_6H_{18}AsN_3$	Tris(dimethylamino)arsine, 99%	10
$C_6H_{18}NNaSi_2$	Sodium hexamethyldisilazane, min. 95%	419
$C_6H_{18}N_3P$	Tris(dimethylamino)phosphine, min. 98% HMPT	331
$C_6H_{18}N_3Sb$	Tris(dimethylamino)antimony (99.99%-Sb) PURATREM	9
$C_6H_{18}N_4$	2,2',2''-Triaminotriethylamine, min. 98% TREN	210
$C_6H_{18}SSi_2$	Bis(trimethylsilyl)sulfide, min. 98%	406
$C_6H_{18}Si_2$	Hexamethyldisilane, 97%	408
$C_6H_{18}Sn_2$	Hexamethylditin, 99%	435
$C_6H_{19}NSi_2$	Hexamethyldisilazane, min. 97%	408
$C_6H_{19}N_3Si$	Tris(dimethylamino)silane, 99+% 3DMAS	412
	Tris(dimethylamino)silane, 99+% 3DMAS, 14-8750, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	412
$C_6H_{21}N_3Si_3$	2,2,4,4,6,6-Hexamethylcyclotrisilazane, 97%	408

Formula	Description	Page
$C_6H_{21}O_3P_3Pt$	Hydrido(dimethylphosphinous acid-kP)[hydrogen bis(dimethylphosphinito-kP)]platinum(II) Ghaffar-Parkins catalyst	338
$C_6H_{24}Cl_3CrN_6$	Tris(ethylenediamine)chromium(III) chloride hemiheptahydrate, min. 98%	46
$C_6K_2N_6Pt$	Potassium hexacyanoplatinate(IV), 99%	342
$C_6K_4N_6Ru$	Potassium hexacyanoruthenate(II) hydrate	342
C_6MoO_6	Molybdenum carbonyl, 98%	137
C_6N_4	Tetracyanoethylene, 98%	209
$C_6Nd_2O_{12}$	Neodymium(III) oxalate decahydrate (99.9%-Nd) (REO)	170
C_6O_6W	Tungsten carbonyl, 99% (<0.3%-Mo)	444
	Tungsten carbonyl, 99% (<0.1%-Mo)	444
	Tungsten carbonyl, 99% (99.9+%-W) sublimed	444
$C_6O_{12}Sm_2$	Samarium(III) oxalate hydrate (99.9%-Sm) (REO)	402
$C_6O_{12}Tm_2$	Thulium(III) oxalate hydrate (99.9%-Tm) (REO)	433
$C_6O_{12}Y_2$	Yttrium(III) oxalate hydrate (99.9%-Y) (REO)	449
C_7HF_5O	Pentafluorobenzaldehyde, 98%	64
	Pentafluorobenzoic acid, 99%	64
$C_7HF_{13}O_2$	Perfluoroheptanoic acid, min. 97%	65
$C_7H_2BrF_5$	Pentafluorobenzylbromide, 98+%	64
$C_7H_3ClF_4$	3-Chloro-4-fluorobenzotrifluoride, 98%	63
$C_7H_5ClF_3N$	5-Amino-2-chlorobenzotrifluoride, min. 97%	63
$C_7H_5CoO_2$	Cyclopentadienylcobalt dicarbonyl, min. 95%	51
$C_7H_5FO_2$	o-Fluorobenzoic acid, min. 97%	63
$C_7H_5LiO_2$	Lithium benzoate, 99+%	116
$C_7H_7BO_4$	3-Carboxyphenylboronic acid, min. 97%	26
	4-Carboxyphenylboronic acid, min. 97%	26
C_7H_7ClMg	Benzylmagnesium chloride, 1-2 M in THF	120
C_7H_7F	o-Fluorotoluene, 99%	63
$C_7H_7IrO_4$	Dicarbonyl(acetylacetonato)iridium(I), 98%	90
$C_7H_7N_3$	5-Methyl-1H-benzotriazole, 99%	202
$C_7H_7O_4Rh$	Dicarbonylacetylacetonato rhodium(I), 99%	357
$C_7H_8Cl_2Pd$	Dichloro(norbornadiene)palladium(II), 99%	239
$C_7H_8Cl_2Si$	Methylphenyldichlorosilane, min. 97%	408
$C_7H_8S_2$	1,2-Dimercapto-4-methylbenzene, min. 90% (Toluene-3,4-dithiol)	425
$C_7H_9BO_2$	m-Tolylboronic acid, min. 97%	30
	o-Tolylboronic acid, min. 97%	30
	p-Tolylboronic acid, min. 97%	30
$C_7H_9BO_3$	2-Methoxyphenylboronic acid, min. 97%	27
	4-Methoxyphenylboronic acid, min. 97%	27
C_7H_9NO	(R)-(+)-α-Methyl-4-pyridinemethanol, min. 98%	203
	(S)-(-)-α-Methyl-4-pyridinemethanol, min. 98%	203
$C_7H_{10}AuF_3O_2$	Dimethyl(trifluoroacetylacetonate)gold(III), 98% (99.9%-Au)	75
$C_7H_{11}N_3$	2,6-Bis(aminomethyl)pyridine, min. 85%	180
C_7H_{12}	t-Butylmethylacetylene, min. 98%	38
$C_7H_{13}AuO_2$	Dimethyl(acetylacetonate)gold(III), 98% (99.9%-Au)	74
$C_7H_{14}B_2ClF_9N_2$	1-(Chloromethyl)-4-fluoro-1,4-diazoniabicyclo[2.2.2]octane bis(tetrafluoroborate), min. 97% SelectFluor®	191
$C_7H_{14}N_2O_4S$	1,2,3-Trimethylimidazolium methyl sulfate, 98% [TriMIM] [MeSO4]	84
$C_7H_{15}F_3O_3SSi$	Triethylsilyl trifluoromethanesulfonate, 99%	411
	t-Butyldimethylsilyl trifluoromethanesulfonate, 98%	406
$C_7H_{16}N_2$	N,N'-Bis(1-methylethyl)methanimidamide, min. 98%	186
$C_7H_{16}O_2$	(3R,5R)-(-)-3,5-Heptanediol, 99%	219
	(3S,5S)-(+)-3,5-Heptanediol, 99%	219
$C_7H_{18}O_3Si$	Methyltriethoxysilane, 98+%	408
$C_7H_{20}N_4$	1,4,8,11-Tetraazaundecane, min. 97%	208
$C_7H_{20}Si_2$	Bis(trimethylsilyl)methane, 97%	406
$C_8Co_2O_8$	Cobalt carbonyl (Dicobalt octacarbonyl) (Stabilized with 1-5% hexanes)	48
$C_8F_5F_3O_2S$	2-Thenoyltrifluoroacetone, 99% (TTA)	65
$C_8F_{12}O_8Rh_2$	Rhodium(II) trifluoroacetate dimer, min. 95%	359
$C_8F_{15}NaO_2$	Perfluorooctanoic acid, sodium salt	65
$C_8F_{16}O$	Perfluoro-2-butyltetrahydrofuran, min. 95%	65
$C_8F_{17}KO_3S$	Perfluorooctanesulphonic acid, potassium salt, 97%	65
$C_8F_{18}O_2S$	Perfluorooctanesulfonyl fluoride, min. 95%	65
$C_8H_4F_3NO$	p-Trifluoromethylphenylisocyanate, 99%	66
$C_8H_4F_3NO_3S_2$	2-[(Trifluoromethyl)thio]-1,1-dioxide-1,2-benzisothiazol-3(2H)-one, 97%	210
C_8H_6Cu	Copper(I) phenylacetylide, min. 97%	58
$C_8H_5F_3O$	p-Trifluoromethylbenzaldehyde, 98+%	66
$C_8H_5F_{13}O$	1H,1H,2H,2H-Perfluorooctan-1-ol, min. 97%	65
$C_8H_5MnO_3$	Cyclopentadienylmanganese tricarbonyl, 98% Cymantrene	125
$C_8H_5O_3Re$	Cyclopentadienylrhenium tricarbonyl, 99%	347
$C_8H_8N_2O_4Mo$	Bis(acetonitrile)tetracarbonylmolybdenum(0), 98%	136
$C_8H_8N_2O_4W$	Bis(acetonitrile)tetracarbonyltungsten(0)	443
$C_8H_8N_4$	2,2'-Bipyrazine, 95%	179
$C_8H_6O_6$	2,5-Dihydroxyterephthalic acid, 98% H_4DOBDC	217
C_8H_8	Cyclooctatetraene, 98% COT	38
$C_8H_8HgO_2$	Phenylmercury acetate, 97.5%	128
$C_8H_{10}AgF_6O_2P$	Trimethylphosphine(hexafluoroacetylacetonato)silver(I), 99% (99.9%-Ag)	415
$C_8H_{10}N_4Zn$	Zinc 2-methylimidazole MOF (ZIF-8)	453
$C_8H_{10}Pd$	Allyl(cyclopentadienyl)palladium(II), 98%	226
$C_8H_{11}Cl_3Hf$	i-Propylcyclopentadienylhafnium trichloride, min. 98%	77
$C_8H_{11}F_6N_3O_4S_2$	1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [EMIIm]	82
$C_8H_{11}NO$	2-(Pyridine-2-yl)propan-2-ol, min. 95% pyalc	207
$C_8H_{11}Na$	Sodium-i-propylcyclopentadienide	422
$C_8H_{11}O_2P$	Phenyldimethoxyphosphine, 98%	318
$C_8H_{11}P$	Dimethylphenylphosphine, 99%	299
$C_8H_{12}B_2CoF_4N_4O_4$	N,N',N'',N'''-(Tetrafluorodiborato) bis[μ-(2,3-butanedionedioximato)]cobalt(II), min. 98%	52
$C_8H_{12}B_2F_8N_4Pd$	Tetrakis(acetonitrile)palladium(II) tetrafluoroborate, min. 98%	248
$C_8H_{12}Br_2Pd$	Dibromo(1,5-cyclooctadiene)palladium(II), 99%	236
$C_8H_{12}Br_2Pt$	Dibromo(1,5-cyclooctadiene)platinum(II), 98%	337
$C_8H_{12}Cl_2Pd$	Dichloro(1,5-cyclooctadiene)palladium(II), 99%	239
$C_8H_{12}Cl_2Pt$	Dichloro(1,5-cyclooctadiene)platinum(II), 99%	337
$C_8H_{12}Cl_2Ru$	Dichloro(1,5-cyclooctadiene)ruthenium(II) polymer, min. 97%	391
$C_8H_{12}CuF_6N_4P$	Tetrakis(acetonitrile)copper(I) hexafluorophosphate, 98+%	59
$C_8H_{12}I_2Pt$	Diiodo(1,5-cyclooctadiene)platinum(II), 99%	337
$C_8H_{12}Mo_2O_8$	Molybdenum(II) acetate dimer, 99%	137
$C_8H_{12}O_6Si$	Vinyltriacetoxysilane	412
$C_8H_{12}O_8Pb$	Lead(IV) acetate, 95%	114
$C_8H_{12}O_8Rh_2$	Rhodium(II) acetate dimer, 99%	358
$C_8H_{12}O_8Si$	Silicon(IV) acetate, min. 95%	409
$C_8H_{14}Cl_2Ni_2$	Methallylnickel chloride dimer	174
$C_8H_{14}Cl_2Pd_2$	(1-Methylallyl)palladium chloride dimer, 99%	247
	Bis(2-methylallyl)palladium chloride dimer, min. 98%	228
$C_8H_{14}CuO_4$	Copper(II) i-butyrate, 99%	56
$C_8H_{14}N_4NiO_4$	Nickel(II) dimethylglyoxime, 99%	175
$C_8H_{14}O_2$	2,2-Dimethyl-3,5-hexanedione, min. 97%	218
$C_8H_{14}Pt$	(Trimethyl)cyclopentadienylplatinum(IV), 99%	339
$C_8H_{14}Si$	Trimethylsilylcyclopentadiene, 97% (mixture of isomers)	412
$C_8H_{15}AgO_2$	Silver 2-ethylhexanoate, 99%	414
$C_8H_{15}BF_4N_2$	1-Butyl-3-methylimidazolium tetrafluoroborate, 98% [BMIM] [BF_4]	81
$C_8H_{15}ClN_2$	1-Butyl-3-methylimidazolium chloride, 98% [BMIM]Cl	81
$C_8H_{15}KO_2$	Potassium 2-ethylhexanoate hydrate, 95%	341
$C_8H_{15}LiO_2$	Lithium 2-ethylhexanoate, min. 98%	117
$C_8H_{15}NO_2$	N-[(1R,2R)-2-Hydroxycyclohexyl]acetamide, min. 98%	201
	N-[(1S,2S)-2-Hydroxycyclohexyl]acetamide, min. 98%	201
$C_8H_{15}NaO_2$	Sodium 2-ethylhexanoate, min. 97%	418

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Formula	Description	Page
	Sodium 2-ethylhexanoate, 60% in water	418
$C_8H_{15}O_2Tl$	Thallium(I) 2-ethylhexanoate, superconductor grade (56-59% Tl)	432
$C_8H_{16}Br_2FeO_2$	Iron(II) bromide, Bis(tetrahydrofuran), min. 98%	107
$C_8H_{16}Br_2MnO_2$	Manganese(II) bromide, bis(tetrahydrofuran), min. 98%	125
$C_8H_{16}Cl_2Rh_2$	Chlorobis(ethylene)rhodium(I) dimer, 99%	356
$C_8H_{16}Cl_4NbO_2$	Tetrachlorobis(tetrahydrofuran)niobium(IV)	177
$C_8H_{16}Cl_4O_2Ti$	Tetrachlorobis(tetrahydrofuran)titanium(IV), min. 97%	440
$C_8H_{16}Cl_4O_2Zr$	Tetrachlorobis(tetrahydrofuran)zirconium	456
$C_8H_{16}N_2$	(2R,2'R)-(-)-2,2'-Bipyrrolidine, 99%	179
	(2S,2'S)-(+)-2,2'-Bipyrrolidine, 99%	179
$C_8H_{16}N_2O_4S$	1-Ethyl-3-methylimidazolium ethylsulfate, 98%	82
$C_8H_{16}OSi_2$	1,3-Divinyltetramethyldisiloxane, min. 97%	407
$C_8H_{16}Si$	Triethylsilylacetylene, min. 97%	411
$C_8H_{17}CsO$	Cesium 2-ethylhexoxide (0.8-1.0M in octane/toluene)	43
$C_8H_{18}AlCl$	Di-i-butylaluminum chloride, 97%	3
$C_8H_{18}ClP$	Di-t-butylchlorophosphine, min. 98%	286
$C_8H_{18}Cl_2Sn$	Di-n-butyltin dichloride, min. 95%	435
	Di-t-butyltin dichloride, 98%	435
$C_8H_{18}KO_4P$	Potassium di-t-butylphosphate, min. 91% (contains <5% water)	341
$C_8H_{18}N_2$	trans-N,N'-Dimethyl-1,2-cyclohexanediamine, 98%	197
$C_8H_{18}OSn$	Di-n-butyltin oxide, 98%	435
$C_8H_{18}O_2$	(3R,6R)-(-)-3,6-Octanediol, 99%	220
	(3S,6S)-(+)-3,6-Octanediol, 99%	220
$C_8H_{18}O_3Si$	Vinyltriethoxysilane, min. 97%	412
$C_8H_{18}O_5Sn_2$	Tetramethyldiacetoxystannoxane	436
$C_8H_{18}Si_2$	Bis(trimethylsilyl)acetylene, min. 97%	406
$C_8H_{18}Sn_2$	Bis(trimethyltin)acetylene, 99%	434
$C_8H_{19}OP$	Di-t-butylphosphine oxide, 98%	288
$C_8H_{19}O_3P$	Di-n-butylphosphite, 96%	290
	n-Octylphosphonic acid, min. 97% OPA	318
$C_8H_{19}P$	Di-i-butylphosphine, min. 97%	288
	Di-i-butylphosphine, min. 97% (10 wt% in hexanes)	288
	Di-t-butylphosphine, 98+%	288
	Di-t-butylphosphine, 98+% (10 wt% in hexanes)	288
	2,4,4-Trimethylpentylphosphine, 99% (8% isomers)	328
$C_8H_{20}Al$	Di-i-butylaluminum hydride (20% in hexanes)	3
$C_8H_{20}BNa$	Sodium tetraethylborate, min. 98%	421
$C_8H_{20}ClN_2P$	Bis(diethylamino)chlorophosphine, min. 97%	261
$C_8H_{20}Cl_2PtS_2$	cis-Dichlorobis(diethylsulfide)platinum(II), 99%	337
$C_8H_{20}Ge$	Tetraethylgermane, 99%	69
$C_8H_{20}GeO_4$	Germanium(IV) ethoxide (99.99+%-Ge) PURATREM	69
$C_8H_{20}HfO_4$	Hafnium(IV) ethoxide, 99%	77
$C_8H_{20}NP$	2-(Di-i-propylphosphino)ethylamine, min. 97% (10 wt% in THF)	310
$C_8H_{20}N_4$	1,4,7,10-Tetraazacyclododecane, min. 98% CYCLEN	207
$C_8H_{20}O_3Si$	2,2-Dimethyl-3,6,9-trioxa-2-siladecane, 99+% Electrolyte Solvent ANL-1NM2	407
$C_8H_{20}O_4Si$	Tetraethoxysilane, min. 98% TEOS	410
$C_8H_{20}O_4Ti$	Titanium(IV) ethoxide (contains 5-15% isopropanol)	442
	Titanium(IV) ethoxide (99.99%-Ti) PURATREM	442
$C_8H_{20}O_4Zr$	Zirconium(IV) ethoxide, 99+%	457
$C_8H_{22}B_2F_8NP$	2-(Di-i-propylphosphonium)ethylammonium bis(tetrafluoroborate), min. 97%	310
$C_8H_{22}N_2Pd$	cis-Dimethyl(N,N,N',N'-tetramethylethylenediamine)palladium(II), 99%	240
$C_8H_{22}N_2Si$	Bis(diethylamino)silane, 97% BDEAS	406
	Bis(t-butylamino)silane, 97+% BTBAS	405
	Bis(diethylamino)silane, 99% (99.999%-Si) BDEAS PURATREM	406
$C_8H_{22}N_2Si$	Bis(t-butylamino)silane, BTBAS (99.999%-Si) PURATREM	406
$C_8H_{22}N_4$	1,5,8,12-Tetraazadodecane, min. 95%	208
$C_8H_{23}N_5$	Tetraethylenepentamine, tech gr. (~50% linear, 41% branched, 5% Triethylenetetramine, 4% polyethylene polyamines) TETRAEN	209
$C_8H_{24}BN$	Tetraethylammonium borohydride	7
$C_8H_{24}B_2N_4$	Tetrakis(dimethylamino)diboron, min. 97%	29
$C_8H_{24}Cl_2O_4RuS_4$	cis-Tetrakis(dimethylsulfoxide)dichlororuthenium(II), 98%	399
$C_8H_{24}N_4Sn$	Tetrakis(dimethylamino)tin(IV), 99% (99.99%-Sn) TDMASn PURATREM	435
	Tetrakis(dimethylamino)tin(IV), 99% (99.99%-Sn) TDMASn PURATREM, 50-1815, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	436
$C_8H_{24}N_4Ti$	Tetrakis(dimethylamino)titanium(IV), 99% TDMAT	441
	Tetrakis(dimethylamino)titanium(IV), 99% TDMAT, 93-2240, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	441
	Tetrakis(dimethylamino)titanium(IV), 99% TDMAT, 93-2240, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	441
$C_8H_{24}N_4Ti$	Tetrakis(dimethylamino)titanium(IV), 99% TDMAT (99.99%-Ti) PURATREM	441
$C_8H_{24}N_4V$	Tetrakis(dimethylamino)vanadium(IV), min. 95% TDMAV	445
$C_8H_{24}N_4Zr$	Tetrakis(dimethylamino)zirconium, 99% TDMAZ	456
	Tetrakis(dimethylamino)zirconium, 99% TDMAZ, 40-4100, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	456
	Tetrakis(dimethylamino)zirconium(IV), 99% (99.99%-Zr) PURATREM TDMAZ	456
$C_8H_{24}N_4Zr$	Tetrakis(dimethylamino)zirconium(IV), 99% (99.99%-Zr) TDMAZ, 40-4115, contained in 50ml Swagelok® cylinder (96-1070) for CVD/ALD	456
$C_8H_{24}O_4Si_4$	Octamethylcyclotetrasiloxane, 98%	408
$C_8H_{28}HfN_4$	Tetrakis(dimethylamino)hafnium, 98+% (99.99+%-Hf, <0.2%-Zr) TDMAH, PURATREM, 72-8000, contained in 50ml Swagelok® cylinder (96-1071) for CVD/ALD	78
C_8K	Potassium graphite KC_8	341
$C_9Fe_2O_9$	Iron nonacarbonyl, 99%	108
$C_9H_4F_{16}O$	1H,1H,9H-Hexadecafluoro-1-nonanol, 95%	64
$C_9H_5O_4V$	Cyclopentadienylvanadium tetracarbonyl, min. 97%	445
$C_9H_6CrO_3$	Benzene chromium tricarbonyl, 98%	44
$C_9H_6O_6$	1,3,5-Tricarboxybenzene, min. 95% (Trimesic acid) BTC	221
$C_9H_7Cl_3Ti$	Indenyltitanium trichloride, 99%	440
$C_9H_7MnO_3$	Methylcyclopentadienylmanganese tricarbonyl, min. 97%	127
$C_9H_8FeO_3$	Cyclohexadiene iron tricarbonyl, 98%	100
$C_9H_9BO_2S$	4-(Methylthiophenyl)boronic acid, min. 97%	27
$C_9H_{10}BCl_3N_6Ti$	Hydrotris(pyrazol-1-ylborato)trichlorotitanium(IV), min. 95%	440
$C_9H_{10}BKN_6$	Potassium hydrotris (pyrazol-1-yl)borate hydrate, 98%	342
$C_9H_{11}Cu$	Mesitylcopper(I), min. 95%	59
$C_9H_{11}F_4NO_3S$	1-Fluoro-2,4,6-trimethylpyridinium triflate	200
$C_9H_{11}NO$	(1S,2R)-(-)-cis-1-Aminoindan-2-ol, 98%	178
	(1R,2S)-(+)-cis-1-Aminoindan-2-ol, 98%	178
$C_9H_{11}N_3$	(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole, min. 98% (S)-Me-BIMAH	203
	(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole, min. 98% (R)-Me-BIMAH	203
$C_9H_{12}Hg_4O_8$	Tetrakis(acetoxymercuri)methane, min. 95%	128
$C_9H_{12}N_3P$	Tris(2-cyanoethyl)phosphine, min. 99%	331
$C_9H_{13}Cl_3Zr$	n-Butylcyclopentadienylzirconium trichloride	455
$C_9H_{13}Li$	Lithium tetramethylcyclopentadienide, min. 95%	118
$C_9H_{14}IP$	Trimethylphenylphosphonium iodide, min. 97%	328
$C_9H_{14}O_2Si$	Methylphenyldimethoxysilane, min. 97%	408
$C_9H_{14}O_3Si$	Phenyltrimethoxysilane, 97%	409
$C_9H_{15}AlO_9$	Aluminum lactate, min. 95%	2

Formula	Description	Page
$C_9H_{15}BN_2O_2$	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)-1H-pyrazole, min. 97%	30
$C_9H_{15}ClPd$	Chloromethyl(1,5-cyclooctadiene)-palladium(II), 99%	233
$C_9H_{15}O_2Rh$	Acetylacetonatobis(ethylene)rhodium(I), 99%	348
$C_9H_{15}P$	Triallylphosphine, min. 97%	325
$C_9H_{16}ClO_6P$	Tris(2-carboxyethyl)phosphine, hydrochloride, 99% TCEP	331
$C_9H_{16}Pt$	(Trimethyl)methylcyclopentadienylplatinum(IV), 99%	339
	(Trimethyl)methylcyclopentadienylplatinum(IV), 99%, 78-1350, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	339
	(Trimethyl)methylcyclopentadienylplatinum(IV), 99%, 78-1350, contained in 50 ml Swagelok® cylinder high temperature valve (96-1071) for CVD/ALD	339
$C_9H_{16}Pt$	(Trimethyl)methylcyclopentadienylplatinum(IV), 99% (99.999%-Pt) PURATREM	339
$C_9H_{17}BF_4N_2$	1-Butyl-2,3-dimethylimidazolium tetrafluoroborate, 98% [BDiMIM] [BF_4]	81
$C_9H_{17}ClN_2$	1,3-Di-i-propylimidazolium chloride, min. 97%	199
$C_9H_{18}Cl_2LiMgN$	2,2,6,6-Tetramethylpiperidinylmagnesium chloride, lithium chloride complex 1.0M (18wt% ±2wt%) in toluene/tetrahydrofura	124
$C_9H_{18}N_2O_4S$	1-Butyl-3-methylimidazolium methanesulfonate, 98% [BMIM] [$MeSO_4$]	81
$C_9H_{21}AlO_3$	Aluminum i-propoxide, 98+%	3
	Aluminum i-propoxide (99.99+%-Al) PURATREM	3
$C_9H_{21}BO_3$	Tri-i-propylborate, min. 98%	31
$C_9H_{21}ClO_3Ti$	Chlorotitanium triisopropoxide, 97%	439
$C_9H_{21}ClSn$	Tri-i-propyltin chloride, min. 98%	438
	Tri-n-propyltin chloride, 98+%	438
$C_9H_{21}DyO_3$	Dysprosium(III) i-propoxide (99.9%-Dy) (REO)	60
$C_9H_{21}ErO_3$	Erbium(III) i-propoxide (99.9%-Er) (REO)	61
$C_9H_{21}FeO_3$	Iron(III) i-propoxide (99.9+%-Fe)	109
$C_9H_{21}GdO_3$	Gadolinium(III) i-propoxide (99.9%-Gd) (REO)	67
$C_9H_{21}LaO_3$	Lanthanum(III) i-propoxide, 99% (99.9%-La) (REO)	113
$C_9H_{21}N_3$	1,4,7-Trimethyl-1,4,7-triazacyclononane, min. 97%	211
$C_9H_{21}N_4P$	2,8,9-Trimethyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3]undecane VERKADE SUPERBASE	329
$C_9H_{21}NdO_3$	Neodymium(III) i-propoxide (99.9%-Nd) (REO)	170
$C_9H_{21}OP$	Tri-n-propylphosphine oxide, min. 98%	330
$C_9H_{21}O_3P$	Tris(3-hydroxypropyl)phosphine, min. 80%	332
	Tri-i-propylphosphite, min. 94%	330
$C_9H_{21}O_3Pr$	Praseodymium(III) i-propoxide (99.9%-Pr) (REO)	346
$C_9H_{21}O_3Sm$	Samarium(III) i-propoxide, min. 97% (99.9%-Sm) (REO)	402
$C_9H_{21}O_3Y$	Yttrium(III) i-propoxide (20-25% in toluene)	450
	Yttrium(III) i-propoxide	450
$C_9H_{21}O_3Yb$	Ytterbium(III) i-propoxide (99.9%-Yb) (REO)	448
$C_9H_{21}O_4V$	Vanadium(V) tri-i-propoxy oxide, 98+% VTIP	446
$C_9H_{21}O_6P_3$	2,4,6-Tri-n-propyl-2,4,6-trioxo-1,3,5,2,4,6-trioxatriphosphorinane (Propylphosphonic acid anhydride 50% solution in N,N-dimethylformamide) T3P	330
	2,4,6-Tripropyl-2,4,6-trioxo-1,3,5,2,4,6-trioxatriphosphorinane T3P (Propylphosphonic acid anhydride 50% solution in ethyl acetate)	330
$C_9H_{21}P$	Di-t-butylmethylphosphine, 98+%	287
	Tri-i-propylphosphine, tech. gr., min. 90%	329
	Tri-i-propylphosphine, 98%	329
	Tri-i-propylphosphine, 98% (Sure/Seal™ bottle)	330
	Tri-i-propylphosphine, 98% (10 wt% in hexanes)	330
	Tri-n-propylphosphine, min. 95%	330

Formula	Description	Page
$C_9H_{22}BF_4P$	Di-t-butylmethylphosphonium tetrafluoroborate, 99%	287
$C_9H_{22}NP$	3-(Di-i-propylphosphino)propylamine, min. 97% (10 wt% in THF)	310
$C_9H_{22}N_4$	1,4,7,10-Tetraazacyclotridecane, min. 98%	208
$C_9H_{23}NO_3Si$	3-Aminopropyltriethoxysilane, 98%	405
	3-Aminopropyltriethoxysilane, 98%, 93-1402, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	405
	3-Aminopropyltriethoxysilane, 98%, 93-1402, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	405
$C_9H_{24}B_2F_8NP$	3-(Di-i-propylphosphonium)propylammonium bis(tetrafluoroborate)	310
$C_9H_{24}N_4$	1,5,9,13-Tetraazatridecane, min. 97%	208
$C_9H_{27}BO_3Si_3$	Tris(trimethylsiloxy)borate, min. 97%	31
$C_9H_{27}NSi_3$	Nonamethyltrisilazane, 98%	408
$C_9H_{27}PSi_3$	Tris(trimethylsilyl)phosphine, min. 98%	332
	Tris(trimethylsilyl)phosphine, min. 98% (10 wt% in hexanes)	332
$C_{10}F_{18}$	Perfluorodecalin, min. 95%	65
$C_{10}H_2BaF_{12}O_4$	Barium hexafluoroacetylacetonate	11
$C_{10}H_2CaF_{12}O_4$	Calcium hexafluoroacetylacetonate dihydrate, 97%	35
$C_{10}H_2CuF_{12}$	Copper(II) hexafluoroacetylacetonate, anhydrous, elec. gr. (99.99+%-Cu) PURATREM	57
$C_{10}H_2CuF_{12}O_4$	Copper(II) hexafluoroacetylacetonate hydrate, elec. gr. (99.99+%-Cu) PURATREM	57
	Copper(II) hexafluoroacetylacetonate hydrate	57
$C_{10}H_2F_{12}MgO_4$	Magnesium hexafluoroacetylacetonate dihydrate, min. 97%	122
$C_{10}H_2F_{12}NiO_4$	Nickel(II) hexafluoroacetylacetonate hydrate, 98%	175
$C_{10}H_2F_{12}O_4Pb$	Lead(II) hexafluoroacetylacetonate, min. 98%	114
$C_{10}H_2F_{12}O_4Pd$	Palladium(II) hexafluoroacetylacetonate, min. 95%	248
$C_{10}H_2F_{12}O_4Pt$	Platinum(II) hexafluoroacetylacetonate, 98% (99.9%-Pt)	338
$C_{10}H_2F_{12}O_4Sn$	Tin(II) hexafluoroacetylacetonate (99.9%-Sn)	436
$C_{10}H_2F_{12}O_4Sr$	Strontium hexafluoroacetylacetonate	423
$C_{10}H_2F_{12}O_4Zn$	Zinc hexafluoroacetylacetonate hydrate, min. 98%	452
$C_{10}H_4F_{17}I$	1H,1H,2H,2H-Perfluorodecyliodide, 97%	65
$C_{10}H_5F_{17}O$	1H,1H,2H,2H-Perfluorodecan-1-ol, min. 97%	65
$C_{10}H_7F_3O_2$	Benzoyl-1,1,1-trifluoroacetone, 98%	63
$C_{10}H_8Br_2Fe$	1,1'-Dibromoferrocene, 97%	100
$C_{10}H_8Cl_2FeP_2$	1,1'-Bis(dichlorophosphino)ferrocene, 98%	95
$C_{10}H_8CuF_6O_4$	Copper(II) trifluoroacetylacetonate, 97+%	58
$C_{10}H_8F_6MgO_4$	Magnesium trifluoroacetylacetonate dihydrate, min. 98%	123
$C_{10}H_8F_6NiO_4$	Nickel(II) trifluoroacetylacetonate dihydrate, 98%	176
$C_{10}H_8MoO_3$	Cycloheptatriene molybdenum tricarbonyl, 99%	136
$C_{10}H_8N_2$	2,2'-Bipyridine, 99+% BIPY	179
$C_{10}H_9BO_2$	1-Naphthylboronic acid, min. 97%	27
$C_{10}H_9BrFe$	Bromoferrocene, 97%	99
$C_{10}H_9Cl_2FeP$	Dichlorophosphinoferrocene, 98%	101
$C_{10}H_{10}Cl_2Hf$	Bis(cyclopentadienyl)hafnium dichloride, min. 98% (Hafnocene dichloride)	76
$C_{10}H_{10}Cl_2Mo$	Bis(cyclopentadienyl)molybdenum dichloride, 99%	136
$C_{10}H_{10}Cl_2N_2Pt$	cis-Dichlorobis(pyridine)platinum(II), 99%	337
$C_{10}H_{10}Cl_2Ti$	Bis(cyclopentadienyl)titanium dichloride, 99+% (Titanocene dichloride)	439
$C_{10}H_{10}Cl_2V$	Bis(cyclopentadienyl)vanadium dichloride (Vanadocene dichloride), 95%	445
$C_{10}H_{10}Cl_2W$	Bis(cyclopentadienyl)tungsten dichloride, 99%	443
$C_{10}H_{10}Cl_2Zr$	Bis(cyclopentadienyl)zirconium dichloride, 99% (Zirconocene dichloride)	455
$C_{10}H_{10}Co$	Bis(cyclopentadienyl)cobalt(II), min. 98% (Cobaltocene)	47
$C_{10}H_{10}CoF_6P$	Cobalticinium hexafluorophosphate, 98%	50
$C_{10}H_{10}Cr$	Bis(cyclopentadienyl)chromium, min. 95%, sublimed (Chromocene)	44

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Formula	Description	Page
$C_{10}H_{10}Fe$	Bis(cyclopentadienyl)iron, 98% (Ferrocene)..	94
	Bis(cyclopentadienyl)iron, 99% (Ferrocene)..	94
$C_{10}H_{10}Mg$	Bis(cyclopentadienyl)magnesium (99.9+%-Mg)	120
	Bis(cyclopentadienyl)magnesium (99.99+%-Mg) PURATREM	120
$C_{10}H_{10}Mn$	Bis(cyclopentadienyl)manganese, 98+% (Manganocene)	124
	Bis(cyclopentadienyl)manganese, 98+%, 25-0200, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	124
$C_{10}H_{10}N_2$	3-Methyl-5-phenyl-1H-pyrazole, 99%	203
$C_{10}H_{10}N_2S_2$	2-Cyanomethyl-N-methyl-N-phenyldithiocarbamate, min. 97%	425
$C_{10}H_{10}N_6$	Tris(pyrazol-1-yl)methane, min. 98%	212
$C_{10}H_{10}Ni$	Bis(cyclopentadienyl)nickel, 99% (Nickelocene)	171
$C_{10}H_{10}O_2S_2$	2-(Thiobenzoylthio)propionic acid, min. 97%	428
$C_{10}H_{10}O_4$	1,4-Phenylenediacetic acid, 97%	220
$C_{10}H_{10}Os$	Bis(cyclopentadienyl)osmium, 99% (99.9%-Os) (Osmocene)	213
$C_{10}H_{10}Ru$	Bis(cyclopentadienyl)ruthenium, 99% (99.9%-Ru) (Ruthenocene)	364
$C_{10}H_{10}V$	Bis(cyclopentadienyl)vanadium, sublimed, 95% (Vanadocene)	445
$C_{10}H_{11}ClZr$	Bis(cyclopentadienyl)zirconium chloride hydride (Schwartz's Reagent), 95%	454
$C_{10}H_{11}F_7O_2$	6,6,7,7,8,8,8-Heptafluoro-2,2-dimethyl-3,5-octanedione, 98+% HFOD	64
$C_{10}H_{11}F_{10}N_3O_4S_2$	1-Ethyl-3-methylimidazolium bis(pentafluoroethylsulfonyl)imide, 99% [EMIBeti]	82
$C_{10}H_{11}FeP$	Phosphinoferrocene, 98%	110
$C_{10}H_{12}Cl_2Pt$	Dichloro(dicyclopentadienyl)platinum(II), 99%	337
$C_{10}H_{12}N_2Na_4O_8$	Ethylenediaminetetraacetic acid, tetrasodium salt tetrahydrate, 99+%	200
$C_{10}H_{14}BaO_4$	Barium acetylacetonate hydrate	11
$C_{10}H_{14}CaO_4$	Calcium acetylacetonate hydrate	34
$C_{10}H_{14}CdO_4$	Cadmium acetylacetonate, 98%	32
$C_{10}H_{14}ClP$	Chloro(t-butyl)phenylphosphine, 97%	283
$C_{10}H_{14}CoO_4$	Cobalt(II) acetylacetonate hydrate	48
$C_{10}H_{14}CuO_4$	Copper(II) acetylacetonate, 98+%	56
$C_{10}H_{14}K_2N_2O_8$	Ethylenediaminetetraacetic acid dipotassium salt dihydrate, 99%	199
$C_{10}H_{14}MgO_4$	Magnesium acetylacetonate, anhydrous, 98%	122
$C_{10}H_{14}MnO_4$	Manganese(II) acetylacetonate, 95%	125
$C_{10}H_{14}MoO_6$	Molybdenum(VI) dioxide bis(acetylacetonate), min. 95%	138
$C_{10}H_{14}N_2Na_2O_8$	Ethylenediaminetetraacetic acid, disodium salt, dihydrate, 99+%	199
$C_{10}H_{14}NiO_4$	Nickel(II) acetylacetonate hydrate	174
	Nickel(II) acetylacetonate, anhydrous, min. 95%	174
$C_{10}H_{14}O_4Pb$	Lead(II) acetylacetonate, min. 95%	114
$C_{10}H_{14}O_4Pd$	Palladium(II) acetylacetonate, 99%	247
$C_{10}H_{14}O_4Pt$	Platinum(II) acetylacetonate, 98%	338
$C_{10}H_{14}O_4Sn$	Tin(II) acetylacetonate, min. 98%	436
$C_{10}H_{14}O_4Sr$	Strontium acetylacetonate hydrate, 99%	422
$C_{10}H_{14}O_4Zn$	Zinc acetylacetonate hydrate, 98%	452
$C_{10}H_{14}O_5Ti$	Titanium(IV) oxide bis(acetylacetonate), min. 95%	442
$C_{10}H_{14}O_5V$	Vanadium(IV) bis(acetylacetonato)oxide, 98% (Vanadyl acetylacetonate)	445
$C_{10}H_{15}BO_3$	3-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)furan, min. 97%	29
$C_{10}H_{15}Cl_2Ru$	Dichloro(pentamethylcyclopentadienyl) ruthenium(III) polymer	392
$C_{10}H_{15}Cl_3Hf$	Pentamethylcyclopentadienylhafnium trichloride, min. 98%	77
$C_{10}H_{15}Cl_3Ti$	Pentamethylcyclopentadienyltitanium trichloride, 98%	440
$C_{10}H_{15}Cl_3Zr$	Pentamethylcyclopentadienylzirconium trichloride, 99%	456
$C_{10}H_{15}Cl_4Ta$	Pentamethylcyclopentadienyltantalum tetrachloride, 98%	429
$C_{10}H_{15}F_6N_3O_4S_2$	1,2-Dimethyl-3-propylimidazolium bis(trifluoromethylsulfonyl)imide, 99% [DMPIIm]	82
$C_{10}H_{15}Li$	Lithium pentamethylcyclopentadienide, min. 98%	118
$C_{10}H_{15}N_3O$	(2S)-2-Amino-3-methyl-N-2-pyridinylbutanamide, min. 98%	179
	(2R)-2-Amino-3-methyl-N-2-pyridinylbutanamide, min. 98%	178
$C_{10}H_{16}$	Pentamethylcyclopentadiene, min. 98%	39
$C_{10}H_{16}N_2$	1,3-Bis(dimethylamino)benzene, 98%	182
$C_{10}H_{16}N_2O_8$	Ethylenediaminetetraacetic acid, 99+%	199
$C_{10}H_{16}O_2$	2-Isobutyrylcyclohexanone, 96% (~96% enol form)	219
$C_{10}H_{16}O_6P_2$	1,2-Bis(dimethoxyphosphoryl)benzene, 99%	263
$C_{10}H_{17}AgO_2$	Silver cyclohexanebutyrate (AAS)	414
$C_{10}H_{17}NO_3Si$	2,2',2"-Nitrilotris(ethanolato)(buta-1,3-dien-2-yl)silane, min. 98%	408
$C_{10}H_{17}O_3P$	2,4,6-Trioxa-1,3,5,7-tetramethyl-8-phosphaadamantane (~32% in xylene)	329
$C_{10}H_{18}O_4Pd$	Palladium(II) trimethylacetate, min. 98%	248
$C_{10}H_{18}Pt$	Dimethyl(1,5-cyclooctadiene)platinum(II), 99%	338
$C_{10}H_{19}AgO_2$	Silver neodecanoate, min. 97%	414
$C_{10}H_{19}BF_4N_2$	1-Hexyl-3-methylimidazolium tetrafluoroborate, 98% [HMIM] [BF_4]	82
$C_{10}H_{19}NO_5S$	(4S)-4-i-Propyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	427
	(4R)-4-i-Propyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	427
$C_{10}H_{19}P$	Dicyclopentylphosphine, 97+%	295
	Dicyclopentylphosphine, 97+% (10 wt% in hexanes)	295
$C_{10}H_{20}B_2O_4$	Bis(neopentylglycolato)diboron, min. 97%	24
$C_{10}H_{20}O_2$	neo-Decanoic acid, prime grade	38
$C_{10}H_{20}O_5$	15-Crown-5, 98%	215
$C_{10}H_{20}O_6P_2$	Bis(diethoxyphosphoryl)acetylene, 99%	261
$C_{10}H_{23}O_3P$	n-Decylphosphonic acid, min. 97%	284
$C_{10}H_{24}CuN_2O_2$	Bis(dimethylamino-2-propoxy)copper(II), min. 97% Cu(dmap)$_2$	55
$C_{10}H_{24}NP$	2-(Di-t-butylphosphino)ethylamine, min. 97% (10 wt% in THF)	289
$C_{10}H_{24}N_2NiO_2$	Bis[1-(N,N-dimethylamino)-2-propanolato] nickel(II), 99% NiDMAP	172
$C_{10}H_{24}N_4$	1,4,8,11-Tetraazacyclotetradecane, min. 98% CYCLAM	208
$C_{10}H_{24}O_4Si$	2,2-Dimethyl-3,6,9,12-tetroxa-2-silatridecane, 99+% Electrolyte Solvent ANL-1NM3	407
$C_{10}H_{24}P_2$	1,2-Bis(diethylphosphino)ethane, 98%	261
$C_{10}H_{25}B_2F_8NP$	(2-Ammonioethyl)di-t-butylphosphonium bis(tetrafluoroborate), min. 97%	250
$C_{10}H_{25}NbO_5$	Niobium(V) ethoxide (99.9+%-Nb)	177
$C_{10}H_{25}O_5Ta$	Tantalum(V) ethoxide (99.99+%-Ta) PURATREM	429
	Tantalum(V) ethoxide (99.9999%-Ta) PURATREM	429
$C_{10}H_{27}N_4Ta$	t-Butylimidotris(dimethylamino) tantalum(V), min. 98%	429
	t-Butylimidotris(dimethylamino)tantalum(V), min. 98%, 73-0700, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	429
$C_{10}H_{28}Si_3$	Tris(trimethylsilyl)methane, min. 97%	412
$C_{10}H_{30}N_5Ta$	Pentakis(dimethylamino)tantalum(V), 99%	429
$C_{10}H_{30}NbN_5$	Pentakis(dimethylamino)niobium(V), 99%	177
$C_{10}Mn_2O_{10}$	Manganese carbonyl, 98%	126
$C_{10}O_{10}Re_2$	Rhenium carbonyl, 98%	347
$C_{11}H_7BF_9N_3$	6,7-Dihydro-2-pentafluorophenyl-5H-pyrrolo[2,1-c]-1,2,4-triazolium tetrafluoroborate, min. 98%	197
$C_{11}H_8CuF_3N_2S$	Trifluoromethylthiolato(2,2-bipyridine) copper(I), 97%	59
$C_{11}H_8FeO_3$	Cyclooctatetraene iron tricarbonyl, 98%	100
$C_{11}H_9N$	2-Phenylpyridine, 95%	205
$C_{11}H_{10}FeO$	Ferrocene carboxaldehyde, min. 98%	105
$C_{11}H_{10}FeO_2$	Ferrocene monocarboxylic acid, min. 97%	105
$C_{11}H_{11}NS_2$	2-Cyanoprop-2-yl-dithiobenzoate, min. 97%	425
$C_{11}H_{11}O_3Re$	i-Propylcyclopentadienylrhenium tricarbonyl, min. 97%	347
$C_{11}H_{12}ClN_3$	6,7-Dihydro-2-phenyl-5H-pyrrolo[2,1-c]-1,2,4-triazolium chloride, min. 98%	197

Formula	Description	Page
$C_{11}H_{12}Cu_5N_9$	(Hexamethylenetetramine)penta[copper(I) cyanide], 98% MOF	58
$C_{11}H_{12}FeO$	Hydroxymethylferrocene, 99%	106
$C_{11}H_{14}F_6N_2O_4S_2$	N-Propyl-3-methylpyridinium bis(trifluoromethylsulfonyl)imide, 99% [PMPIm]	83
$C_{11}H_{14}F_6N_3PRu$	Tris(acetonitrile)cyclopentadienylruthenium(II) hexafluorophosphate, min. 98%	400
$C_{11}H_{14}S_2$	2-Methyl-2-propylbenzodithiolate	426
$C_{11}H_{15}N_3$	(S)-(-)-2-(α-(i-propyl)methanamine)-1H-benzimidazole, min. 98% (S)-i-Pr-BIMAH	206
	(R)-(+)-2-(α-(i-propyl)methanamine)-1H-benzimidazole, min. 98% (R)-i-Pr-BIMAH	206
$C_{11}H_{17}MoN_3O_6$	Oxodiperoxy(pyridine)(1,3-dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone) molybdenum(IV), min. 95%	138
$C_{11}H_{19}AgF_3O_5P$	Triethoxyphosphine(trifluoroacetylacetonate) silver(I), min. 98%	415
$C_{11}H_{19}AgO_2$	2,2,6,6-Tetramethyl-3,5-heptanedionato silver(I) (99.9%-Ag) [Ag(TMHD)]	415
$C_{11}H_{19}CsO_2$	2,2,6,6-Tetramethyl-3,5-heptanedionato cesium [Cs(TMHD)]	44
$C_{11}H_{19}KO_2$	2,2,6,6-Tetramethyl-3,5-heptanedionato potassium, min. 95% [K(TMHD)]	345
$C_{11}H_{19}LiO_2$	2,2,6,6-Tetramethyl-3,5-heptanedionato lithium, 98+% [Li(TMHD)]	119
$C_{11}H_{19}NO_5S$	(S,R)-Hexahydro-3H-1,2,3-benzoxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	426
	(R,S)-Hexahydro-3H-1,2,3-benzoxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	426
$C_{11}H_{19}O_2Rb$	2,2,6,6-Tetramethyl-3,5-heptanedionato rubidium [Rb(TMHD)]	362
$C_{11}H_{19}O_2Tl$	2,2,6,6-Tetramethyl-3,5-heptanedionatothallium(I), 99% [Tl(TMHD)]	431
$C_{11}H_{20}AuClN_2$	Chloro[1,3-bis(t-butyl)-2H-imidazol-2-ylidene]gold(I), 98%	73
$C_{11}H_{20}CuP$	Cyclopentadienyl(triethylphosphine) copper(I), min. 98%	58
$C_{11}H_{20}N_2$	1,3-Di-t-butylimidazol-2-ylidene, min. 98%	195
$C_{11}H_{20}O_2$	2,2,6,6-Tetramethylheptane-3,5-dione, 98% TMHD	221
$C_{11}H_{21}BF_4N_2$	1,3-Bis(t-butyl)imidazolium tetrafluoroborate, min. 97% ItBuHBF$_4$	181
$C_{11}H_{21}ClN_2$	1,3-Di-t-butylimidazolium chloride, min. 98%	194
$C_{11}H_{21}NO_5S$	(4S)-4-t-Butyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	424
	(4R)-4-t-Butyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	424
$C_{11}H_{23}CoNaO_9P_3$	Sodium(cyclopentadienyl)tris(dimethylphosphito)cobaltate(I), 98%	422
$C_{11}H_{23}O_3P$	(Rp)-Hydroxymethylphosphonic acid [(-)-(1R,2S,2R)-2-i-propyl-5-methylcyclohexanol]ester, 99%	315
$C_{11}H_{25}O_3PS$	Di-t-butyl(3-sulfonatopropyl)phosphine, min. 98%	290
$C_{11}H_{25}P$	Di-t-butyl(i-propyl)phosphine, min. 98%	290
$C_{11}H_{26}NP$	3-(Di-t-butylphosphino)propylamine, min. 97% (10 wt% in THF)	290
$C_{11}H_{26}N_4$	1,4,8,12-Tetraazacyclopentadecane, min. 98%	207
$C_{11}H_{26}O_4Si$	2,2-Dimethyl-4,7,10,13-tetraoxa-2-silatetradecane, 99+% Electrolyte Solvent ANL-1S1M3	407
$C_{11}H_{27}B_2F_8NP$	(3-Ammoniopropyl)di-t-butylphosphonium bis(tetrafluoroborate), min. 97%	250
$C_{11}H_{29}N_4Ta$	t-Amylimidotris(dimethylamino)tantalum(V) TAIMATA	428
$C_{12}Co_4O_{12}$	Tetracobalt dodecacarbonyl, min. 98%	52
$C_{12}F_{27}N$	Perfluorotri-n-butylamine, min. 85%	65
$C_{12}Fe_3O_{12}$	Iron dodecacarbonyl (Stabilized with 5-10% methanol)	107
$C_{12}H_4Br_4N_2$	3,5,6,8-Tetrabromo-1,10-phenanthroline, 98%	208
$C_{12}H_4N_4$	7,7,8,8-Tetracyanoquinodimethane, 98% TCNQ	209
$C_{12}H_6F_5N$	2-(2,4-Difluorophenyl)-5-(trifluoromethyl) pyridine, 98% dF(CF3)ppy	196
$C_{12}H_8Br_2$	2,2'-Dibromobiphenyl, 98+%	39
$C_{12}H_8ClF_2P$	Bis(4-fluorophenyl) chlorophosphine, min. 98%	277
$C_{12}H_8F_3N$	2-[4-(Trifluoromethyl)phenyl]pyridine, 95%	210
$C_{12}H_8N_2$	1,10-Phenanthroline, anhydrous, 99%	205
$C_{12}H_8N_2O_4$	4,4'-Dicarboxy-2,2'-bipyridine, 98%	195
$C_{12}H_8O_4$	2,6-Naphthalenedicarboxylic acid, min. 98%	219
$C_{12}H_9F_2N$	2-(2,4-Difluorophenyl)-5-methylpyridine, 95%	196
$C_{12}H_9O_3P$	Tri-2-furylphosphine, 98+%	327
$C_{12}H_9P$	5H-Benzo[b]phosphindole, 99%	251
$C_{12}H_{10}ClOP$	Diphenylphosphinic chloride, 98%	303
$C_{12}H_{10}ClP$	Diphenylchlorophosphine, min. 95%	302
	Diphenylchlorophosphine, 98%	302
$C_{12}H_{10}Cl_2Si$	Diphenyldichlorosilane, min. 97%	407
$C_{12}H_{10}Cl_2Sn$	Diphenyltin dichloride, 96%	435
$C_{12}H_{10}Co_2O_6$	(3,3-Dimethyl-1-butyne)dicobalt hexacarbonyl, 98%	51
$C_{12}H_{10}Co_3O_{14}$	Cobalt(II) citrate hydrate	48
$C_{12}H_{10}FeO_4$	1,1'-Ferrocene dicarboxylic acid, min. 96%	105
$C_{12}H_{10}N_4$	1,4-Di(4'-pyrazolyl)benzene, min. 97% H_2BDP	199
$C_{12}H_{10}OSn$	Diphenyltin oxide, 98%	435
$C_{12}H_{10}O_2Ti$	Bis(cyclopentadienyl)dicarbonyl titanium(II), min. 98%	439
$C_{12}H_{10}O_{14}Pb_3$	Lead(II) citrate trihydrate, min. 97%	114
$C_{12}H_{10}SSn$	Diphenyltin sulfide, 99%	435
$C_{12}H_{10}Se$	Diphenylselenide	404
$C_{12}H_{10}Se_2$	Diphenyldiselenide, 98%	404
$C_{12}H_{10}Zn$	Diphenylzinc, 99%	451
$C_{12}H_{11}P$	Diphenylphosphine, 99%	303
	Diphenylphosphine, 99% (10 wt% in hexanes)	303
$C_{12}H_{12}Cr$	Bis(benzene)chromium, min. 97%	44
$C_{12}H_{12}Fe$	Vinylferrocene, 99%	111
$C_{12}H_{12}FeO$	Acetylferrocene, 99.5%	94
$C_{12}H_{12}FeO_2$	Ferrocenylacetic acid, min. 98%	105
$C_{12}H_{12}N_2$	4,4'-Dimethyl-2,2'-bipyridine, 99% DMBPY	197
$C_{12}H_{12}O_2Si$	Diphenylsilanediol, min. 95%	407
$C_{12}H_{12}O_3W$	Mesitylene tungsten tricarbonyl, 98%	443
$C_{12}H_{12}Ru_2Cl_4$	Dichloro(benzene)ruthenium(II) dimer, 98%	382
$C_{12}H_{12}Si$	Diphenylsilane, min. 97%	407
$C_{12}H_{12}Ti$	Cyclopentadienyl(cycloheptatrienyl)titanium(II), 99%	439
$C_{12}H_{13}NS_2$	2-Cyano-2-butylbenzodithiolate	424
$C_{12}H_{13}N_2P$	Bis(2-cyanoethyl)phenylphosphine, min. 97%	256
$C_{12}H_{14}Cl_2SiZr$	[Dimethylbis(cyclopentadienyl)silyl]zirconium dichloride, min. 98%	455
$C_{12}H_{14}Fe$	Ethylferrocene, 98%	105
	1,1'-Dimethylferrocene, min. 98%	102
$C_{12}H_{14}FeO$	α-Hydroxyethylferrocene, 98%	106
$C_{12}H_{15}F_9N_2O_6S_3$	1,2-Dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl)methide, 99% [DMPIMe]	82
$C_{12}H_{15}MoN_3O_3$	Tricarbonyltris(propionitrile)molybdenum (O), min. 95%	138
$C_{12}H_{15}O_2Rh$	Dicarbonyl(pentamethylcyclopentadienyl) rhodium(I), 99% (99.9%-Rh)	357
$C_{12}H_{16}Hf$	Bis(cyclopentadienyl)dimethylhafnium, min. 97%	76
$C_{12}H_{16}N_2O_2S_2$	1,3-(N-Mercaptoethylcarboxamide)benzene, 99% BDET	426
$C_{12}H_{16}Zr$	Bis(cyclopentadienyl)dimethylzirconium, min. 97%	454
$C_{12}H_{17}BO_3$	2-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%	30
	3-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%	30
	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%	30
$C_{12}H_{17}N_3$	(S)-(-)-2-(α-(i-butyl)methanamine)-1H-benzimidazole, min. 98% (S)-i-Bu-BIMAH	190
	(R)-(+)-2-(α-(i-butyl)methanamine)-1H-benzimidazole, min. 98% (R)-i-Bu-BIMAH	190
	(S)-(-)-2-(α-(t-butyl)methanamine)-1H-benzimidazole, min. 95% (S)-t-Bu-BIMAH	189
$C_{12}H_{18}BF_4N_2Rh$	Bis(acetonitrile)(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97%	349

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Formula	Description	Page
$C_{12}H_{18}BNO_2$	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)aniline, min. 97%	29
$C_{12}H_{18}Cl_2Ru$	Dichloro(2,6,10-dodecatriene-1,12-diyl) ruthenium(IV), 99%	392
$C_{12}H_{18}CuO_6$	Copper(II) ethylacetoacetate, 99%	56
$C_{12}H_{18}IrN_2BF_4$	Bis(acetonitrile)(1,5-cyclooctadiene)iridium(I) tetrafluoroborate, min. 97%	86
$C_{12}H_{18}O_{12}Pd_3$	Palladium(II) acetate, min. 98% (99.9+%-Pd)	247
	Palladium(II) acetate, 99+% (99.95+%-Pd)	247
$C_{12}H_{20}$	Tetramethyl(n-propyl)cyclopentadiene, min. 97%	40
$C_{12}H_{20}N_4$	1,4-Bis(2-isocyanopropyl)piperazine (SnatchCat Metal Scavenger)	128
$C_{12}H_{20}Sn$	Tetraallyltin, min. 95%	435
$C_{12}H_{22}ClP$	Dicyclohexylchlorophosphine, min. 98%	291
$C_{12}H_{22}CuO_{14}$	Copper(II) gluconate, min. 98%	57
$C_{12}H_{22}O_2$	2,2,6,6-Tetramethyl-3,5-octanedione, 98% (TMOD)	221
$C_{12}H_{23}BF_4N_2$	1-Methyl-3-octylimidazolium tetrafluoroborate, 98% [OMIM] [BF_4]	83
$C_{12}H_{23}P$	Dicyclohexylphosphine, 98% (10 wt% in hexanes)	292
	Dicyclohexylphosphine, 98%	292
$C_{12}H_{24}B_2O_4$	Bis(hexyleneglycolato)diboron, 99%	24
	Bis(pinacolato)diboron, 99%	24
$C_{12}H_{24}Cl_3CrO_3$	Chromium(III) chloride tetrahydrofuran adduct, 98%	45
$C_{12}H_{24}Cl_3MoO_3$	Trichlorotris(tetrahydrofuran)molybdenum(III), min. 95%	138
$C_{12}H_{24}Cl_3O_3Ti$	Trichlorotris(tetrahydrofuran)titanium(III), min. 97%	443
$C_{12}H_{24}Cl_3O_3V$	Vanadium(III) chloride tetrahydrofuran adduct	445
$C_{12}H_{24}Cu_4I_4N_4$	Bis(1,4-diazabicyclo [2.2.2]octane)tetra (copper(I) iodide) $(CuI)_4(DABCO)_2$	54
$C_{12}H_{24}O_4Sn$	Di-n-butyltin diacetate, min. 96%	434
$C_{12}H_{24}O_6$	18-Crown-6, 99%	216
$C_{12}H_{25}LiO_4S$	Lithium dodecyl sulfate, min. 98%	168
$C_{12}H_{25}NaO_4S$	Sodium dodecylsulfate, 98+%	168
	Sodium dodecylsulfate, min. 99%	168
$C_{12}H_{25}P$	Di-t-butyl(2-butenyl)phosphine (40% in xylene), 98% m-Crophos®	286
$C_{12}H_{26}N_2Sn$	N,N'-Di-t-butyl-2,3-diamidobutanetin(II), 98%	434
$C_{12}H_{27}Al$	Tri-i-butylaluminum, min. 95%	4
$C_{12}H_{27}AlO_3$	Aluminum s-butoxide, 98%	1
$C_{12}H_{27}AuClP$	Chlorotri-t-butylphosphinegold(I), 99%	74
$C_{12}H_{27}BO_3$	Tri-n-butylborate, 98%	30
$C_{12}H_{27}ClSn$	Tri-n-butyltin chloride, 96%	437
$C_{12}H_{27}O_3P$	Tri-n-butylphosphite, min. 94%	326
	n-Dodecylphosphonic acid, min. 97% DDPA.	312
$C_{12}H_{27}O_3Sb$	Antimony(III) n-butoxide, 99%	8
$C_{12}H_{27}P$	Tri-i-butylphosphine, min. 93%	325
	Tri-n-butylphosphine, 99%	325
	Tri-n-butylphosphine, min. 93%	325
	Tri-n-butylphosphine, 99% (10 wt% in hexanes)	325
	Tri-t-butylphosphine, 99%	326
	Tri-t-butylphosphine, 99% (10 wt% in hexanes)	326
	Tri-t-butylphosphine, 99% (10 wt% in hexanes) (Sure/Seal™ bottle)	326
	Tri-t-butylphosphine, min. 98%	325
	Tri-t-butylphosphine, min. 98% (50wt% in toluene)	325
	Di-t-butyl(n-butyl)phosphine, min. 97%	286
$C_{12}H_{28}AlLiO_3$	Lithium tri-t-butoxyaluminohydride, ~1.0M in THF	118
$C_{12}H_{28}BF_4P$	Tri-n-butylphosphonium tetrafluoroborate, 99%	326
	Tri-t-butylphosphonium tetrafluoroborate, 99%	326
$C_{12}H_{28}BK$	Potassium tri-sec-butylborohydride, 1.0M in THF, in Sure/Seal™ bottle	345
$C_{12}H_{28}ClN_2P$	Bis(di-i-propylamino)chlorophosphine, min. 97%	272
$C_{12}H_{28}Cu_4I_4N_4$	Bis(N,N'-dimethylpiperazine)tetra[copper(I) iodide], 98% MOF	55
$C_{12}H_{28}HfO_4$	Hafnium(IV) i-propoxide monoisopropylate, 99%	77
$C_{12}H_{28}MgN_2$	Magnesium bis(di-i-propylamide) 0.7M (18wt% ±2wt%) in tetrahydrofuran	122
$C_{12}H_{28}NO_4Ru$	Tetrapropylammonium perruthenate, min. 97% TPAP	8
$C_{12}H_{28}N_2$	N,N'-Di-t-butyl-2,3-diaminobutane, 98%	194
$C_{12}H_{28}N_2O_2Pb$	Bis(1-dimethylamino-2-methyl-2-propanolate)lead(II), 98% $Pb(DMAMP)_2$	114
$C_{12}H_{28}O_4Si$	Tri-t-butoxysilanol (99.999%-Si) PURATREM	411
	Tri-t-butoxysilanol (99.999%-Si) PURATREM 14-7015 contained in 50 ml Swagelok® cylinder (96-1077) for CVD/ALD	411
	Tri-t-butoxysilanol (99.9+%-Si)	411
$C_{12}H_{28}O_4Ti$	Titanium(IV) i-propoxide, min. 98%	442
	Titanium(IV) i-propoxide, min. 98%, 93-2216, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	442
$C_{12}H_{28}O_4Zr$	Zirconium(IV) i-propoxide (isopropanol adduct) (99.9%-Zr)	458
	Zirconium(IV) n-propoxide (23-28% free alcohol)	458
$C_{12}H_{28}Sn$	Tetra-i-propyltin, min. 98%	436
	Tetra-n-propyltin, min. 97%	436
	Tri-n-butyltin hydride, min. 95%	437
$C_{12}H_{30}Cl_2P_2Pt$	cis-Dichlorobis(triethylphosphine) platinum(II), 99%	337
$C_{12}H_{30}MoN_4$	Bis(t-butylimido)bis(dimethylamino) molybdenum(VI), 98%	136
$C_{12}H_{30}N_4W$	Bis(t-butylimido)bis(dimethylamino)tungsten(VI), min. 97% BTBMW	443
$C_{12}H_{32}HfN_4$	Tetrakis(ethylmethylamino)hafnium, 99% (99.99+%-Hf, <0.15% Zr) TEMAH PURATREM	78
	Tetrakis(ethylmethylamino)hafnium, 99% (99.99+%-Hf, <0.15% Zr) TEMAH, PURATREM, 72-7720, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	78
$C_{12}H_{32}N_4V$	Tetrakis(ethylmethylamino)vanadium(IV), 98% TEMAV	445
$C_{12}H_{32}N_4Zr$	Tetrakis(ethylmethylamino)zirconium(IV), 99% TEMAZ	457
	Tetrakis(ethylmethylamino)zirconium(IV) 99% TEMAZ, 40-1710, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	457
$C_{12}H_{36}Al_2N_6$	Hexakis(dimethylamino)dialuminum 98% (99.9%-Al) TDMAA	4
$C_{12}H_{36}Ga_2N_6$	Bis(μ-dimethylamino)tetrakis (dimethylamino)digallium, 98%	67
$C_{12}H_{36}N_6Si_2$	Hexakis(ethylamino)disilane (99.995%-Si) PURATREM	408
$C_{12}H_{36}Si_5$	Tetrakis(trimethylsilyl)silane, 98% TMSS	410
$C_{12}Ir_4O_{12}$	Iridium carbonyl, min. 98%	92
$C_{12}N_{26}N_2Sn$	N,N'-Di-t-butyl-2,3-diamidobutanetin(II), 98%, 50-1150, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	434
$C_{12}O_{12}Os_3$	Osmium carbonyl, 99%	213
$C_{12}O_{12}Rh_4$	Tetrarhodium dodecacarbonyl, min. 98%	361
$C_{12}O_{12}Ru_3$	Ruthenium carbonyl, 99%	398
$C_{13}H_8ClN_2O_3Re$	Chlorotricarbonyl(2,2'-bipyridine)rhenium(I), 99%	346
$C_{13}H_8CuF_3N_2$	Trifluoromethyl(1,10-phenanthroline) copper(I), 95% Trifluoromethylator®	59
$C_{13}H_{13}F_6IrO_2$	1,5-Cyclooctadiene(hexafluoroacetylacetonato)iridium(I), 98%	89
$C_{13}H_{13}N$	2-(N-Methylamino)-1,1'-biphenyl, min. 95%	202
$C_{13}H_{13}NO_2S_2$	4-Cyano-4-(thiobenzoylthio)pentanoic acid, min. 97%	425
$C_{13}H_{13}P$	Methyldiphenylphosphine, 99%	315
$C_{13}H_{14}N_2$	1,3-Di-(4-pyridyl)propane, 98%	199
$C_{13}H_{15}NS_2$	2-Cyano-2-pentylbenzodithiolate	425
	2-Cyano-3-methyl-2-butylbenzodithiolate	425
$C_{13}H_{15}O_3Re$	Pentamethylcyclopentadienylrhenium tricarbonyl, min. 98%	347
$C_{13}H_{16}$	1-t-Butyl-1H-indene, min. 95%	38
$C_{13}H_{16}F_6N_2O_4S_2$	N-Butyl-3-methylpyridinium bis(trifluoromethylsulfonyl)imide, 99% [BMPIm]	82
$C_{13}H_{17}BO_4$	3-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)benzoic acid, min. 97%	29

Formula	Description	Page
	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)benzoic acid, min. 97%	29
$C_{13}H_{17}FeN$	N,N-Dimethylaminomethylferrocene, min. 95%	102
$C_{13}H_{17}Ir$	1-Ethylcyclopentadienyl-1,3-cyclohexadiene-iridium(I), 99% (99.9%-Ir)	91
$C_{13}H_{17}NO_5S$	(4R)-4-Phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	427
	(4S)-4-Phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	427
$C_{13}H_{18}ClNOSi$	(4S,5S)-2-Allyl-2-chloro-3,4-dimethyl-5-phenyl-1-oxa-3-aza-2-silacyclopentane, min. 98% (~2:1 mixture of diastereomers)	405
$C_{13}H_{18}N_2O_3S$	1-Ethyl-3-methylimidazolium tosylate, 98% [EMIM] [TOS]	82
$C_{13}H_{19}AgF_6O_2Si$	Vinyltriethylsilane(hexafluoroacetylacetonato)silver(I) (99.9%-Ag)	415
$C_{13}H_{19}BO_4$	2-Methoxy-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%	27
$C_{13}H_{19}IrO_2$	1,5-Cyclooctadiene(acetylacetonato)iridium(I), 99% (99.9%-Ir)	88
$C_{13}H_{19}NO$	(1R,2R)-2-Benzylamino-1-cyclohexanol, min. 98%	179
	(1S,2S)-2-Benzylamino-1-cyclohexanol, min. 98%	179
$C_{13}H_{19}O_2Rh$	Acetylacetonato(1,5-cyclooctadiene) rhodium(I), 98%	349
$C_{13}H_{23}ClN_2Ni$	Chloro(2-methylphenyl)(N,N,N',N'-tetramethyl-1,2-ethylenediamine)nickel(II), 99% (contains about 5% o-chlorotoluene) NiCl(o-tolyl)(TMEDA)	174
$C_{13}H_{24}O_3Ti$	Pentamethylcyclopentadienyltitanium trimethoxide, min. 97%	440
$C_{13}H_{24}Pt$	(Trimethyl)pentamethylcyclopentadienylplatinum(IV), 99%	339
$C_{13}H_{24}Si$	Trimethylsilylpentamethylcyclopentadiene	412
$C_{13}H_{24}Ti$	(Trimethyl)pentamethylcyclopentadienyltitanium(IV), min. 97%	443
$C_{13}H_{25}BF_4N_2$	(2R,5R)-1-{[(2R,5R)-2,5-Dimethylpyrrolidin-1-yl]methylene}-2,5-dimethylpyrrolidinium tetrafluoroborate, min. 97%	198
$C_{13}H_{27}O_6Ta$	Tantalum(V) (tetraethoxy)(acetylacetonate) (99.99+%-Ta) PURATREM	430
$C_{13}H_{27}P$	Di-t-butyl(3-methyl-2-butenyl)phosphine (40% in xylene), 98% Crophos®	287
$C_{13}H_{28}F_3O_3PS$	Tri-t-butylphosphonium trifluoromethanesulfonate, 99% Stabiphos T	326
$C_{13}H_{29}BF_4N_2$	Di-i-propylaminomethylene(di-i-propyl) aminium tetrafluoroborate, min. 97%	198
$C_{13}H_{29}P$	Di-t-butylneopentylphosphine, min. 95% (DTBNpP)	287
	Di-t-butylneopentylphosphine, min. 95% (DTBNpP) (10 wt% in hexanes)	287
$C_{13}H_{30}BF_4P$	Di-t-butylneopentylphosphonium tetrafluoroborate, min. 95%	287
$C_{13}H_{33}N<\cdot.4_{Ta}$	(t-Butylimido)tris(ethylmethylamino) tantalum(V) (99.99%-Ta) PURATREM	429
$C_{14}HF_{27}O_2$	Perfluorotetradecanoic acid, min. 97%	168
$C_{14}H_8F_3N_2O_6ReS$	Trifluoromethylsulfonatotricarbonyl(2,2'-bipyridine)rhenium(I), 99%	348
$C_{14}H_8F_6O_6S_2$	2,2'-Bis(trifluoromethanesulfonyloxy)-1,1'-biphenyl, 99% (1,1'-Biphenol bistriflate)	215
$C_{14}H_{10}$	Diphenylacetylene, 99%	39
$C_{14}H_{10}Cl_2N_2Pd$	Dichlorobis(benzonitrile)palladium(II), 99%	236
$C_{14}H_{10}Cl_2N_2Pt$	Dichlorobis(benzonitrile)platinum(II), 99%	337
$C_{14}H_{10}Fe_2O_4$	Cyclopentadienyliron dicarbonyl dimer, 99%	100
$C_{14}H_{10}N_2O_2$	4,7-Dimethoxy-1,10-phenanthroline, 98%	197
$C_{14}H_{10}O_4$	[1,1'-Biphenyl]-4,4'-dicarboxylic acid, min. 98%	215
$C_{14}H_{10}O_4Pd$	Palladium(II) benzoate, 99%	248
$C_{14}H_{10}O_4Ru_2$	Dicarbonylcyclopentadienylruthenium dimer, 99%	381
$C_{14}H_{13}P$	Vinyldiphenylphosphine, min. 97%	333
$C_{14}H_{14}ClP$	Di-o-tolylchlorophosphine, min. 98%	311
$C_{14}H_{14}Cl_2N_2$	meso-1,2-Bis(4-chlorophenyl)ethylenediamine, min. 98%	181
$C_{14}H_{14}F_{13}NO_2$	(4S,5R)-(-)-4-i-Propyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99%	206
	(4R,5S)-(+)-4-i-Propyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99%	206
$C_{14}H_{14}N_4O_4$	(1R,2R)-(+)-1,2-Bis(4-nitrophenyl)ethylenediamine dihydrochloride, min. 98%	187
$C_{14}H_{14}O_2S_2$	1,2-Bis(phenylsulfinyl)ethane, 98%	424
$C_{14}H_{14}Pd$	Cyclopentadienyl[(1,2,3-n)-1-phenyl-2-propenyl]palladium(II), 98%	235
$C_{14}H_{15}NO$	(1R,2S)-2-Amino-1,2-diphenylethanol, min. 98%	178
	(1S,2R)-2-Amino-1,2-diphenylethanol, min. 98%	178
$C_{14}H_{15}P$	Di-p-tolylphosphine, 99% (10 wt% in hexanes)	311
	Di-p-tolylphosphine, 99%	311
	Ethyldiphenylphosphine, 99%	312
	Di-o-tolylphosphine, min. 97%	311
$C_{14}H_{16}BF_4Rh$	Bis(norbornadiene)rhodium(I) tetrafluoroborate, min. 96%	355
$C_{14}H_{16}Cl_2Rh_2$	Chloronorbornadiene rhodium(I) dimer, 99%	357
$C_{14}H_{16}FeO$	Butyroferrocene, 99%	100
$C_{14}H_{16}IP$	Dimethyldiphenylphosphonium iodide, 98%	299
$C_{14}H_{16}NP$	2-(Diphenylphosphino)ethylamine, min. 95%	304
$C_{14}H_{16}N_2$	(1R,2R)-(+)-1,2-Diphenylethylenediamine, min. 97% (R,R)-DPEN	198
	(1S,2S)-(-)-1,2-Diphenylethylenediamine, min. 97% (S,S)-DPEN	198
$C_{14}H_{16}N_2O_2$	(1R,2R)-(-)-1,2-Bis(4-hydroxyphenyl) ethylenediamine dihydrochloride, min. 98%	185
	(1R,2R)-1,2-Bis(2-hydroxyphenyl)ethane-1,2-diamine, min. 97%	185
	(1S,2S)-1,2-Bis(2-hydroxyphenyl)ethane-1,2-diamine, min. 97%	185
$C_{14}H_{16}O_2Si$	Diphenyldimethoxysilane, min. 97%	407
$C_{14}H_{16}P_2$	1,2-Bis(phenylphoshino)ethane, min. 90%	279
	1,2-Bis(phenylphosphino)ethane, min. 95% (10wt% in hexanes)	279
$C_{14}H_{16}Sn$	Dimethyldiphenyltin	435
$C_{14}H_{17}BF_4NP$	2-(Diphenylphosphino)ethanammonium tetrafluoroborate, min. 97%	304
$C_{14}H_{17}NO_5S$	(4S,5R)-3,3a,8,8a-Tetrahydroindeno[1,2-d]-1,2,3-oxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	427
	(4R,5S)-3,3a,8,8a-Tetrahydroindeno[1,2-d]-1,2,3-oxathiazole-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	427
$C_{14}H_{17}NS_2$	2-Cyano-2-hexylbenzodithiolate	424
$C_{14}H_{18}BF_4O_2Rh$	1,5-Cyclooctadiene(hydroquinone)rhodium(I) tetrafluoroborate	357
$C_{14}H_{18}Cl_2Hf$	Bis(ethylcyclopentadienyl)hafnium dichloride, min. 98%	76
$C_{14}H_{18}Cl_2Ti$	Bis(ethylcyclopentadienyl)titanium(IV) dichloride, min. 98%	439
$C_{14}H_{18}Cl_2Zr$	Bis(ethylcyclopentadienyl)zirconium dichloride, min. 97%	455
$C_{14}H_{18}Cr$	Bis(ethylcyclopentadienyl)chromium, min. 98%	44
$C_{14}H_{18}Fe$	Bis(ethylcyclopentadienyl)iron, min. 98%	98
	t-Butylferrocene, min. 98%	100
	n-Butylferrocene, 99%	100
$C_{14}H_{18}Mg$	Bis(ethylcyclopentadienyl)magnesium, min. 98%	120
	Bis(ethylcyclopentadienyl)magnesium, min. 98%, 12-0510, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	121
	Bis(ethylcyclopentadienyl)magnesium, min. 98%, 12-0510, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	121
$C_{14}H_{18}Mn$	Bis(ethylcyclopentadienyl)manganese, min. 98%	125
	Bis(ethylcyclopentadienyl)manganese, min. 98%, 25-0210, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	125
$C_{14}H_{18}Ni$	Bis(ethylcyclopentadienyl)nickel, min. 98%	172
$C_{14}H_{18}Ru$	Bis(ethylcyclopentadienyl)ruthenium(II), 98% (99.9%-Ru)	365

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Formula	Description	Page
	Bis(ethylcyclopentadienyl)ruthenium(II), 98% (99.9%-Ru), 44-0040, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD.	365
	Bis(ethylcyclopentadienyl)ruthenium(II), 98% (99.9%-Ru), 44-0040, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	365
$C_{14}H_{19}BO_4$	2-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl acetate, min. 97%	30
	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl acetate, min. 97%	30
$C_{14}H_{19}FeN$	α-(N,N-Dimethylamino)ethylferrocene, 98%	102
$C_{14}H_{19}Ir$	(Methylcyclopentadienyl) (1,5-cyclooctadiene)iridium(I), 99% (99.9%-Ir)	92
$C_{14}H_{19}NO_3$	[(1R,2R)-2-Hydroxycyclohexyl]carbamic Acid Phenylmethyl Ester, min. 98%	201
	[(1S,2S)-2-Hydroxycyclohexyl]carbamic Acid Phenylmethyl Ester, min. 98%	201
$C_{14}H_{19}NO_5S$	(4S,5R)-4-Methyl-5-phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	426
	(4R,5S)-4-Methyl-5-phenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	426
$C_{14}H_{20}BNO_3$	4-(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)acetanilide, min. 97%	29
$C_{14}H_{20}FeIN$	Ferrocenylmethyltrimethylammonium iodide, 99%	106
$C_{14}H_{20}N_2O_3S$	1-Ethyl-2,3-dimethylimidazolium tosylate, 98% [EDiMIM] [TOS]	82
$C_{14}H_{20}O_5$	Benzo-15-crown-5, 97%	214
$C_{14}H_{21}BO_3$	2,6-Dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenol, min. 97%	27
$C_{14}H_{21}I_2O_2$	1,2-Diiodo-4,5-di-n-butoxybenzene	218
$C_{14}H_{22}N_2O_8$	trans-1,2-Cyclohexanediaminetetraacetic acid monohydrate, min. 98% CyDTA	193
	trans-1,2-Cyclohexanediaminetetraacetic acid monohydrate, 99+% CyDTA	193
$C_{14}H_{22}Ru$	Bis(2,4-dimethylpentadienyl)ruthenium(II), 99%	365
$C_{14}H_{23}Cr_3O_{16}$	Chromium(III) acetate, basic	45
$C_{14}H_{23}N_3O_{10}$	Diethylenetriaminepentaacetic acid, 97% DTPA	195
	Diethylenetriaminepentaacetic acid, 98.5% DTPA (USP)	195
	Diethylenetriaminepentaacetic acid, 99% DTPA	195
$C_{14}H_{23}P$	Di-2-norbornylphosphine, min. 98% (mixture of endo and exo isomers)	301
	Di-2-norbornylphosphine, min. 98% (mixture of endo and exo isomers) (10 wt% in hexanes)	301
	Di-t-butylphenylphosphine, min. 98% (50wt% in toluene)	288
$C_{14}H_{24}BF_4P$	Di-t-butylphenylphosphonium tetrafluoroborate, 97%	288
$C_{14}H_{24}NP$	2-(Di-t-butylphosphinomethyl)pyridine, 99%	289
$C_{14}H_{24}N_2O_{10}$	Ethylene glycol-bis(2-aminoethyl)-N,N,N',N'-tetraacetic acid, 99% EGTA	199
$C_{14}H_{27}AuF_6NO_4PS_2$	Tri-t-butylphosphine[bis(trifluoromethyl) sulfonylimido]gold(I), 98%	76
$C_{14}H_{27}O_{18}Ru_3$	Hexakis[μ-(acetato-O:O')]-triaqua-μ3-oxo-triruthenium(III), min. 95% (Ruthenium(III) acetate)	397
$C_{14}H_{28}N_2O_6S$	1-Butyl-2,3-dimethylimidazolium diethyleneglycolmonomethylether sulfate, 98% [BDiMIM] [MDEGSO$_4$]	81
$C_{14}H_{28}P_2$	(+)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)ethane, 98+% (R,R)-Me-BPE	265
	(-)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)ethane, 98+% (S,S)-Me-BPE	265
$C_{14}H_{29}P$	Cyclohexyldi-t-butylphosphine, 97%	283
$C_{14}H_{29}P$	Cyclohexyldi-t-butylphosphine, 98% (10wt% in hexanes)	283
$C_{14}H_{30}O_2Sn$	Tri-n-butyltin acetate, 98%	437
$C_{14}H_{31}O_3P$	n-Tetradecylphosphonic acid, min. 97% TDPA	321
$C_{14}H_{32}BF_4P$	Di-t-butyl(n-hexyl)phosphonium tetrafluoroborate, 98%	287
$C_{14}H_{32}N_4$	1,4,8,11-Tetramethyl-1,4,8, 11-tetraazacyclotetradecane, 98%	209
$C_{14}H_{32}P_2$	1,2-Bis(di-i-propylphosphino)ethane, 98%	273
$C_{14}H_{33}O_4PS$	Tributyl(methyl)phosphonium methylsulfate, min. 95%	83
$C_{15}H_3AlF_{18}O_6$	Aluminum hexafluoroacetylacetonate, min. 98%	2
$C_{15}H_3CrF_{18}O_6$	Chromium(III) hexafluoroacetylacetonate, min. 98%	45
$C_{15}H_3ErF_{18}O_6$	Erbium(III) hexafluoroacetylacetonate hydrate (99.9%-Er) (REO)	61
$C_{15}H_3F_{18}NdO_6$	Neodymium(III) hexafluoroacetylacetonate dihydrate (99.9%-Nd) (REO)	170
$C_{15}H_3F_{18}O_6Pr$	Praseodymium(III) hexafluoroacetylacetonate (99.9%-Pr) (REO)	345
$C_{15}H_3F_{18}O_6Y$	Yttrium(III) hexafluoroacetylacetonate, hydrate (99.9%-Y) (REO)	449
$C_{15}H_3F_{18}O_6Yb$	Ytterbium(III) hexafluoroacetylacetonate dihydrate (99.9%-Yb) (REO)	447
$C_{15}H_{11}Cl_3N_2$	1,3-Bis(4-chlorophenyl)imidazolium chloride, min. 97%	181
$C_{15}H_{11}N_3$	2,2'':6',2''-Terpyridine, min. 98% TERPY	207
$C_{15}H_{12}CeF_9O_6$	Cerium(III) trifluoroacetylacetonate hydrate	42
$C_{15}H_{12}F_9FeO_6$	Iron(III) trifluoroacetylacetonate, 99% (99.9%-Fe)	109
$C_{15}H_{12}F_9InO_6$	Indium(III) trifluoroacetylacetonate, 99%	80
$C_{15}H_{12}F_9NdO_6$	Neodymium(III) trifluoroacetylacetonate (99.9%-Nd)	170
$C_{15}H_{12}F_9O_6Sm$	Samarium(III) trifluoroacetylacetonate (99.9%-Sm) (REO)	402
$C_{15}H_{12}N_3P$	Tris(2-pyridyl)phosphine, min. 97%	332
$C_{15}H_{14}S_2$	2-Phenylethylbenzodithiolate	427
$C_{15}H_{14}S_3$	S,S-Dibenzyltrithiocarbonate, min. 97%	425
$C_{15}H_{15}Ce$	Tris(cyclopentadienyl)cerium(III) (99.9%-Ce) (REO)	42
$C_{15}H_{15}Er$	Tris(cyclopentadienyl)erbium(III) (99.9%-Er) (REO)	62
$C_{15}H_{15}Gd$	Tris(cyclopentadienyl)gadolinium(III) (99.9%-Gd) (REO)	67
$C_{15}H_{15}La$	Tris(cyclopentadienyl)lanthanum (99.9%-La) (REO)	113
$C_{15}H_{15}Nd$	Tris(cyclopentadienyl)neodymium, 99% (99.9%-Nd) (REO)	170
$C_{15}H_{15}Pr$	Tris(cyclopentadienyl)praseodymium (99.9%-Pr) (REO)	346
$C_{15}H_{15}Sm$	Tris(cyclopentadienyl)samarium (99.9%-Sm) (REO)	403
$C_{15}H_{15}Tm$	Tris(cyclopentadienyl)thulium (99.9%-Tm) (REO)	433
$C_{15}H_{15}Y$	Tris(cyclopentadienyl)yttrium (99.9%-Y) (REO)	448
$C_{15}H_{15}Yb$	Tris(cyclopentadienyl)ytterbium (99.9%-Yb) (REO)	447
$C_{15}H_{18}NP$	3-(Diphenylphosphino)propylamine, min. 97%	308
$C_{15}H_{18}P_2$	1,3-Bis(phenylphosphino)propane, 90-95%	279
$C_{15}H_{19}BF_4NP$	3-(Diphenylphosphino)propylammonium tetrafluoroborate	309
$C_{15}H_{19}F_6PRu$	Cyclopentadienyl(p-cymene)ruthenium(II) hexafluorophosphate, min. 98%	379
$C_{15}H_{21}AlO_6$	Aluminum acetylacetonate, 99%	1
$C_{15}H_{21}BO_4$	Ethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzoate, min. 97%	27
	Ethyl-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzoate, min. 97%	27
	Ethyl-3-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzoate, min. 97%	27
$C_{15}H_{21}CeO_6$	Cerium(III) acetylacetonate hydrate (99.9%-Ce) (REO)	40
$C_{15}H_{21}CoO_6$	Cobalt(III) acetylacetonate, 98+%	48
$C_{15}H_{21}CrO_6$	Chromium(III) acetylacetonate, 97.5%	45
$C_{15}H_{21}DyO_6$	Dysprosium(III) acetylacetonate hydrate (99.9%-Dy) (REO)	60
$C_{15}H_{21}ErO_6$	Erbium(III) acetylacetonate hydrate (99.9%-Er) (REO)	61
$C_{15}H_{21}FeO_6$	Iron(III) acetylacetonate, 99%	106
$C_{15}H_{21}GaO_6$	Gallium(III) acetylacetonate (99.99+%-Ga) PURATREM	67

Formula	Description	Page
$C_{15}H_{21}GdO_6$	Gadolinium(III) acetylacetonate hydrate (99.9%-Gd) (REO)	66
$C_{15}H_{21}InO_6$	Indium(III) acetylacetonate, 98%	79
$C_{15}H_{21}IrO_6$	Iridium(III) acetylacetonate, 98%	92
$C_{15}H_{21}LaO_6$	Lanthanum(III) acetylacetonate hydrate (99.9%-La) (REO)	112
$C_{15}H_{21}MnO_6$	Manganese(III) acetylacetonate, min. 90%	125
$C_{15}H_{21}O_2P$	2-{2-[(2R,5R)-2,5-Dimethyl-1-phospholano]phenyl}1,3-dioxolane, min. 97%	299
	2-{2-[(2S,5S)-2,5-Dimethyl-1-phospholano]phenyl}1,3-dioxolane, min. 97%	299
$C_{15}H_{21}O_6Pr$	Praseodymium(III) acetylacetonate hydrate (99.9%-Pr) (REO)	345
$C_{15}H_{21}O_6Rh$	Rhodium(III) acetylacetonate, 97+% (99.9%-Rh)	358
$C_{15}H_{21}O_6Ru$	Ruthenium(III) acetylacetonate, 99%	398
$C_{15}H_{21}O_6Sm$	Samarium(III) acetylacetonate hydrate (99.9%-Sm) (REO)	402
$C_{15}H_{21}O_6Tb$	Terbium(III) acetylacetonate trihydrate (99.9%-Tb) (REO)	431
$C_{15}H_{21}O_6Tm$	Thulium(III) acetylacetonate trihydrate (99.9%-Tm) (REO)	433
$C_{15}H_{21}O_6V$	Vanadium(III) acetylacetonate, 98%	445
$C_{15}H_{21}O_6Y$	Yttrium(III) acetylacetonate hydrate (99.9%-Y) (REO)	449
$C_{15}H_{21}O_6Yb$	Ytterbium(III) acetylacetonate hydrate (99.9%-Yb) (REO)	447
$C_{15}H_{22}BKN_6$	Potassium hydrotris(3,5-dimethylpyrazol-1-yl)borate, 97%	343
$C_{15}H_{23}ClN_2$	1,3-Di-t-butylbenzimidazolium chloride, min. 97%	194
$C_{15}H_{24}AuClN_2$	Chloro[1,3-bis(cyclohexyl)2H-imidazol-2-ylidene]gold(I), 98%	73
$C_{15}H_{25}BF_4N_2$	1,3-Bis(cyclohexyl)imidazolium tetrafluoroborate, min. 97% $ICyHBF_4$	181
$C_{15}H_{26}N_4$	N-Benzyl-1,4,7,10-tetraazacyclododecane, min. 98%	179
$C_{15}H_{27}NS_3$	2-Cyanomethyl-S-dodecyltrithiocarbonate, min. 97%	425
$C_{15}H_{27}P$	Tricyclopentylphosphine, min. 95%	327
	Tricyclopentylphosphine, min. 95% (10wt% in hexanes)	327
$C_{15}H_{32}N_3PO$	2-Cyanoethyl N,N,N',N'-tetra(i-propyl)phosphorodiamidite, min. 98%	283
$C_{15}H_{33}NO_3S$	3-(Decyldimethylammonio)propanesulfonate (Sulfobetaine 10)	167
$C_{15}H_{33}N_4P$	2,8,9-Tri-i-propyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3]undecane	330
$C_{15}H_{33}O_3P$	Tri-neo-pentylphosphite, min. 90%	329
$C_{15}H_{33}O_4P$	Tri-n-amylphosphate, min. 97%	325
$C_{15}H_{34}O_4Si$	Tri-t-pentoxysilanol (99.999%-Si) PURATREM	412
$C_{15}H_{34}P_2$	1,3-Bis(di-i-propylphosphino)propane, min. 98% (dippp)	273
$C_{16}H_6ClF_{12}P$	Bis(3,5-di(trifluoromethyl)phenyl)chlorophosphine, min. 98%	275
$C_{16}H_{10}Mo_2O_6$	Cyclopentadienylmolybdenum tricarbonyl dimer, min. 98%	137
$C_{16}H_{10}N_2O_8$	3,3',5,5'-Azobenzene tetracarboxylic acid, $TazbH_4$, 97%	214
$C_{16}H_{13}KO_4Si$	Potassium bis(1,2-benzenediolato)(1,3-butadien-2-yl)silicate, min. 98%	409
$C_{16}H_{14}Br_2$	racemic-4,12-Dibromo[2.2]paracyclophane, min. 95%	39
$C_{16}H_{14}N_2O_4Pd$	Diacetato(1,10-phenanthroline)palladium(II), 99%	236
$C_{16}H_{14}N_4$	(1R,2R)-(+)-1,2-Bis(4-cyanophenyl)ethylenediamine dihydrochloride, min. 98%	181
$C_{16}H_{15}Br$	racemic-4-Bromo[2.2]paracyclophane, min. 95%	38
$C_{16}H_{16}Fe$	Bis(cyclooctatetraene)iron(0), min. 98%	94
$C_{16}H_{16}N_2O_2$	Ethylenebis(salicylimine), 98% SALEN	199
$C_{16}H_{16}O$	racemic-4-Hydroxy[2.2]paracyclophane, min. 97%	219
$C_{16}H_{16}O_2$	racemic-4,12-Dihydroxy[2.2]paracyclophane, min. 97%	217
$C_{16}H_{16}S_2$	2-Phenyl-2-propylbenzodithiolate, min. 97%	427
$C_{16}H_{18}ClNOSi$	(4S,5S)-2-Chloro-3,4-dimethyl-2,5-diphenyl-1-oxa-3-aza-2-silacyclopentane, min. 98% (~2:1 mixture of diastereomers)	406
$C_{16}H_{18}F_{12}FeN_2O_4$	Bis(1,1,1,5,5,5-hexafluoroacetylacetonato)(N,N,N',N'-tetramethylethylenediamine)iron(II), min. 98%	99
$C_{16}H_{18}O_2$	3,3',5,5'-Tetramethyl-2,2'-biphenol, 99%	220
$C_{16}H_{19}BrN_2$	2,6-Bis(dimethylamino)-2'-bromo-1,1'-biphenyl, min. 98%	182
$C_{16}H_{19}FeNO$	(S)-(-)-[4,5-Dihydro-4-(1-methylethyl)-2-oxazolyl]ferrocene, min. 98%	102
$C_{16}H_{19}P$	Bis(3,5-dimethylphenyl)phosphine, 98%	264
	Bis(3,5-dimethylphenyl)phosphine, 98% (10wt% in hexanes)	264
$C_{16}H_{20}Cr$	Bis(ethylbenzene)chromium [mixture of $(C_2H_5)xC_6H_6\eta x$ where x = 0-4]	44
$C_{16}H_{20}Mo$	Bis(ethylbenzene)molybdenum [mixture of $(C_2H_5)\cdot C_6H_6\eta^x$ where x = 0-4)]	136
$C_{16}H_{20}N_2O_2$	N,N'-Bis(2-hydroxybenzyl)ethylenediamine, min. 98% H_4 SALEN	185
$C_{16}H_{21}O_3P$	1,3,5,7-Tetramethyl-8-phenyl-2,4,6-trioxa-8-phosphaadamantane, 99% MeCgPPh	324
$C_{16}H_{22}Cl_2Hf$	Bis(i-propylcyclopentadienyl)hafnium dichloride, min. 98%	76
$C_{16}H_{22}Cl_2Ti$	Bis(i-propylcyclopentadienyl)titanium dichloride, min. 98%	439
$C_{16}H_{22}Cl_2Zr$	Bis(i-propylcyclopentadienyl)zirconium dichloride, 98%	455
$C_{16}H_{22}Cr$	Bis(i-propylcyclopentadienyl)chromium, min. 98%	44
$C_{16}H_{22}Fe$	Bis(i-propylcyclopentadienyl)iron, min. 98%	99
$C_{16}H_{22}Mg$	Bis(n-propylcyclopentadienyl)magnesium, min. 98%	121
$C_{16}H_{22}Mn$	Bis(i-propylcyclopentadienyl)manganese, min. 98%	125
$C_{16}H_{22}Ni$	Bis(i-propylcyclopentadienyl)nickel, min. 98%	172
$C_{16}H_{24}BF_4Ir$	Bis(1,5-cyclooctadiene)iridium(I) tetrafluoroborate, 98%	86
$C_{16}H_{24}BF_4Rh$	Bis(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+%	349
$C_{16}H_{24}Cl_2Ir_2$	Chloro-1,5-cyclooctadiene iridium(I) dimer, 99%	87
$C_{16}H_{24}Cl_2Rh_2$	Chloro(1,5-cyclooctadiene)rhodium(I) dimer, 98%	356
$C_{16}H_{24}F_6N_3PRu$	Tris(acetonitrile)pentamethylcyclopentadienylruthenium(II) hexafluorophosphate, min. 98%	400
$C_{16}H_{24}F_{12}N_3RhSb_2$	Tris(acetonitrile)pentamethylcyclopentadienylrhodium(III) hexafluoroantimonate, min. 98%	361
$C_{16}H_{24}Ni$	Bis(1,5-cyclooctadiene)nickel (0), 98+%	171
$C_{16}H_{24}O_2$	6,7-Dimethoxy-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene, 99+% Redox shuttle ANL-RS21	218
$C_{16}H_{25}AgF_7O_2P$	Triethylphosphine(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)silver(I), min. 98%	415
$C_{16}H_{26}CuO_6$	Bis(t-butylacetoacetato)copper(II), 99%	54
$C_{16}H_{26}O_2Rh_2$	Hydroxy(1,5-cyclooctadiene)rhodium(I) dimer, min. 97%	358
$C_{16}H_{26}Ru$	Bis(2-methylallyl)(1,5-cyclooctadiene)ruthenium(II), min. 97%	366
$C_{16}H_{28}Ir_2N_2O_8$	[2-(Pyridine-2-yl)-2-propanato]iridium(IV) dimer solution 97% (1 mM in 0.1 Molar aqueous $NaIO_3$)	92
$C_{16}H_{28}NP$	[4-(N,N-Dimethylamino)phenyl]di-t-butylphosphine, min. 95% amphos	298
$C_{16}H_{28}N_4O_8$	1,4,7,10-Tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid, min. 98% DOTA	207
$C_{16}H_{28}O_4P_2$	(2,5-Dimethoxy-1,4-phenylene)bis(diethylphosphine oxide), 99+% Redox shuttle ANL-RS51	297
$C_{16}H_{28}O_6Ti$	Titanium (di-i-propoxide)bis(acetylacetonate) (75% in isopropanol)	441
$C_{16}H_{30}BaO_4$	Barium 2-ethylhexanoate, ~30% in xylene (7-10% Ba)	11

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Formula	Description	Page
$C_{16}H_{30}CaO_4$	Calcium 2-ethylhexanoate, superconductor grade, 40% in 2-ethylhexanoic acid (3-8% Ca)	35
$C_{16}H_{30}CoO_4$	Cobalt 2-ethylhexanoate, ~65% in mineral spirits (12% Co)	49
$C_{16}H_{30}CuO_4$	Copper(II) 2-ethylhexanoate (solvent free - 16-19% Cu)	56
$C_{16}H_{30}MgO_4$	Magnesium 2-ethylhexanoate, 30-40% solution in toluene	122
$C_{16}H_{30}MnO_4$	Manganese(II) 2-ethylhexanoate, 40% solution in mineral spirits (6% Mn)	126
$C_{16}H_{30}NiO_4$	Nickel(II) 2-ethylhexanoate, 78% in 2-ethylhexanoic acid (10-15% Ni)	175
$C_{16}H_{30}O_4Pb$	Lead(II) 2-ethylhexanoate (40.5%-42.5% Pb)	114
$C_{16}H_{30}O_4Sn$	Tin(II) 2-ethylhexanoate, ~90% in 2-ethylhexanoic acid (~28% Sn)	436
$C_{16}H_{30}O_4Sr$	Strontium 2-ethylhexanoate, ~40% in 2-ethylhexanoic acid (8-12% Sr)	423
$C_{16}H_{30}O_4Zn$	Zinc 2-ethylhexanoate, 99% (~18% Zn, 1% Diethylene glycol monomethyl ether)	452
$C_{16}H_{31}AlO_5$	Aluminum 2-ethylhexanoate, basic, min. 96%	2
$C_{16}H_{31}P$	t-Butyldicyclohexylphosphine, min. 95%	282
$C_{16}H_{32}N_2O_4S$	1-Butyl-3-methylimidazolium octylsulfate, 98% [BMIM] [$OctSO_4$]	81
$C_{16}H_{33}N_3Ti$	Pentamethylcyclopentadienyltris (dimethylamino)titanium(IV), 99%	440
$C_{16}H_{34}BaO_2$	Barium 2-ethylhexoxide (~1M in hexanes/toluene)	11
$C_{16}H_{34}CoN_4$	Bis(N,N'-di-i-propylacetamidinato)cobalt(II), min. 98% Co(iPr-MeAMD)2	47
$C_{16}H_{34}CoN_4$	Bis(N,N'-di-i-propylacetamidinato)cobalt(II), min. 98% (99.99%-Co) PURATREM ($Co(iPr\text{-}MeAMD)_2$)	47
$C_{16}H_{34}N_4Sn$	Bis(N,N'-di-i-propylacetamidinato)tin(II), 99%	434
$C_{16}H_{34}OSn$	Tributyl(1-ethoxyvinyl)tin, 97%	437
$C_{16}H_{34}PdSi_2$	Bis[(trimethylsilyl)methyl](1,5-cyclooctadiene)palladium(II), 98%	229
$C_{16}H_{35}O_3P$	n-Hexadecylphosphonic acid, min. 97% HDPA	313
$C_{16}H_{35}O_4P$	Di-(2-ethylhexyl)phosphoric acid (contains some mono)	296
$C_{16}H_{36}BF_4N$	Tetrabutylammonium tetrafluoroborate, 99%	7
$C_{16}H_{36}BrN$	Tetrabutylammonium bromide, 99%	7
$C_{16}H_{36}BrP$	Tetra-n-butylphosphonium bromide, 98%	321
$C_{16}H_{36}ClNO_4$	Tetrabutylammonium perchlorate, min. 98%	7
$C_{16}H_{36}ClP$	Tetrabutylphosphonium chloride (80-82 wt% solution in water)	321
$C_{16}H_{36}FN$	Tetrabutylammonium fluoride, 1M in THF	7
	Tetrabutylammonium fluoride hydrate, 98% TBAF	7
$C_{16}H_{36}F_6NP$	Tetrabutylammonium hexafluorophosphate, 98%	7
$C_{16}H_{36}Ge$	Tetra-n-butylgermane, min. 98%	69
$C_{16}H_{36}HfO_4$	Hafnium(IV) t-butoxide (99.9%-Hf, <1.5%-Zr)	77
$C_{16}H_{36}NO_4Ru$	Tetrabutylammonium perruthenate, min. 97% TBAP	7
$C_{16}H_{36}NReS_4$	Tetrabutylammonium tetrathiorhenate(VII), 99%	7
$C_{16}H_{36}O_4Si$	Tetrabutoxysilane, min. 97%	410
$C_{16}H_{36}O_4Sn$	Tin(IV) t-butoxide (99.99%-Sn) PURATREM	436
$C_{16}H_{36}O_4Ti$	Titanium(IV) n-butoxide, 98+%	441
	Titanium(IV) t-butoxide (99.95%-Ti)	441
$C_{16}H_{36}O_4Zr$	Zirconium(IV) t-butoxide, 99%	457
	Zirconium(IV) t-butoxide (99.99%-Zr) PURATREM	457
	Zirconium(IV) n-butoxide (76-80% in n-butanol)	457
$C_{16}H_{36}P_2$	1,4-Bis(di-i-propylphosphino)butane, min. 98%	272
$C_{16}H_{36}Sn$	Tetra-n-butyltin, min. 94%	435
$C_{16}H_{37}NO$	Tetrabutylammonium hydroxide, 40% in water	7
$C_{16}H_{37}NP_2$	Bis[(2-di-i-propylphosphino)ethyl]amine, min. 97% (10 wt% in tetrahydrofuran)	273
$C_{16}H_{39}ClIrNP_2$	Chlorodihydrido[bis(2-di-i-propylphosphinoethyl)amine]iridium(III), min. 98%	87
$C_{16}H_{39}N_4Nb$	(t-Butylimido)tris(diethylamino)niobium(V), min. 98%	177
$C_{16}H_{39}N_4Ta$	(t-Butylimido)tris(diethylamino)tantalum(V), min. 98% (99.99%-Ta) PURATREM TBTDET	428
$C_{16}H_{40}BClF_4N_2P_2Ru$	Chlorobis[2-(di-i-propylphosphino)ethanamine]ruthenium(II) tetrafluoroborate, min. 97%	374
$C_{16}H_{40}BN$	Tetrabutylammonium borohydride, 97%	7
$C_{16}H_{40}Cl_2N_2P_2Ru$	Dichlorobis[2-(di-i-propylphosphino)ethylamine]ruthenium(II), min. 97%	383
$C_{16}H_{40}HfN_4$	Tetrakis(diethylamino)hafnium, 99% (99.99+%-Hf, <0.2% Zr) PURATREM	77
$C_{16}H_{40}N_4Ti$	Tetrakis(diethylamino)titanium(IV), 99%	440
	Tetrakis(diethylamino)titanium(IV), 99%, 22-1050, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	440
$C_{16}H_{40}N_4V$	Tetrakis(diethylamino)vanadium(IV), min. 95% TDEAV	445
$C_{16}H_{40}N_4Zr$	Tetrakis(diethylamino)zirconium, 99%	456
$C_{16}H_{48}Hf_2N_8$	Tetrakis(dimethylamino)hafnium, 98+% (99.99+%-Hf, <0.2% Zr) TDMAH, PURATREM	77
	Tetrakis(dimethylamino)hafnium, 98+% (99.99+%-Hf, <0.2%-Zr) TDMAH, PURATREM, 72-8000, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	78
$C_{16}O_{16}Rh_6$	Hexarhodium hexadecacarbonyl, min. 98%	358
$C_{17}H_{14}Cl_4N_2$	N,N'-(1,3-Dimethyl-1,3-propanediylidene) bis(2,6-dichlorobenzenamine), 99%	198
$C_{17}H_{14}NP$	2-Diphenylphosphinopyridine, min. 97%	309
$C_{17}H_{14}O$	1,5-Diphenyl-1,4-pentadien-3-one, min. 98% (Dibenzylideneacetone)	219
$C_{17}H_{16}FeOS$	(R)-(-)-(p-Toluenesulfinyl)ferrocene, min. 98%	111
	(S)-(+)-(p-Toluenesulfinyl)ferrocene, min. 98%	111
$C_{17}H_{16}O_2$	(R)-2,2',3,3'-Tetrahydro-1,1'-spirobi[indene]-7,7'-diol, 99%	220
$C_{17}H_{18}N_2$	N-[1-Methyl-3-(phenylamino)-2-buten-1-ylidene]benzenamine, min. 98% NacNac	203
$C_{17}H_{19}Ir$	1,5-Cyclooctadiene(η5-indenyl)iridium(I), 99%	90
$C_{17}H_{20}NP$	(R)-2-[(Diphenylphosphino)methyl]pyrrolidine, min. 97% (10 wt% in tetrahydrofuran)	306
	(S)-2-[(Diphenylphosphino)methyl]pyrrolidine, min. 97%	306
$C_{17}H_{21}BF_4NP$	(R)-2-[(Diphenylphosphino)methyl]pyrrolidinium tetrafluoroborate, min. 97%	306
	(S)-2-[(Diphenylphosphino)methyl]pyrrolidinium tetrafluoroborate, min. 97%	306
$C_{17}H_{21}F_6N_3S$	1-[3,5-Bis(trifluoromethyl)phenyl]-3-[(1R,2R)-(-)-2-(dimethylamino)cyclohexyl]thiourea (R,R-TUC)	188
	1-[3,5-Bis(trifluoromethyl)phenyl]-3-[(1S,2S)-(+)-2-(dimethylamino)cyclohexyl]thiourea (S,S-TUC)	188
$C_{17}H_{22}NP$	(R)-1-(Diphenylphosphino)-2-amino-3-methylbutane, min. 97%	303
	(S)-1-(Diphenylphosphino)-2-amino-3-methylbutane, min. 97%	303
$C_{17}H_{23}N_3O_2$	(-)-2,6-Bis[(4S)-4-(i-propyl)-2-oxazolin-2-yl] pyridine, 98+% (S)-(i-Pr)-pybox	188
	(+)-2,6-Bis[(4R)-4-(i-propyl)-2-oxazolin-2-yl] pyridine, 98+% (R)-(i-Pr)-pybox	188
$C_{17}H_{24}F_3N_3O_3RuS$	Tris(acetonitrile)pentamethylcyclopentadienylruthenium(II) trifluoromethanesulfonate, min. 98%	400
$C_{17}H_{24}F_3O_3RhS$	Bis(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 99%	349
$C_{17}H_{25}BO_5$	t-Butyl-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl carbonate, min. 97%	26
	t-Butyl-3-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl carbonate, min. 97%	26
$C_{17}H_{25}O_2P$	2-{2-[(2R,5R)-2,5-Diethyl-1-phospholano] phenyl}1,3-dioxolane, min. 97%	296
	2-{2-[(2S,5S)-2,5-Diethyl-1-phospholano] phenyl}1,3-dioxolane, min. 97%	296

Formula	Description	Page
$C_{17}H_{26}BNO_4$	t-Butyl-N-[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]carbamate, min. 97%	26
$C_{17}H_{26}NP$	1-Di-i-propylphosphino-2-(N,N-dimethylamino)-1H-indene, 99%	310
$C_{17}H_{27}O_3P$	(Sp)-Hydroxymethylphenylphosphinic acid [(-)-(1R,2S,2R)-2-i-propyl-5-methylcyclohexanol]ester, 99%	314
$C_{17}H_{30}N_4$	N-Benzyl-1,4,8,11-tetraazacyclotetradecane, min. 98%	179
$C_{17}H_{31}NS_3$	2-(2-Cyanoprop-2-yl)-S-dodecyltrithiocarbonate, min. 97%	425
$C_{17}H_{32}O_2S_3$	2-Methyl-2-[(dodecylsulfanylthiocarbonyl) sulfanyl]propanoic acid, min. 97%	426
$C_{17}H_{33}BF_4N_2$	(2S,5S)-1-{[(2S,5S)-2,5-Diethylpyrrolidin-1-yl]methylene}-2,5-diethylpyrrolidinium tetrafluoroborate, min. 97%	196
	(2R,5R)-1-{[(2R,5R)-2,5-Diethylpyrrolidin-1-yl]methylene}-2,5-diethylpyrrolidinium tetrafluoroborate, min. 97%	196
$C_{17}H_{34}N_2O_4S$	1-Butyl-2,3-dimethylimidazolium octylsulfate, 98% [BDiMIM] [$OcSO_4$]	81
$C_{17}H_{35}ClNP$	[2-(Dicyclohexylphosphino)ethyl]trimethylammonium chloride, min. 95%	293
$C_{17}H_{36}O_3W$	Tris(t-butoxy)(2,2-dimethylpropylidyne)tungsten(VI), 98% Schrock Alkyne Metathesis Catalyst	444
$C_{17}H_{37}NO_3S$	N-Dodecyl-N,N-dimethyl-3-ammonio-1-propanesulfonate (Sulfobetaine 12)	167
$C_{17}H_{38}ClNOP_2Ru$	Carbonylchlorohydrido[bis(2-di-i-propylphosphinoethyl)amine]ruthenium(II), min. 97%	368
$C_{18}F_{15}B$	Tris(pentafluorophenyl)borane, min. 97%	31
$C_{18}F_{15}P$	Tris(pentafluorophenyl)phosphine, 98%	332
$C_{18}H_5F_{10}P$	Bis(pentafluorophenyl)phenylphosphine, 97%	278
$C_{18}H_8Fe_3O_{16}$	Iron(III) 1,3,5-benzenetricarboxylate hydrate, porous (F-free MIL-100(Fe), KRICT F100) [Iron trimesate]	107
$C_{18}H_{11}BF_9N_3O$	(5aS, 10bR)-(-)-5a,10b-Dihydro-2-(pentafluorophenyl)-4H,6H-indeno[2,1-b][1,2,4]triazolo[4,3-d][1,4]oxazinium tetrafluoroborate, min. 98%	197
	(5aR,10bS)-(+)-5a,10b-Dihydro-2-(pentafluorophenyl)-4H,6H-indeno[2,1-b][1,2,4]triazolo[4,3-d][1,4]oxazinium tetrafluoroborate, min. 98%	196
$C_{18}H_{12}Cl_3P$	Tri(m-chlorophenyl)phosphine, min. 97%	326
	Tri(p-chlorophenyl)phosphine, 99%	326
$C_{18}H_{12}F_3P$	Tris(p-fluorophenyl)phosphine, 99%	331
$C_{18}H_{12}Na_3O_9PS_3$	Tris(3-sulfonatophenyl)phosphine hydrate, sodium salt (<10% oxide)	332
	Tris(3-sulfonatophenyl)phosphine hydrate, sodium salt (<5% oxide)	332
$C_{18}H_{13}K_2O_6PS_2$	Bis(p-sulfonatophenyl)phenylphosphine dihydrate dipotassium salt, min. 97%	279
$C_{18}H_{13}K_2O_6PS_2$	Bis(p-sulfonatophenyl)phenylphosphine dihydrate dipotassium salt, 97%	279
$C_{18}H_{13}P$	5-Phenyl-5H-benzo[b]phosphindole, 99%	318
$C_{18}H_{14}AuClO_3PNaS$	Chloro[diphenyl(3-sulfonatophenyl)phosphine]gold(I), sodium salt hydrate, min. 98%	74
$C_{18}H_{14}BrP$	2-Bromophenyldiphenylphosphine, 98%	281
$C_{18}H_{14}Cl_2Zr$	Bis(indenyl)zirconium dichloride, min. 98%	455
$C_{18}H_{14}F_{13}NO_2$	(4S,5R)-(-)-4-Benzyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99%	179
	(4R,5S)-(+)-4-Benzyl-5-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-2-oxazolidinone, 99%	179
$C_{18}H_{14}KO_3PS$	Diphenyl(p-sulfonatophenyl)phosphine monohydrate dimethylsulfoxide adduct, potassium salt	309
$C_{18}H_{14}NaO_3PS$	Diphenyl(m-sulfonatophenyl)phosphine dihydrate sodium salt, min. 90%	309
$C_{18}H_{15}As$	Triphenylarsine, min. 97%	10
$C_{18}H_{15}AuClP$	Chlorotriphenylphosphinegold(I), 98+% (99.9+%-Au)	74
$C_{18}H_{15}B$	Triphenylborane, min. 95%	31
$C_{18}H_{15}Bi$	Triphenylbismuth, 99%	24
$C_{18}H_{15}Br_2P$	Dibromotriphenylphosphorane, 98%	285
$C_{18}H_{15}Br_2Sb$	Triphenylantimony dibromide, 98+%	9
$C_{18}H_{15}ClGe$	Triphenylgermanium chloride, 99%	70
$C_{18}H_{15}ClSi$	Triphenylchlorosilane, 97%	412
$C_{18}H_{15}ClSn$	Triphenyltin chloride, min. 95%	438
$C_{18}H_{15}Cl_2Sb$	Triphenylantimony dichloride, 99%	9
$C_{18}H_{15}FSn$	Triphenyltin fluoride, min. 97%	438
$C_{18}H_{15}OP$	Triphenylphosphine oxide, 98%	329
$C_{18}H_{15}O_3P$	Triphenylphosphite, 97%	329
$C_{18}H_{15}O_4P$	Triphenylphosphate, 98%	329
$C_{18}H_{15}P$	Triphenylphosphine, 99%	329
$C_{18}H_{15}Sb$	Triphenylantimony, 97%	9
$C_{18}H_{16}BN_4K$	Potassium diphenylbis(pyrazol-1-yl)borate, min. 98%	341
$C_{18}H_{16}NP$	2-Diphenylphosphino-6-methylpyridine, 98%	306
$C_{18}H_{16}OSi$	Triphenylsilanol, min. 98%	412
$C_{18}H_{16}Si$	Triphenylsilane, min. 97%	412
$C_{18}H_{17}N_3$	4,4',4''-Trimethyl-2,2':6',2''-terpyridine, 98%	211
$C_{18}H_{18}BN$	Triphenylborane, ammonia complex, min. 98%	31
$C_{18}H_{18}Cl_2Pd_2$	Di-μ-chlorobis[(1,2,3-η)-1-phenyl-2-propenyl] dipalladium(II), 98%	238
$C_{18}H_{20}BNO$	(R)-Tetrahydro-1-methyl-3,3-diphenyl-1H,3H-pyrrolo[1,2-c][1,3,2]oxazaborole, 0.9-1.1M in toluene [(R)-Methyloxazaborolidine] (R)-CBS Catalyst	28
	(S)-Tetrahydro-1-methyl-3,3-diphenyl-1H,3H-pyrrolo[1,2-c][1,3,2]oxazaborole, 0.9-1.1M in toluene [(S)-Methyloxazaborolidine] (S)-CBS Catalyst	29
$C_{18}H_{20}F_6O_4Ru$	Bis(1,1,1-trifluoro-2,4-pentanedionato) (1,5-cyclooctadiene)ruthenium(II), 98%	366
$C_{18}H_{20}N_2O_6S_2Pd$	Bis(acetonitrile)palladium(II) p-toluenesulfonate, 98%	227
$C_{18}H_{20}N_4O_2$	(-)-N,N'-(1R,2R)-1,2-Diaminocyclohexanediylbis(2-pyridinecarboxamide), min. 98% (R,R)-DACH-Pyridyl Trost Ligand	194
	(+)-N,N'-(1S,2S)-1,2-Diaminocyclohexanediylbis(2-pyridinecarboxamide), min. 98% (S,S)-DACH-Pyridyl Trost Ligand	194
$C_{18}H_{20}O_6PdS_2$	1,2-Bis(phenylsulfinyl)ethane palladium(II) acetate, min. 98% Christina White Catalyst	228
$C_{18}H_{21}Er$	Tris(methylcyclopentadienyl)erbium(III) (99.9%-Er) (REO)	62
$C_{18}H_{21}NO$	(2R)-(-)-N-Methyl-α,α-diphenyl-2-pyrrolidinemethanol, min. 98%	202
	(2S)-(+)-N-Methyl-α,α-diphenyl-2-pyrrolidinemethanol, min. 98%	202
$C_{18}H_{21}P$	Cyclohexyldiphenylphosphine, 98%	283
$C_{18}H_{22}ClO_2P$	Bis(3,5-dimethyl-4-methoxyphenyl)chlorophosphine, min. 98%	263
$C_{18}H_{22}F_6IrN_2P$	Bis(pyridine)(1,5-cyclooctadiene)iridium(I) hexafluorophosphate, 99%	87
$C_{18}H_{22}NP$	(1R,2R)-2-(Diphenylphosphino)-1-aminocyclohexane, min. 97%	303
	(1S,2S)-2-(Diphenylphosphino)-1-aminocyclohexane, min. 97%	303
$C_{18}H_{24}Cl_2N_2Pd_2$	Di-μ-chlorobis{2-[(dimethylamino)methyl] phenyl}dipalladium, 99%	237
$C_{18}H_{24}Cl_4Ru_2$	Dichloro(mesitylene)ruthenium(II) dimer, 98%	392
$C_{18}H_{24}NP$	(S)-1-(Diphenylphosphino)-2-amino-3,3-dimethylbutane, min. 97% (10wt% in hexanes)	303
	(R)-1-(Diphenylphosphino)-2-amino-3,3-dimethylbutane, min. 97% (10wt% in hexanes)	303
$C_{18}H_{24}N_2$	4,4'-Bis(di-t-butyl)-2,2'-bipyridine, 97% DTBBPY	181
$C_{18}H_{25}BF_4NP$	(S)-1-(Diphenylphosphino)-3,3-dimethylbutan-2-aminium tetrafluoroborate, min. 97%	304
$C_{18}H_{25}ClN_2O_2$	1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methylpentanoic acid]imidazolium chloride, min. 95%	211
$C_{18}H_{25}F_6N_2PO_2$	1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methylpentanoic acid]imidazolium hexafluorophosphate, min. 95%	211
$C_{18}H_{26}Cl_2Ti$	Bis(t-butylcyclopentadienyl)titanium dichloride, min. 98%	439
$C_{18}H_{26}Cl_2Zr$	Bis(t-butylcyclopentadienyl)zirconium dichloride, min. 98%	454
	Bis(n-butylcyclopentadienyl)zirconium dichloride, min. 98%	454

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Formula	Description	Page
	Bis(tetramethylcyclopentadienyl)zirconium dichloride, min. 97%	455
$C_{18}H_{26}Cr$	Bis(tetramethylcyclopentadienyl)chromium, min. 98%	45
$C_{18}H_{26}Mn$	Bis(tetramethylcyclopentadienyl)manganese, min. 98%	125
$C_{18}H_{26}NP$	N-Phenyl-2-(di-t-butylphosphino)pyrrole, 95+% [cataCXium® PtB]	318
$C_{18}H_{26}N_4$	(1R,2R)-(+)-1,2-Bis(4-dimethylaminophenyl) ethylenediamine tetrahydrochloride, min. 98%	182
$C_{18}H_{26}Ni$	Bis(tetramethylcyclopentadienyl)nickel, min. 98%	172
$C_{18}H_{27}ClN_2O$	1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methyl-1-pentanol]imidazolium chloride, min. 97%	211
$C_{18}H_{27}ClRu$	Chloro(1,5-cyclooctadiene)(pentamethylcyclopentadienyl)ruthenium(II), 98%	376
$C_{18}H_{27}F_6N_2OP$	1-(2,4,6-Trimethylphenyl)-3-[(2S)-4-methyl-1-pentanol]imidazolium hexafluorophosphate, min. 97%	211
$C_{18}H_{27}P$	Dicyclohexylphenylphosphine, min. 95%	292
$C_{18}H_{28}N_2P_2$	(R,R)-(-)-2,3-Bis(t-butylmethylphosphino) quinoxaline, min. 98% (R,R)-QuinoxP*	255
	(S,S)-(+)-2,3-Bis(t-butylmethylphosphino) quinoxaline, min. 98% (S,S)-QuinoxP*	255
$C_{18}H_{28}OP_2$	[1-(2R,5R)-2,5-Dimethylphospholanyl]-[2-(2R,5R)-2,5-dimethylphospholanyl-1-oxide]benzene, min. 97%	299
	[1-(2S,5S)-2,5-Dimethylphospholanyl]-[2-(2S,5S)-2,5-dimethylphospholanyl-1-oxide]benzene, min. 97%	299
$C_{18}H_{28}P_2$	(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene, 98+% (S,S)-Me-DUPHOS	265
	(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)benzene, 98+% (R,R)-Me-DUPHOS	265
$C_{18}H_{30}Ir_2O_2$	Di-μ-methoxobis(1,5-cyclooctadiene)diiridium(I), min. 98%	91
$C_{18}H_{30}O_2Rh_2$	Di-μ-methoxobis(1,5-cyclooctadiene)dirhodium(I), min. 98%	358
$C_{18}H_{32}O_4Sn$	Di-n-butyltinbis(acetylacetonate)	434
$C_{18}H_{33}NaO_2$	Sodium oleate, 99%	169
$C_{18}H_{33}P$	Tricyclohexylphosphine, 97%	326
	Tricyclohexylphosphine (20% in toluene), min. 88%	326
$C_{18}H_{34}BF_4P$	Tricyclohexylphosphonium tetrafluoroborate, 99%	326
$C_{18}H_{34}O_2$	Oleic acid, 99%	168
$C_{18}H_{35}LiO_2$	Lithium stearate, min. 95%	118
$C_{18}H_{35}NaO_2$	Sodium stearate, tech. gr.	420
$C_{18}H_{36}FeN_9$	Tetramethylammonium ferricyanide, 98%	111
$C_{18}H_{36}N_8O_4$	1,4,8,11-Tetraazacyclotetradecane-N,N',N'',N'''-tetraacetamide, min. 98%	208
$C_{18}H_{36}P_2$	(+)-1,2-Bis((2R,5R)-2,5-diethylphospholano) ethane, 98+% (R,R)-Et-BPE	262
	(-)-1,2-Bis((2S,5S)-2,5-diethylphospholano) ethane, 98+% (S,S)-Et-BPE	262
$C_{18}H_{36}Zn$	2,2,6,6-Bis(tetramethylpiperidine)zinc, magnesium chloride, lithium chloride complex 0.35M (12wt% ±2wt%) in toluene/tetrahydrofura	450
$C_{18}H_{37}N$	Oleylamine, min. 70%	168
	Oleylamine, min. 95%	168
$C_{18}H_{38}CoN_4$	Bis(N-t-butyl-N'-ethylpropanimidamidato) cobalt(II), min. 98%	47
	Bis(N-t-butyl-N'-ethylpropanimidamidato)cobalt(II), min. 98% (99.99%-Co) PURATREM	47
$C_{18}H_{39}N_4P$	2,8,9-Tri-i-butyl-2,5,8,9-tetraaza-1-phosphabicyclo[3.3.3]undecane, 97%	326
$C_{18}H_{39}O_3P$	n-Octadecylphosphonic acid, min. 97% ODPA	316
$C_{18}H_{39}P$	Tri-n-hexylphosphine, min. 96%	327
$C_{18}H_{42}Al_2O_3$	Triethyl(tri-sec-butoxy)dialuminum (contains diethyl(tetra-sec-butoxy)dialuminum and tetraethyl(di-sec-butoxy)dialuminum)	4
$C_{18}H_{42}N_4$	Tris(isobutylaminoethyl)amine, min 97%	212
$C_{18}H_{42}O_4P_2$	Tributyl(ethyl)phosphonium diethylphosphate, 95%	83
$C_{18}H_{44}Cl_2N_2P_2Ru$	Dichlorobis[3-(di-i-propylphosphino)propylamine]ruthenium(II), min. 97%	383
$C_{18}H_{54}LaN_3Si_6$	Tris(N,N-bis(trimethylsilyl)amide)lanthanum(III), min. 98% (99.9%-La) (REO)	113
$C_{18}H_{54}N_3Si_6Y$	Tris[N,N-bis(trimethylsilyl)amide]yttrium(III), min. 98% (99.9%-Y) (REO)	448
	Tris[N,N-bis(trimethylsilyl)amide]yttrium(III), min. 98% (99.9%-Y) (REO), 39-1500, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	448
$C_{19}H_{12}F_3Na_2O_6PS_2$	Bis(3-sulfonatophenyl)(2-trifluoromethylphenyl)phosphine, disodium dihydrate, min. 97% o-DANPHOS	279
	Bis(3-sulfonatophenyl)(4-trifluoromethylphenyl)phosphine disodium dihydrate, min. 97% p-DANPHOS	280
$C_{19}H_{14}NP$	(2-Cyanophenyl)diphenylphosphine, min. 98%	283
$C_{19}H_{15}OP$	2-(Diphenylphosphino)benzaldehyde, min. 97%	303
$C_{19}H_{15}O_2P$	2-(Diphenylphosphino)benzoic acid, min. 97%	303
$C_{19}H_{17}P$	p-Tolyldiphenylphosphine, min. 96%	325
	Benzyldiphenylphosphine, 99%	251
$C_{19}H_{18}AuP$	Methyl(triphenylphosphine)gold(I), 99%	75
$C_{19}H_{18}BrP$	Methyltriphenylphosphonium bromide, 98+%	316
$C_{19}H_{18}NP$	2-[2-(Diphenylphosphino)ethyl]pyridine, min. 97%	304
$C_{19}H_{19}F_5N_3OBF_4$	(5aS,6R,9S,9aR)-5a,6,7,8,9,9a-Hexahydro-6,11,11-trimethyl-2-(2,3,4,5,6-pentafluorophenyl)-6,9-methano-4H-[1,2,4]triazolo[3,4-c][1,4]benzoxazinium tetrafluoroborate	200
$C_{19}H_{20}NO_2P$	(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% (R)-SIPHOS	321
	(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% (S)-SIPHOS	321
$C_{19}H_{20}N_2S$	(2R,3S)-(-)-3,4-Dihydro-3-(i-propyl)-2-phenyl-2H-pyrimido[2,1-b]benzothiazole, min. 98% HyperBTM	197
$C_{19}H_{21}NO_5S$	(4S,5R)-4,5-Diphenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	426
	(4R,5S)-4,5-Diphenyl-1,2,3-oxathiazolidine-2,2-dioxide-3-carboxylic acid t-butyl ester, min. 97%	426
$C_{19}H_{23}N_3O$	(8α, 9S)-(+)-9-Amino-cinchonan-6'-ol, min. 90%	178
	(9R)-(+)-9-Amino-cinchonan-6'-ol, min. 90%	178
$C_{19}H_{25}BF_3N_5O_3RuS$	[Bis(pyrazol-1-yl)(acetimino)hydridoborato](p-cymene)ruthenium(II) trifluoromethanesulfonate	366
$C_{19}H_{26}N_2O_2$	(2R)-(+)-1,1-Bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine, min. 97% (R)-DAIPEN	185
	(2S)-(-)-1,1-Bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine, min. 97% (S)-DAIPEN	185
$C_{19}H_{27}ClN_2$	1,3-Dicyclohexylbenzimidazolium chloride, min. 97%	195
$C_{19}H_{28}NOP$	N-(2-Methoxyphenyl)-2-(di-t-butylphosphino) pyrrole, min. 95% [cataCXium® POMetB]	315
$C_{19}H_{33}NO_2S_3$	4-Cyano-4-(dodecylsulfanylthiocarbonyl) sulfanylpentanoic acid, min. 97%	424
$C_{19}H_{34}F_3O_3PS$	Tricyclohexylphosphonium trifluoromethanesulfonate, 99% Stabiphos	327
$C_{19}H_{35}ClCoN_6O_7P$	Triethylammonium {chlorobis(dimethylglyoximato)(4-hydrogenphosphonatepyridinyl) cobaltate(III)}	52
$C_{19}H_{35}N_2P$	2-(Di-t-butylphosphinomethyl)-6-(diethylaminomethyl)pyridine, 98%	289
$C_{19}H_{42}BrN$	Hexadecyltrimethylammonium bromide, 99+% CTAB	168
$C_{20}H_4F_{24}O_8Zr$	Zirconium(IV) hexafluoroacetylacetonate	458
$C_{20}H_{12}Br_2$	racemic-2,2'-Dibromo-1,1'-binaphthyl, min. 96%	38
	(1R)-2,2'-Dibromo-1,1'-binaphthalene, min. 98%	38
	(1S)-2,2'-Dibromo-1,1'-binaphthalene, min. 98%	38

Formula	Description	Page
$C_{20}H_{12}Br_2O_2$	(R)-(+)-3,3'-Dibromo-1,1'-bi-2-naphthol, min. 98%	216
	(S)-(-)-3,3'-Dibromo-1,1'-bi-2-naphthol, min. 98%	216
	racemic-6,6'-Dibromo-1,1'-bi-2-naphthol, min. 98%	216
	(R)-(-)-6,6'-Dibromo-1,1'-bi-2-naphthol, min. 98%	216
	(S)-(+)-6,6'-Dibromo-1,1'-bi-2-naphthol, min. 98%	216
	(R)-(-)-6,6'-Dibromo-1,1'-bi-2-naphthol, 98% (99% ee)	216
	(S)-(+)-6,6'-Dibromo-1,1'-bi-2-naphthol, 98% (99% ee)	216
$C_{20}H_{12}ClO_2P$	(R)-(-)-4-Chlorodinaphthol[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, min. 97%	283
	(S)-(+)-4-Chlorodinaphthol[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, min. 97%	283
$C_{20}H_{12}F_6NaO_3PS$	Bis(4-trifluoromethylphenyl)(3-sulfonatophenyl)phosphine, sodium salt, min. 97% p-DAN2PHOS	281
	Bis(2-trifluoromethylphenyl)(3-sulfonatophenyl)phosphine, sodium salt, min. 97% o-DAN2PHOS	280
$C_{20}H_{13}Br$	2-Bromo-1,1'-binaphthyl, 98%	38
$C_{20}H_{13}F_6Na_2O_6PS_2$	Bis(3-sulfonatophenyl)(3,5-di-trifluoromethylphenyl)phosphine, disodium salt monohydrate, min. 97% DANPHOS (water soluble)	279
$C_{20}H_{13}O_4P$	(R)-(-)-1,1'-Binaphthyl-2,2'-diyl hydrogenphosphate, min. 98%	252
	(S)-(+)-1,1'-Binaphthyl-2,2'-diyl hydrogenphosphate, min. 98%	252
$C_{20}H_{14}ClP$	Bis(1-naphthyl)chlorophosphine, min. 97%	278
$C_{20}H_{14}O_2$	R-(+)-1,1'-Bi-2-naphthol, 99% (R)-BINOL	214
	S-(-)-1,1'-Bi-2-naphthol, 99% (S)-BINOL	214
	racemic-1,1'-Bi-2-naphthol, 99% rac-BINOL	214
$C_{20}H_{15}AuF_6NO_4PS_2$	Triphenylphosphinegold(I) bis(trifluoromethanesulfonyl)imidate, min. 98%	76
$C_{20}H_{16}Cl_2N_4Ru$	cis-Dichlorobis(2,2'-bipyridine)ruthenium(II) dihydrate, 99%	383
$C_{20}H_{16}Cl_2Zr$	rac-Ethylenebis(indenyl)zirconium(IV) dichloride	456
$C_{20}H_{16}F_{12}O_8Zr$	Zirconium(IV) trifluoroacetylacetonate, 99%	458
$C_{20}H_{16}N_2$	racemic-2,2'-Diamino-1,1'-binaphthyl, min. 96%	193
	(R)-(+)-2,2'-Diamino-1,1'-binaphthyl, 99%	193
	(S)-(-)-2,2'-Diamino-1,1'-binaphthyl, 99%	193
$C_{20}H_{18}Cl_2SiZr$	rac-Dimethylsilylbis(1-indenyl)zirconium dichloride, min. 97%	456
$C_{20}H_{18}Cl_2Zr$	Bis(2-methylindenyl)zirconium dichloride, 98%	455
$C_{20}H_{18}O_2Sn$	Triphenyltin acetate, 97%	438
$C_{20}H_{18}O_4P$	2-(Diphenylphosphino)terephthalic acid, 98%	309
$C_{20}H_{19}O_2P$	Bis(2-methoxyphenyl)phenylphosphine, min. 98%	278
$C_{20}H_{20}BaF_{14}O_4$	Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)barium [Ba(FOD)$_2$]	12
$C_{20}H_{20}BrP$	Ethyltriphenylphosphonium bromide, 99%	312
$C_{20}H_{20}Br_2O_2$	(R)-(+)-3,3'-Dibromo-5,5',6,6',7,7',8,8'-octahydro-1,1'-bi-2-naphthol, 99%	217
	(S)-(-)-3,3'-Dibromo-5,5',6,6',7,7',8,8'-octahydro-1,1'-bi-2-naphthol, 99%	217
$C_{20}H_{20}CaF_{14}O_4$	Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)calcium [Ca(FOD)$_2$]	34
$C_{20}H_{20}CuF_{14}O_4$	Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)copper(II) [Cu(FOD)$_2$]	55
$C_{20}H_{20}F_{14}O_4Sr$	Bis(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)strontium hydrate [Sr(FOD)$_2$]	422
$C_{20}H_{20}NP$	(R)-1-[2-(Diphenylphosphino)phenyl]ethylamine, min. 97%	308
	(S)-1-[2-(Diphenylphosphino)phenyl]ethylamine, min. 97%	308
	(R)-2-(Diphenylphosphino)-1-phenylethylamine, min. 97%	308
	(S)-2-(Diphenylphosphino)-1-phenylethylamine, min. 97%	308
$C_{20}H_{20}NP$	Diphenyl[4-(N,N-dimethylamino)phenyl]phosphine, min. 95%	302
$C_{20}H_{20}Si$	Dimethylbis(indenyl)silane, min. 98%	407
$C_{20}H_{20}Zr$	Dimethylbis(indenyl)zirconium, min. 98%	455
$C_{20}H_{21}N_4NaO_3S$	2-{[Bis(2-pyridinylmethyl)amino]ethylamino}benzenesulfonic acid hydrate sodium salt ZX1	188
$C_{20}H_{21}O_4P$	(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	317
$C_{20}H_{22}O_2$	(R)-(+)-5,5',6,6',7,7',8,8'-Octahydro-1,1'-bi-2-naphthol, 99%	220
	(S)-(-)-5,5',6,6',7,7',8,8'-Octahydro-1,1'-bi-2-naphthol, 99%	220
$C_{20}H_{24}Cl_2Zr$	rac-Ethylenebis(4,5,6,7-tetrahydro-1-indenyl)zirconium dichloride	456
$C_{20}H_{24}N_2O_6$	N,N'-Di(2-hydroxybenzyl)ethylenediamine-N,N'-diacetic acid monohydrochloride hydrate HBED	197
$C_{20}H_{24}O_6$	Dibenzo-18-crown-6, min. 98%	216
$C_{20}H_{27}AuClP$	Chloro[2-(di-t-butylphosphino))-1,1'-biphenyl]gold(I), 99%	73
$C_{20}H_{27}N_4$	(2R,2'R)-(+)-[N,N'-Bis(2-pyridylmethyl)]-2,2'-bipyrrolidine tetrahydrochloride, 98% (R,R)-PDP	188
	(2S,2'S)-(-)-[N,N'-Bis(2-pyridylmethyl]-2,2'-bipyrrolidine tetrahydrochloride, 98% (S,S)-PDP	188
$C_{20}H_{27}P$	2-(Di-t-butylphosphino))-1,1'-biphenyl, 99% JohnPhos	288
$C_{20}H_{28}Cl_2N_2$	(1R,2R)-N,N'-Bis(phenylmethyl)-1,2-cyclohexanediamine dihydrochloride, min. 98%	187
	(1S,2S)-N,N'-Bis(phenylmethyl)-1,2-cyclohexanediamine dihydrochloride, min. 98%	187
$C_{20}H_{28}Cl_3N_3O$	(8α, 9S)-6'-Methoxycinchonan-9-amine trihydrochloride, min. 90%	202
	(8α, 9R)-6'-Methoxycinchonan-9-amine trihydrochloride, min. 90%	202
$C_{20}H_{28}Cl_4Ru_2$	Di-μ-chlorobis[(p-cymene)chlororuthenium(II)], min. 98%	383
$C_{20}H_{28}HfO_8$	Hafnium(IV) acetylacetonate, min. 96%	77
$C_{20}H_{28}O_8Zr$	Zirconium(IV) acetylacetonate, min. 98%	457
$C_{20}H_{30}Ba$	Bis(pentamethylcyclopentadienyl)barium, 98%	12
$C_{20}H_{30}ClOP$	Di-1-adamantylphosphinic chloride, 98%	284
$C_{20}H_{30}ClP$	Di-1-adamantylchlorophosphine, min. 97%	284
$C_{20}H_{30}Cl_2Hf$	Bis(pentamethylcyclopentadienyl)hafnium dichloride, min. 98%	76
$C_{20}H_{30}Cl_2Ti$	Bis(pentamethylcyclopentadienyl)titanium dichloride, 99%	439
$C_{20}H_{30}Cl_2Zr$	Bis(pentamethylcyclopentadienyl)zirconium dichloride, 99%	455
$C_{20}H_{30}Cl_3N_3O$	(8α, 9S)-10,11-Dihydro-6'-methoxycinchonan-9-amine trihydrochloride, min. 90%	196
	(9R)-10,11-Dihydro-6'-methoxycinchonan-9-amine trihydrochloride, min. 90%	196
$C_{20}H_{30}Cl_4Ir_2$	Dichloro(pentamethylcyclopentadienyl)iridium(III) dimer, 98%	90
$C_{20}H_{30}Cl_4Rh_2$	Dichloro(pentamethylcyclopentadienyl)rhodium(III) dimer, 99%	357
$C_{20}H_{30}CoF_6P$	Bis(pentamethylcyclopentadienyl)cobalticinium hexafluorophosphate, 98%	47
$C_{20}H_{30}Cr$	Bis(pentamethylcyclopentadienyl)chromium, min. 95% (Decamethylchromocene)	44
$C_{20}H_{30}Fe$	Bis(pentamethylcyclopentadienyl)iron, 99%	99
$C_{20}H_{30}Mg$	Bis(pentamethylcyclopentadienyl)magnesium, elec. gr. (99.999%-Mg) PURATREM	121
	Bis(pentamethylcyclopentadienyl)magnesium, min. 98%	121
$C_{20}H_{30}Mn$	Bis(pentamethylcyclopentadienyl)manganese, min. 98% (Decamethylmanganocene)	125
$C_{20}H_{30}Ni$	Bis(pentamethylcyclopentadienyl)nickel, 98% (Decamethylnickelocene)	172
$C_{20}H_{30}Os$	Bis(pentamethylcyclopentadienyl)osmium, 99% (99.9%-Os) (Decamethylosmocene)	213
$C_{20}H_{30}Ru$	Bis(pentamethylcyclopentadienyl)ruthenium, 99% (99.9%-Ru) (Decamethylruthenocene)	366

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Formula	Description	Page
$C_{20}H_{31}B_2F_8N_2P$	2-Diethylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl di(hydrogen tetrafluoroborate) salt, min. 98% EtCPhos	296
$C_{20}H_{31}OP$	Di-1-adamantylphosphine oxide, min. 90%	284
$C_{20}H_{31}P$	Di-1-adamantylphosphine, min. 97%	284
$C_{20}H_{32}Cl_4Ru_2$	Dichlorobis(μ-chloro) bis[(1,2,3,6,7,8-≈)-2,7-dimethyl-2,6-octadien-1,8-diyl]diruthenium(IV), 99%	383
$C_{20}H_{32}Hf$	Dimethylbis(t-butylcyclopentadienyl)hafnium(IV), min. 98%	76
$C_{20}H_{32}Ti$	Dimethylbis(t-butylcyclopentadienyl)titanium(IV), min. 98%	439
$C_{20}H_{32}Zr$	Dimethylbis(t-butylcyclopentadienyl)zirconium, min. 98%	455
$C_{20}H_{34}MnO_4$	Manganese(II) cyclohexanebutyrate	126
$C_{20}H_{34}NiO_4$	Nickel(II) cyclohexanebutyrate (AAS)	175
$C_{20}H_{34}O_4$	1,4-Di-t-butyl-2,5-bis(2-methoxyethoxy) benzene, 99+% Redox shuttle ANL-RS2	217
$C_{20}H_{34}O_4Zn$	Zinc cyclohexanebutyrate dihydrate (AAS)	452
$C_{20}H_{35}N_2OPRu$	Carbonylhydrido[6-(di-t-butylphosphinomethylene)-2-(N,N-diethylaminomethyl)-1,6-dihydropyridine]ruthenium(II), min. 98% Milstein Catalyst	369
$C_{20}H_{36}ClN_2OPRu$	Carbonylchlorohydrido[6-(di-t-butylphosphinomethyl)-2-(N,N-diethylaminomethyl) pyridine]ruthenium(II), min. 98% (Milstein Catalyst Precursor)	369
$C_{20}H_{36}NaO_7S$	Sodium dioctylsulfosuccinate (AOT), min. 95%	168
$C_{20}H_{36}O_4P_2$	(2,5-Dimethoxy-1,4-phenylene)bis(di-i-propylphosphine oxide), 99+% Redox shuttle ANL-RS5	297
$C_{20}H_{37}O_3PS$	Tri-i-butyl(methyl)phosphonium tosylate, min. 95%	83
$C_{20}H_{38}BaO_4$	Barium neodecanoate, superconductor grade (25-29% Ba)	12
$C_{20}H_{38}CaO_4$	Calcium neodecanoate, superconductor grade (9-11% Ca)	35
$C_{20}H_{38}CuO_4$	Copper(II) neodecanoate, superconductor grade, ~60% in toluene (6-12% Cu)	57
$C_{20}H_{38}O_4Sr$	Strontium neodecanoate, superconductor grade (16-21% Sr)	423
$C_{20}H_{42}Cu_2N_4$	Bis(N,N'-di-sec-butylacetamidinato)dicopper(I), 99%	54
$C_{20}H_{42}MgN_4$	Bis(N,N'-di-sec-butylacetamidinato)magnesium, 99%	120
$C_{20}H_{42}N_4Fe$	Bis(N,N'-di-t-butylacetamidinato)iron (II), min. 98%	95
	Bis(N,N'-di-t-butylacetamidinato)iron(II), min. 98%, 26-0145, contained in 50 ml Swagelok® (96-1070) cylinder for CVD/ALD	95
$C_{20}H_{42}N_4Ni$	Bis(N,N'-di-t-butylacetamidinato)nickel(II), (99.999%-Ni) PURATREM	172
$C_{20}H_{45}NP_2$	Bis[2-(di-t-butylphosphino)ethyl]amine, min. 97% (10wt% in hexanes)	257
$C_{20}H_{45}O_5Ta$	Tantalum(V) n-butoxide (99.99+%-Ta) PURATREM	429
$C_{20}H_{46}B_2F_8P_2$	1,4-Bis(di-t-butylphosphonium)butane bis(tetrafluoroborate), min. 97%	258
$C_{20}H_{48}Cl_2N_2P_2Ru$	Dichlorobis[2-(di-t-butylphosphino)ethylamine]ruthenium(II), min. 97%	382
$C_{21}H_{12}F_9P$	Tris(p-trifluoromethylphenyl)phosphine, min. 97%	332
$C_{21}H_{13}F_6O_2P$	Bis(4-trifluoromethylphenyl)(4-carboxyphenyl)phosphine, min. 97% p-Miranphos	280
	Bis(3-trifluoromethylphenyl)(3-carboxyphenyl)phosphine, min. 97% m-Miranphos	280
$C_{21}H_{14}F_3O_4P$	Bis(4-carboxyphenyl)(4-trifluoromethylphenyl)phosphine, min. 97% p-Miran2phos	256
	Bis(3-carboxyphenyl)(3-trifluoromethylphenyl)phosphine, min. 97% m-Miran2phos	256
$C_{21}H_{16}BN_6Tl$	Thallium hydrotris(indazol-2-yl)borate, min. 98%	432
$C_{21}H_{19}OP$	2-(Di-p-tolylphosphino)benzaldehyde, min. 97%	311
$C_{21}H_{20}BrP$	Allyltriphenylphosphonium bromide, 99%	250
$C_{21}H_{20}NP$	(1R,2R)-2-(Diphenylphosphino)-2,3-dihydro-1H-inden-1-amine, min. 97% (10wt% in THF)	303
	(1S,2S)-2-(Diphenylphosphino)-2,3-dihydro-1H-inden-1-amine, min. 97% (10wt% in THF)	304
$C_{21}H_{21}O_3P$	Tris(o-methoxyphenyl)phosphine, min. 98%	332
	Tris(m-methoxyphenyl)phosphine, 97+%	332
	Tris(p-methoxyphenyl)phosphine, 98%	332
$C_{21}H_{21}P$	Tri-o-tolylphosphine, 99%	333
	Tri-m-tolylphosphine, 98%	332
	Tri-p-tolylphosphine, 98%	332
	Tribenzylphosphine, 98%	325
$C_{21}H_{22}NP$	(1R,2R)-2-Amino-1-phenylpropyldiphenylphosphine, min. 97%	250
	(1S,2S)-2-Amino-1-phenylpropyldiphenylphosphine, min. 97%	250
$C_{21}H_{22}N_2O_2$	(-)-2,2-Bis[(4S)-4-phenyl-2-oxazolin-2-yl] propane, 98%	187
$C_{21}H_{22}N_2O_2S$	(1R,2R)-(-)-N-(4-toluenesulfonyl)-1,2-diphenylethylenediamine, 98% (R,R)-TsDPEN	210
	(1S,2S)-(+)-N-(4-toluenesulfonyl)-1,2-diphenylethylenediamine, 98% (S,S)-TsDPEN	210
$C_{21}H_{23}BF_4NP$	(1R,2R)-1-(Diphenylphosphino)-1-phenylpropan-2-ammonium tetrafluoroborate, min. 97%	308
$C_{21}H_{23}ClIrN$	Chloro(pentamethylcyclopentadienyl)[(2-pyridinyl-kN)phenyl-kC]iridium(III), 99%	88
$C_{21}H_{23}O_2P$	(11aR)-(+)-10,11,12,13-Tetrahydro-5-(1,1-dimethylethyl)diindeno[7,1-de,1',7'-fg)[1.3.2] dioxaphosphocin, 97% (R)-FuP-tBu	322
	(11aS)-(-)-10,11,12,13-Tetrahydro-5-(1,1-dimethylethyl)diindeno[7,1-de,1',7'-fg)[1.3.2] dioxaphosphocin, 97% (S)-FuP-tBu	322
$C_{21}H_{24}AuClN_2$	Chloro[1,3-bis(2,4,6-trimethylphenyl)2H-imidazol-2-ylidene]gold(I), 98%	73
$C_{21}H_{24}ClN_2O_3Re$	Chlorotricarbonyl(4,4'-di-t-butyl-2,2'-bipyridine)rhenium(I), 99%	347
$C_{21}H_{24}N_2$	1,3-Bis(2,4,6-trimethylphenyl)imidazol-2-ylidene, min. 98%	189
$C_{21}H_{25}ClN_2$	1,3-Bis(2,4,6-trimethylphenyl)imidazolium chloride, min. 97%	189
$C_{21}H_{26}AuClN_2$	Chloro[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene]gold(I), 98%	73
$C_{21}H_{26}N_2$	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene, min. 98%	189
	N-{3-[(2,6-Dimethylphenyl)amino]-1-methyl-2-buten-1-ylidene}-2,6-dimethylbenzenamine, 98%	197
$C_{21}H_{26}O_8S_2$	(4S,5S)-(+)-O-Isopropylidene-2,3-dihydroxy-1,4-bis (p-tosyl)butane	39
	(4R,5R)-(-)-O-Isopropylidene-2,3-dihydroxy-1,4-bis (p-tosyl)butane	39
$C_{21}H_{27}BF_4N_2$	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazolium tetrafluoroborate, min. 95% SIMes-HBF_4	189
$C_{21}H_{27}ClN_2$	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazolium chloride, min. 97%	189
$C_{21}H_{29}P$	2-Di-t-butylphosphino-2'-methyl)-1,1'-biphenyl, 99% t-BuMePhos	289
$C_{21}H_{31}O_3PSi$	Diphenyl[3-(triethoxysilyl)propyl]phosphine, 98%	309
$C_{21}H_{33}Nb$	Trihydridobis(pentamethylcyclopentadienyl) niobium(V)	178
$C_{21}H_{34}BF_4O_3P$	[2,4,6-Trimethoxyphenyl]dicyclohexylphosphonium tetrafluoroborate, 98% LB-PhosHBF_4	328
$C_{21}H_{35}F_6N_3P_2Ru$	Acetonitrile(cyclopentadienyl)[2-(di-i-propylphosphino)-4-(t-butyl)-1-methyl-1H-imidazole] ruthenium(II) hexafluorophosphate, min. 98% [Alkene Zipper Catalyst]	363
$C_{21}H_{35}O_2Rh$	Acetylacetonatobis(cyclooctene)rhodium(I), min. 97%	348
$C_{21}H_{39}N_6O_4P$	1-Methyl-3-propylimidazolium phosphate, 99%	83
$C_{21}H_{45}LaN_6$	Tris(N,N'-di-i-propylformamidinato) lanthanum(III), (99.999+%-La) PURATREM La-FMD	113
$C_{21}H_{45}N_6Y$	Tris(N,N'-di-i-propylformamidinato)yttrium(III), 97%	448
$C_{21}H_{46}ClNOP_2Ru$	Carbonylchlorohydrido[bis(2-di-t-butylphosphinoethyl)amine]ruthenium(II), min. 97%	368

Formula	Description	Page
$C_{21}H_{46}P_2$	1,5-Bis(di-t-butylphosphino)pentane, min. 97%	257
$C_{22}H_{10}F_{12}NaO_3PS$	Bis(3,5-di-trifluoromethylphenyl)(3-sulfonatophenyl)phosphine, sodium salt, min. 97% DAN2PHOS	276
$C_{22}H_{12}F_6O_6S_2$	(R)-(-)-1,1'-Bi-2-naphthol bis(trifluoromethanesulfonate), 98%	214
	(S)-(+)-1,1'-Bi-2-naphthol bis(trifluoromethanesulfonate), 98%	215
$C_{22}H_{18}NO_2P$	(R)-(-)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, min. 97% (R)-MONOPHOS	302
	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, min. 97% (S)-MONOPHOS	302
$C_{22}H_{20}N_2$	meso-1,2-Bis(naphthyl)ethylenediamine, min. 98%	187
$C_{22}H_{20}N_4P_2$	1,2-Bis(di-2-pyridylphosphino)ethane, min. 98%	274
$C_{22}H_{22}Cl_2N_2O_4Ru$	Chloro(4,4'-dicarboxy-2,2'-bipyridine)(p-cymene)ruthenium(II) chloride, min. 98%	377
$C_{22}H_{22}NP$	(R)-1-Amino-8-(diphenylphosphino)-1,2,3,4-tetrahydronaphthalene, min. 97%	250
	(S)-1-Amino-8-(diphenylphosphino)-1,2,3,4-tetrahydronaphthalene, min. 97%	250
	9-[2-(Diethylphosphino)phenyl]-9H-carbazole, min. 97% Et PhenCar-Phos	296
$C_{22}H_{23}BF_4NP$	(R)-8-(Diphenylphosphino)-1,2,3,4-tetrahydronaphthalenamine tetrafluoroborate, min. 97%	309
$C_{22}H_{23}BO_5$	7-{[(4,4,5,5-Tetramethyl-1,3,2-dioxaborolan-2-yl)benzyl]oxy}-2H-1-benzopyran-2-one CBBE	29
$C_{22}H_{24}F_6N_2O_4S_2Zn$	Bis[4,4,4-trifluoro-1-(2-thienyl-1,3-butanedionato]zinc TMEDA adduct, 99%	451
$C_{22}H_{26}NO_2P$	(S)-(+)-(8,9,10,11,12,13,14,15-Octahydro-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)dimethylamine, 99%	317
$C_{22}H_{26}NO_2PS$	4-Butyl-N-(diphenylphosphino)benzenesulfonamide, min. 97%	282
$C_{22}H_{26}N_2O_3$	1,3-Bis(2,4,6-trimethylphenyl)imidazolium bicarbonate, min. 97% IMesH.HCO_3	189
$C_{22}H_{28}FeN_2$	(R)-(+)-4-Pyrrolidinopyrindinyl(pentamethylcyclopentadienyl) iron, min. 98% (R)-PPY*	110
	(S)-(-)-4-Pyrrolidinopyrindinyl(pentamethylcyclopentadienyl)iron, min. 98% (S)-PPY*	110
$C_{22}H_{28}NP$	N-Phenyl-2-(di-t-butylphosphino)indol, min. 98% [cataCXium® PIntB]	318
$C_{22}H_{29}BF_4N_2$	1-(2,4,6-Trimethylphenyl)-3-(adamantyl) imidazolium tetrafluoroborate, min. 97%	210
$C_{22}H_{29}ClN_2$	1-(2,4,6-Trimethylphenyl)-3-(adamantyl) imidazolium chloride, min. 97%	210
$C_{22}H_{29}O_2PPd$	Acetato(2'-di-t-butylphosphino-1,1'-biphenyl-2-yl)palladium(II), min. 98%	225
$C_{22}H_{29}P$	(S)-(+)-Neomenthyldiphenylphosphine, 98% (S)-NMDPP	316
$C_{22}H_{30}F_6AuNPSb$	2-(Di-t-butylphosphino))-1,1'-biphenyl(acetonitrile)gold(I) hexafluoroantimonate, 99%	74
$C_{22}H_{30}NP$	N-Phenyl-2-(dicyclohexylphosphino)pyrrole, 90% [cataCXium® PCy]	318
$C_{22}H_{30}N_3OBF_4$	(5aS,6R,9S,9aR)-5a,6,7,8,9,9a-Hexahydro-6,11,11-trimethyl-2-(2,4,6-trimethylphenyl)-6,9-methano-4H-[1,2,4]triazolo[3,4-c][1,4] benzoxazinium tetrafluoroborate	201
$C_{22}H_{31}BF_4N_2$	1-(2,4,6-Trimethylphenyl)-3-[(1R,2R,3R,5S)-(-)-isopinocampheyl]imidazolium tetrafluoroborate, min. 95%	211
$C_{22}H_{31}ClN_2$	1-(2,4,6-Trimethylphenyl)-3-[(1R,2R,3R,5S)-(-)-isopinocampheyl]imidazolium chloride, min. 95%	211
$C_{22}H_{32}FeP_2$	1,1'-Bis((2R,5R)-2,5-dimethylphospholano) ferrocene, min. 97%	97
	1,1'-Bis((2S,5S)-2,5-dimethylphospholano) ferrocene, min. 97%	97
$C_{22}H_{32}NP$	2-Di-t-butylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% tBuDavePhos	289
$C_{22}H_{33}O_4PPd$	Di(acetato)dicyclohexylphenylphosphinepalladium (II) (~5% Pd) polymer-bound FibreCat™	235
$C_{22}H_{36}Cl_2FeP_2Pd$	Dichloro[1,1'-bis(di-i-propylphosphino) ferrocene]palladium(II), 99%	238
$C_{22}H_{36}Cl_2Ru_2S_2$	Dichlorobis(μ-methanethioato)bis(pentamethylcyclopentadienyl)diruthenium(III), 99% (minimum 90% syn isomer)	391
$C_{22}H_{36}FeP_2$	1,1'-Bis(di-i-propylphosphino)ferrocene, min. 98% DiPPF	98
$C_{22}H_{36}I_2O_2$	1,2-Diiodo-4,5-di-n-octyloxybenzene	218
$C_{22}H_{36}OP_2$	[1-(2R,5R)-2,5-Diethylphospholanyl]-[2-(2R,5R)-2,5-diethylphospholanyl-1-oxide]benzene, min. 97%	296
	[1-(2S,5S)-2,5-Diethylphospholanyl]-[2-(2S,5S)-2,5-diethylphospholanyl-1-oxide]benzene, min. 97%	296
$C_{22}H_{36}P_2$	(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano) benzene, 98+% (R,R)-Et-DUPHOS	262
	(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano) benzene, 98+% (S,S)-Et-DUPHOS	262
$C_{22}H_{36}Zr$	Bis(pentamethylcyclopentadienyl)dimethylzirconium(IV), 99%	455
$C_{22}H_{38}BaO_4$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) barium hydrate [Ba(TMHD)$_2$]	13
	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) barium tetraglyme adduct (99.99%-Ba, Sr-0.5%) PURATREM	13
	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) barium triglyme adduct(99.99%-Ba, Sr-0.5%) PURATREM	13
$C_{22}H_{38}CaO_4$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) calcium, min. 97% [Ca(TMHD)$_2$]	34
$C_{22}H_{38}Cl_2O_4Ti$	Dichlorobis(2,2,6,6-tetramethyl-3,5-heptanedionato)titanium(IV), 99%	439
$C_{22}H_{38}CuO_4$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) copper(II), 99% [Cu(TMHD)$_2$]	55
$C_{22}H_{38}MgO_4$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) magnesium, anhydrous, min. 98% [Mg(TMHD)$_2$]	121
	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) magnesium dihydrate, min. 98% [Mg(TMHD)$_2$]	121
	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) magnesium, anhydrous, min. 98% [Mg(TMHD)2] , 12-0900, contained in high-temp 50 ml Swagelok® cylinder (96-1071) for CVD/ALD	121
$C_{22}H_{38}MoO_6$	Molybdenum(VI) dioxide bis(2,2,6,6-tetramethyl-3,5-heptanedionate), min. 98% [O_2Mo(TMHD)$_2$]	138
$C_{22}H_{38}NiO_4$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) nickel(II), min. 98% (99.9%-Ni) [Ni(TMHD)$_2$]	172
$C_{22}H_{38}O_4Pb$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) lead(II), 99% [Pb(TMHD)$_2$]	114
$C_{22}H_{38}O_4Pd$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) palladium(II), min. 98% [Pd(TMHD)$_2$]	228
$C_{22}H_{38}O_4Sr$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) strontium hydrate [Sr(TMHD)$_2$]	422
	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) strontium tetraglyme adduct (99.99%-Sr) PURATREM	422
	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) strontium triglyme adduct (99.99%-Sr) PURATREM	422
$C_{22}H_{38}O_4Zn$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) zinc, 99% [Zn(TMHD)$_2$]	450
$C_{22}H_{38}O_5Ti$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato) oxotitanium(IV), min. 95% [OTi(TMHD)$_2$]	439
$C_{22}H_{40}BF_4P_2Rh$	(+)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Me-BPE-Rh	351
	(-)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (S,S)-Me-BPE-Rh	351
$C_{22}H_{40}O_8P_2$	2,5-Di-t-butyl-1,4-phenylene tetraethyl bis(phosphonate), 99+% Redox shuttle ANL-RS6	288

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Formula	Description	Page
$C_{22}H_{42}B_2F_8P_2$	1,2-Bis(dicyclopentylphosphonium)ethane bis(tetrafluoroborate), min. 97%	259
$C_{22}H_{44}BF_4P_2Rh$	(R)-(-)-t-Butylmethyl(di-t-butylphosphinomethyl)phosphino(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97%	
	(R)-TCFP-Rh	355
$C_{22}H_{44}P_2$	1,2-Bis((2R,5R)-2,5-di-i-propylphospholano) ethane, 96%	274
	1,2-Bis((2S,5S)-2,5-di-i-propylphospholano) ethane, min. 97%	274
$C_{22}H_{46}MnN_4$	Bis(N,N'-di-i-propylpentylamidinato)manganese(II), min. 98%	124
$C_{22}H_{52}Cl_2N_2P_2Ru$	Dichlorobis[3-(di-t-butylphosphino)propylamine]ruthenium(II), min. 97%	382
$C_{23}H_{19}N_3O_2$	(+)-2,6-Bis[(4R)-4-phenyl-2-oxazolin-2-yl] pyridine, 98+% (R,R)-Ph-pybox	187
	(-)-2,6-Bis[(4S)-4-phenyl-2-oxazolin-2-yl] pyridine, 98+% (S,S)-Ph-pybox	187
$C_{23}H_{19}O_3P$	(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (R)-ShiP	322
	(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (S)-ShiP	322
$C_{23}H_{22}BNO$	(R)-Tetrahydro-1,3,3-triphenyl-1H,3H-pyrrolo[1,2-c][1,3,2]oxaborole, 99% (R)-Phenyl oxazaborolidine	29
$C_{23}H_{22}NP$	1-Diphenylphosphino-2-(N,N-dimethylamino)-1H-indene, 99% (contains vinylic isomer)	304
$C_{23}H_{23}N_3$	2,6-Bis[1-(2-methylphenylimino)ethyl] pyridine, 98%	186
$C_{23}H_{23}OP$	2-[Bis(3,5-dimethylphenyl)phosphino]benzaldehyde, min. 97%	264
$C_{23}H_{27}Br_2CN_2Si$	(1R,2R)-[1,2-Cyclohexanediamino-N,N'-bis(4-bromobenzyl)allylchlorosilane, min. 98%	406
$C_{23}H_{31}P$	Di-t-butyl(2,2-diphenyl-1-methylvinyl)phosphine, min. 98% vBRIDP	287
$C_{23}H_{32}AuClN_2$	Chloro[1,3-bis(adamantyl)2H-imidazol-2-ylidene]gold(I), 98%	73
$C_{23}H_{32}NOP$	1-(2-Methoxyphenyl)-2-(dicyclohexylphosphino)pyrrole, min. 95% [cataCXium® POMeCy]	315
$C_{23}H_{32}N_2$	1,3-Bis(1-adamantyl)imidazol-2-ylidene, min. 98% ARDUENGO'S CARBENE	180
$C_{23}H_{33}ClN_2$	1,3-Bis(1-adamantyl)imidazolium chloride, min. 97%	180
$C_{23}H_{35}ClN_2$	1,3-Bis(1-adamantyl)-4,5-dihydroimidazolium chloride, min. 97%	180
$C_{23}H_{37}Cl_2N$	2-[2,6-Bis(1-methylethyl)phenyl]-3,3-dimethyl-2-azoniaspiro[4.5]dec-1-ene hydrogen dichloride, min. 97% Cyclohexyl-CAAC	186
$C_{23}H_{40}F_3O_3P_2RhS$	1,2-Bis((2R,5R)-2,5-dimethylphospholano) ethane(cyclooctadiene)rhodium(I) trifluoromethanesulfonate	351
	1,2-Bis((2S,5S)-2,5-dimethylphospholano) ethane(cyclooctadiene)rhodium(I) trifluoromethanesulfonate	351
$C_{23}H_{43}NP_2$	2,6-Bis(di-t-butylphosphinomethyl)pyridine, 99%	257
$C_{23}H_{44}B_2F_8P_2$	1,3-Bis(dicyclopentylphosphonium)propane bis(tetrafluoroborate), min. 97%	259
$C_{24}H_9F_{18}P$	Tris[3,5-bis(trifluoromethyl)phenyl]phosphine, 97%	330
$C_{24}H_{16}N_2$	4,7-Diphenyl-1,10-phenanthroline, 99% (Bathophenanthroline)	198
$C_{24}H_{18}F_{12}N_{12}P_2Ru$	Tris(2,2'-bipyrazine)ruthenium(II) hexafluorophosphate, 95%	401
$C_{24}H_{19}BN_9Tl$	Thallium hydrotris[3-(2-pyridyl)pyrazol-1-yl] borate, min. 98%	432
$C_{24}H_{20}AsCl$	Tetraphenylarsonium chloride monohydrate, 99%	10
$C_{24}H_{20}BF_4NaO_2$	Sodium tetrakis(4-fluorophenyl)borate dihydrate, 97%	421
$C_{24}H_{20}BLi$	Lithium tetraphenylborate tris(1,2-dimethoxyethane)adduct, 98%	118
$C_{24}H_{20}BNa$	Sodium tetraphenylborate, 99.5+% (ACS)	421
	Sodium tetraphenylborate, tech. gr. (min. 95%)	421
$C_{24}H_{20}BrP$	Tetraphenylphosphonium bromide, 99%	325
$C_{24}H_{20}Br_2O_4$	(R)-(+)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthyl, min. 98%	217
	(S)-(-)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthyl, min. 98%	217
	(R)-(+)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthalene, min. 98% (99% ee)	217
	(S)-(-)-6,6'-Dibromo-2,2'-bis(methoxymethoxy)-1,1'-binaphthalene, min. 98% (99% ee)	217
$C_{24}H_{20}Cl_2N_2Pd_2$	Chloro(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dimer, min. 98%	229
$C_{24}H_{20}NO_3P$	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)morpholine, min. 97% (S)-MorfPhos	302
$C_{24}H_{20}Pb$	Tetraphenyllead, min. 97%	115
$C_{24}H_{20}Sn$	Tetraphenyltin, min. 95%	436
$C_{24}H_{21}NP_2$	N,N-Bis(diphenylphosphino)amine, min. 98%	266
$C_{24}H_{22}NO_2P$	(S)-(+)-(2,6-Dimethyl-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl) dimethylamine, min. 98%	298
	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)diethylamine, min. 97%	302
$C_{24}H_{22}NP$	2-[(11bS)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]ethyl]amine, min. 97%	297
$C_{24}H_{22}O_3PRh$	Carbonyl(acetylacetonato)(triphenylphosphine)rhodium(I), 99%	356
$C_{24}H_{22}O_4$	(R)-(+)-2,2'-Bis(methoxymethoxy)-1,1'-binaphthyl, 98%	215
	(S)-(-)-2,2'-Bis(methoxymethoxy)-1,1'-binaphthyl, 98%	215
$C_{24}H_{24}FeNP$	(R)-1-((S)-2-Diphenylphosphino)ferrocenylethylamine, min. 97%	103
	(S)-1-((R)-2-Diphenylphosphino)ferrocenylethylamine, min. 97%	103
$C_{24}H_{24}I_2N_4$	11,12-Bis[3-methylimidazolium]-9,10-dihydro-9,10-ethanoanthracene bis(iodide), min. 95%	186
$C_{24}H_{24}NOP$	(R)-(+)-2-[2-(Diphenylphosphino) phenyl]-4-(1-methylethyl)-4,5-dihydrooxazole, 98% (R)-iPr-PHOX	308
	(S)-(-)-2-[(2-(Diphenylphosphino) phenyl]-4-(1-methylethyl)-4,5-dihydrooxazole, 98% (S)-iPr-PHOX	308
$C_{24}H_{25}Na_2O_6PS_2$	Bis(4,6-dimethyl-3-sulfonatophenyl)(2,4-dimethylphenyl)phosphine, disodium salt hydrate, min. 95% TXPDS	266
$C_{24}H_{26}NP$	9-[2-(Di-i-propylphosphino)phenyl]- 9H-carbazole, min. 97% i-Pr PhenCar-Phos	310
$C_{24}H_{26}N_2O_2$	(1'R,2'R,3aS,3"aS,8aR,8"aR)-(+)-3,3",3a,3"a,8,8",8a,8"a-Octahydrodispiro{2H-indeno[1,2-d]oxazole-2,1'-cyclohexane-2',2"-[2H]indeno[1,2-d]oxazole} WOLF BISOXAZOLIDINE	204
$C_{24}H_{27}ClN_2O_2RuS$	Chloro{(1R,2R)-1,2-diphenyl-1-[(3-(η6-phenyl)propyl)amino]-2-(methylsulfonylamido)} ruthenium(II) RuCl[(R,R)–teth-MsDpen]	378
	Chloro{(1S,2S)-1,2-diphenyl-1-[(3-(η6-phenyl)propyl)amino]-2-(methylsulfonylamido)} ruthenium(II) RuCl[(S,S)–teth-MsDpen]	378
$C_{24}H_{27}N_{22}P$	1-[(2S)-1-(Di-o-tolylphosphinooxy)propan-2-yl]-3-phenylurea, min. 97%	312
$C_{24}H_{24}Na_3O_9PS_3$	Tris(4,6-dimethyl-3-sulfonatophenyl) phosphine trisodium salt hydrate, min. 97% TXPTS	331
$C_{24}H_{27}O_6P$	Tris(2,6-dimethoxyphenyl)phosphine, min. 97%	331
$C_{24}H_{27}P$	Tris(3,5-dimethylphenyl)phosphine, 98%	331
	Tris(2,4-dimethylphenyl)phosphine, 98%	331
$C_{20}H_{20}ClIrN_2$	Chloro(1,5-cyclooctadiene)(1,10-phenanthroline)iridium(I) THF adduct, min. 98%	87

Formula	Description	Page
$C_{24}H_{29}Br_2ClN_2Si$	(1R,2R)-(-)-[N,N'-Bis(4-bromobenzyl)-1,2-cyclohexanediamino][(2E)-2-buten-1-yl] chlorosilane, min. 98%	405
	(1S,2S)-(+)-[N,N'-Bis(4-bromobenzyl)-1,2-cyclohexanediamino][(2E)-2-buten-1-yl]chlorosilane, min. 98%	405
$C_{24}H_{29}ClN_2O_2RuS$	Chloro(mesitylene)[(1R,2R)-(-)-2-amino-1,2-diphenylethyl(methylsulfonylamido)] ruthenium(II) RuCl(mesitylene)[(R,R)-MsDpen]	378
	Chloro(mesitylene)[(1S,2S)-(+)-2-amino-1,2-diphenylethyl(methylsulfonylamido)] ruthenium(II) RuCl(mesitylene)[(S,S)-MsDpen]	378
$C_{24}H_{29}ClN_2Pd$	Allylchloro[1,3-bis(2,4,6-trimethylphenyl) imidazol-2-ylidene]palladium(II), 98%	226
$C_{24}H_{30}Cr_2O_4$	Pentamethylcyclopentadienylchromium dicarbonyl dimer, 99%	46
$C_{24}H_{30}Fe_2O_4$	Pentamethylcyclopentadienyliron dicarbonyl dimer, min. 98%	110
$C_{24}H_{30}Mo_2O_4$	Pentamethylcyclopentadienylmolybdenum dicarbonyl dimer, 99%	138
$C_{24}H_{31}P$	2-(Dicyclohexylphosphino))-1,1'-biphenyl, 98% CyJohnPhos	292
$C_{24}H_{32}F_{12}FeN_6Sb_2$	(2S,2'S)-(-)-[N,N'-Bis(2-pyridylmethyl]-2,2'-bipyrrolidinebis(acetonitrile)iron(II) hexafluoroantimonate Fe(S,S-PDP) White-Chen Catalyst	99
	(2R,2'R)-(-)-[N,N'-Bis(2-pyridylmethyl]-2,2'-bipyrrolidinebis(acetonitrile)iron(II) hexafluoroantimonate Fe(R,R-PDP) White-Chen Catalyst	99
$C_{24}H_{32}O_8$	Dibenzo-24-crown-8, 98%	216
$C_{24}H_{32}P_2$	(1R,1'R,2S,2'S)-(+)-2,2'-Di-t-butyl-2,3,2',3'-tetrahydro-1,1'-bi-1H-isophosphindole, min. 98% (R,R,S,S)-DUANPHOS	291
$C_{24}H_{33}Ce$	Tris(i-propylcyclopentadienyl)cerium(III) (99.9%-Ce) (REO)	42
$C_{24}H_{33}ClN_2$	1-(2,6-Di-i-propylphenyl)-3-(2,4,6-trimethylphenyl)-4,5-dihydroimidazolium chloride, min. 97%	199
$C_{24}H_{33}Dy$	Tris(i-propylcyclopentadienyl)dysprosium(III) (99.9%-Dy) (REO)	60
$C_{24}H_{33}Er$	Tris(i-propylcyclopentadienyl)erbium(III) (99.9%-Er) (REO)	62
$C_{24}H_{33}La$	Tris(i-propylcyclopentadienyl)lanthanum (99.9%-La) (REO)	113
$C_{24}H_{33}Nd$	Tris(i-propylcyclopentadienyl)neodymium (99.9%-Nd) (REO)	170
$C_{24}H_{33}P$	Di-t-butyl(2,2-diphenyl-1-methyl-1-cyclopropyl)phosphine cBRIDP	287
$C_{24}H_{33}Pr$	Tris(i-propylcyclopentadienyl)praseodymium (99.9%-Pr) (REO)	346
$C_{24}H_{33}Tb$	Tris(i-propylcyclopentadienyl)terbium (99.9%-Tb) (REO)	431
$C_{24}H_{33}Y$	Tris(n-propylcyclopentadienyl)yttrium (99.9%-Y) (REO)	449
$C_{24}H_{34}O_2$	racemic-5,5',6,6'-Tetramethyl-3,3'-di- t-butyl-1,1'-biphenyl-2,2'-diol, 99% rac-BIPHEN H_2	221
	(R)-(+)-5,5',6,6'-Tetramethyl-3,3'-di-t-butyl-1,1'- biphenyl-2,2'-diol, 99% (R)-BIPHEN H_2	221
	(S)-(-)-5,5',6,6'-Tetramethyl-3,3'-di-t-butyl-1,1'- biphenyl-2,2'-diol, 99% (S)-BIPHEN H_2	221
$C_{24}H_{35}N_2P$	1-(2,4,6-Trimethylphenyl)-2-(dicyclohexylphosphino)imidazole, min. 95% [cataCXium® PICy]	328
$C_{24}H_{36}F_6O_3P_2RhSb$	(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]maleic anhydride(1,5-cyclooctadiene)rhodium(I) hexafluoroantimonate, min. 97% [catASium® M(R)RhSbF$_6$]	352
$C_{24}H_{36}FeP_2$	(-)-1,1'-Bis((2S,4S)-2,4-diethylphosphonato) ferrocene, min. 95% (S,S)-Et-FerroTANE®	95
$C_{24}H_{37}BF_4N_2$	1-(2,4,6-Trimethylphenyl)-3-(cyclododecyl) imidazolium tetrafluoroborate, min. 97%	210
$C_{24}H_{37}ClNPPd$	Chloro(tri-t-butylphosphine)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98%	235
$C_{24}H_{37}N_2Cl$	1-(2,4,6-Trimethylphenyl)-3-(cyclododecyl) imidazolium chloride, min. 97%	210
$C_{24}H_{38}Ba$	Bis(n-propyltetramethylcyclopentadienyl) barium, min. 98%	12
$C_{24}H_{39}P$	Butyldi-1-adamantylphosphine, min. 95% [cataCXium® A]	282
$C_{24}H_{40}BF_4O_2P$	[2,6-Di-i-propoxyphenyl]dicyclohexylphosphonium tetrafluoroborate, 98% GorlosPhosHBF$_4$	309
$C_{24}H_{40}IP$	n-Butyl-di-(1-adamantyl)phosphonium iodide, min. 95% [cataCXium® AHI]	282
$C_{24}H_{44}P_2$	1,3-Bis(di-t-butylphosphinomethyl)benzene, 99%	257
	α, α'-Bis(di-t-butylphosphino)-o-xylene, min. 97%	258
$C_{24}H_{44}Sn$	Tetracyclohexyltin, 99%	435
$C_{24}H_{45}BiO_6$	Bismuth(III) 2-ethylhexanoate, 72% in mineral spirits (~28% Bi)	23
	Bismuth(III) 2-ethylhexanoate, 70-75% in xylenes (~24% Bi) (99.99+%-Bi) PURATREM	23
	Bismuth(III) 2-ethylhexanoate, ~30% wt/wt Bi in 2-ethylhexanoic acid (99.98%-Bi)	23
$C_{24}H_{45}CeO_6$	Cerium(III) 2-ethylhexanoate, 49% in 2-ethylhexanoic acid (12% Ce)	41
$C_{24}H_{45}CrO_6$	Chromium(III) 2-ethylhexanoate, 70% in mineral spirits (8-10% Cr)	45
$C_{24}H_{45}EuO_6$	Europium(III) 2-ethylhexanoate (99.9%-Eu) (REO)	62
$C_{24}H_{45}FeO_6$	Iron 2-ethylhexanoate, 6% (Fe) in mineral spirits (99.998+%-Fe) PURATREM	107
$C_{24}H_{45}GdO_6$	Gadolinium(III) 2-ethylhexanoate (~25% in toluene)	67
$C_{24}H_{45}N_6O_4P$	1-Butyl-3-methylimidazolium phosphate, 99% [BMIM]$_3$ [PO$_4$]	81
$C_{24}H_{45}NdO_6$	Neodymium(III) 2-ethylhexanoate (10-15% Nd)	169
$C_{24}H_{45}O_6Y$	Yttrium(III) 2-ethylhexanoate (15-17% Y), superconductor grade (99.9%-Y) (REO)	449
$C_{24}H_{46}B_2F_8P_2$	1,4-Bis(dicyclopentylphosphonium)butane bis(tetrafluoroborate), min. 97%	259
$C_{24}H_{51}LuN_6$	Tris(N,N'-di-i-propylacetamidinato)lutetium(III), 99%	120
$C_{24}H_{51}N$	Didodecylamine, min. 97%	167
$C_{24}H_{51}N_6Yb$	Tris(N,N'-di-i-propylacetamidinato)ytterbium(III), 99%	447
$C_{24}H_{51}OP$	Trioctylphosphine oxide, min. 90% TOPO	329
	Trioctylphosphine oxide, 99% TOPO	329
$C_{24}H_{51}P$	Tri-n-octylphosphine, min. 97% TOP	329
$C_{24}H_{54}Br_2P_2Pd_2$	Di-μ-bromobis(tri-t-butylphosphino)dipalladium(I)	236
$C_{24}H_{54}I_2P_2Pd_2$	Di-μ-iodobis(tri-t-butylphosphino)dipalladium(I), 98%	239
$C_{24}H_{54}OSn_2$	Bis(tri-n-butyltin)oxide, 96%	434
$C_{24}H_{54}O_4SSn_2$	Bis(tri-n-butyltin)sulfate, min. 97%	434
$C_{24}H_{54}P_2Pd$	Bis(tri-t-butylphosphine)palladium(0), 98%	228
$C_{24}H_{54}P_2Pt$	Bis(tri-t-butylphosphine)platinum (0), 98%	337
$C_{24}H_{54}SSn_2$	Bis(tri-n-butyltin)sulfide, 97%	434
$C_{24}H_{54}Sn_2$	Hexa-n-butylditin, min. 95%	435
$C_{24}H_{56}Al_2MgO_8$	Magnesium aluminum i-propoxide (99.99%-Mg) PURATREM	122
$C_{24}H_{72}Co_2N_4Si_8$	Bis{[μ-[di(trimethylsilyl)amide]}bis{[di(trimethylsilyl)amide]}dicobalt(II), 98%	47
$C_{25}H_{19}N_3O_2$	(-)-2,6-Bis[(3aS,8aR)-3a,8a-dihydro-8H-indeno[1,2-d]oxazolin-2-yl]pyridine, min. 97% Indenyl-PYBOX	182
$C_{25}H_{22}Au_2Cl_2P_2$	[μ-Bis(diphenylphosphino) methane]dichlorodigold(I), 99%	72
$C_{25}H_{22}ClP$	Benzyltriphenylphosphonium chloride, 99%	252
$C_{25}H_{22}NO_2P$	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)piperidine, min. 97% (S)-PipPhos	302
$C_{25}H_{22}P_2$	Bis(diphenylphosphino)methane, 97%	269
$C_{25}H_{23}N_3O_2$	2,6-Bis[(4R)-benzyl-2-oxazolin-2-yl]pyridine, min. 98%	180
	2,6-Bis[(4S)-benzyl-2-oxazolin-2-yl]pyridine, min. 98%	180
$C_{25}H_{23}O_3P$	4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydrobenzo[d][1,3]oxaphosphole, 98+% rac-AntPhos	250

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Formula	Description	Page
	(R)-4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydro-benzo[d][1,3]oxaphosphole,98+% (>99% ee) [(R)-AntPhos]	251
	(S)-4-(Anthracen-9-yl)-3-(t-butyl-2,3-dihydro-benzo[d][1,3]oxaphosphole,99+% (>99% ee) [(S)-AntPhos]	251
$C_{25}H_{23}P$	(11aR)-(+)-5,6,10,11,12,13-Hexahydro-5-phenyl-4H-diindeno[7,1-cd:1',7'-ef]phosphocin, min. 97% (R)-SITCP	313
	(11aS)-(+)-5,6,10,11,12,13-Hexahydro-5-phenyl-4H-diindeno[7,1-cd:1',7'-ef]phosphocin, min. 97% (S)-SITCP	313
$C_{25}H_{28}ClIrN_2O_3$	Chloro(pentamethylcyclopentadienyl){5-nitro-2-{1-[(4-methoxyphenyl)imino-kN]ethyl} phenyl-kC}iridium(III), 99% Iridicycle-NO2	88
$C_{25}H_{29}ClN_2O_3RuS$	Chloro{N-[(1R,2R)-2-[(S)-[2-[[1,2,3,4,5,6-η)-4-methylphenyl]methoxy]ethyl]amino]-1,2-diphenylethylmethanesulfonamidato} ruthenium(II) Ru-(R,R)-Ms-DENEB	379
	Chloro{N-[(1S,2S)-2-[(R)-[2-[[1,2,3,4,5,6-η)-4-methylphenyl]methoxy]ethyl]amino]-1,2-diphenylethylmethanesulfonamidato} ruthenium(II) Ru-(S,S)-Ms-DENEB	379
$C_{25}H_{31}ClN_2O_2RuS$	Chloro(p-cymene)[(1R,2R)-(-)-2-amino-1,2-diphenylethyl(methylsulfonylamido)] ruthenium(II) RuCl(p-cymene) [(R,R)-MsDpen]	376
	Chloro(p-cymene)[(1S,2S)-(-)-2-amino-1,2-diphenylethyl((methylsulfonylamido)] ruthenium(II) RuCl(p-cymene) [(S,S)-MsDpen]	376
$C_{25}H_{32}ClPRh$	Chloronorbornadienetriphenylphosphinerhodium(I) (~5% Rh) polymer-bound FibreCat™	357
$C_{25}H_{33}P$	2-Dicyclohexylphosphino-2'-methyl-)-1,1'-biphenyl, min. 98% MePhos	294
$C_{25}H_{35}P$	Dicyclohexyl(2,2-diphenyl-1-methylvinyl) phosphine Cy-vBRIDP	291
$C_{25}H_{36}F_3O_6P_2RhS$	(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]maleic anhydride(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, min. 97% [catASium® M(R)RhOTf]	352
$C_{25}H_{37}NPRh$	3-Di-i-propylphosphoranylidene-2-(N,N-dimethylamino)-1H-indene(1,5-cyclooctadiene)rhodium(I), min. 95%	358
$C_{25}H_{38}BF_4N$	2-[2,6-Bis(1-methylethyl)phenyl]-3,3,6,8-tetramethyl-2-azoniaspiro[4.5]dec -1,7-diene tetrafluoroborate Trivertal-CAAC	186
$C_{25}H_{38}F_6IrNP_2$	3-Di-i-propylphosphino-2-(N,N-dimethylamino)-1H-indene(1,5-cyclooctadiene)iridium(I) hexafluorophosphate, min. 98%	91
$C_{25}H_{38}F_6NP_2Rh$	3-Di-i-propylphosphino-2-(N,N-dimethylamino)-1H-indene(1,5-cyclooctadiene) rhodium(I) hexafluorophosphate, min. 98%	358
$C_{25}H_{39}BF_4NO_2P_2Rh$	(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]-1-methyl-1H-pyrrole-2,5-dione(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% [catASium® MN(R)Rh]	352
	(+)-2,3-Bis[(2S,5S)-2,5-dimethylphospholanyl]-1-methyl-1H-pyrrole-2,5-dione(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% [catASium® MN(S)Rh]	353
$C_{25}H_{40}NO_3PPdS$	Methanesulfonato[di-t-butyl(n-butyl) phosphine](2'-amino-1,1'-biphenyl-2-yl) palladium(II) dichloromethane adduct, min. 98% [P(t-Bu)$_2$(n-Bu) Palladacycle Gen. 3]	241
	Methanesulfonato(tri-t-butylphosphino) (2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [P(t-Bu)3 Palladacycle Gen. 3]	246
$C_{25}H_{46}P_2$	Bis(dicyclohexylphosphino)methane, min. 97%	258
$C_{26}H_4F_{20}P_2$	1,2-Bis(dipentafluorophenylphosphino) ethane, 99%	266
$C_{26}H_{20}P_2$	Bis(diphenylphosphino)acetylene, 97%	266
$C_{26}H_{22}P_2$	cis-1,2-Bis(diphenylphosphino)ethylene, min. 98%	268
$C_{26}H_{24}Cl_2CoP_2$	1,2-Bis(diphenylphosphino)ethanedichlorocobalt(II), min. 97%	47
$C_{26}H_{24}Cl_2FeP_2$	Dichloro[1,2-bis(diphenylphosphino)ethane] iron(II), 98%	100
$C_{26}H_{24}Cl_2NiP_2$	1,2-Bis(diphenylphosphino)ethane nickel(II) chloride, 99%	172
$C_{26}H_{24}Cl_2P_2Pd$	Dichloro(1,2-bis(diphenylphosphino)ethane) palladium(II), 98%	237
$C_{26}H_{24}CoP_2$	Cobalt-dppe heterogeneous water oxidation catalyst (~17% Co)	50
$C_{26}H_{24}NP$	2-Diphenylphosphino-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% PhDavePhos	304
	(1R,2R)-2-(Diphenylphosphino)-1,2-diphenylethylamine, min. 97%	304
	(1S,2S)-2-(Diphenylphosphino)-1,2-diphenylethylamine, min. 97%	304
$C_{26}H_{24}OP_2$	1,2-Bis(diphenylphosphino)ethane monooxide, min. 97%	268
$C_{26}H_{24}P_2$	1,2-Bis(diphenylphosphino)ethane, 99% DIPHOS	268
$C_{26}H_{25}BF_4NP$	(1R,2R)-2-(Diphenylphosphino)-1,2-diphenylethylammonium tetrafluoroborate, min. 97%	304
$C_{26}H_{26}N_2O_6Pd_2S_2$	(2'-Amino-1,1'-biphenyl-2-yl)methanesulfonatopalladium(II) dimer, min. 98%	226
$C_{26}H_{28}ClIrN_2O$	Chloro(pentamethylcyclopentadienyl){5-cyano-2-{1-[(4-methoxyphenyl)imino-kN]ethyl} phenyl-kC}iridium(III), 99% Iridicycle-CN	87
$C_{26}H_{30}Cl_2Pd_2$	Chloro(1-t-butylindenyl)palladium(II) dimer, 98%	230
$C_{26}H_{31}ClIrNO_2$	Chloro(pentamethylcyclopentadienyl) {5-methoxy-2-{1-[(4-methoxyphenyl) imino-kN]ethyl}phenyl-kC}iridium(III), 99% Iridicycle-MeO	88
$C_{26}H_{31}IrO_2$	Tris(norbornadiene)(acetylacetonato) iridium(III), 98% (99.9%-Ir)	93
$C_{26}H_{32}NP$	N-Phenyl-2-(dicyclohexylphosphino)indol, min. 95% [cataCXium® PInCy]	318
	1-(Dicyclohexylphosphino)-2-phenyl-1H-indole, min. 98% NPCy Phendole-Phos	295
$C_{26}H_{33}N_2P$	2-(t-Butylphenylphosphino)-2',6'-dimethylamino-1,1'-biphenyl, 98% (t-Bu)PhCPhos	282
$C_{26}H_{34}NaO_5PS$	2'-Dicyclohexylphosphino-2,6-dimethoxy-3-sulfonato-1,1'-biphenyl hydrate sodium salt (water soluble SPhos), min. 98%	292
$C_{26}H_{35}AuClO_2P$	Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)gold(I), 98%	74
$C_{26}H_{35}O_2P$	2-Dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl, min. 98% SPhos	292
$C_{26}H_{36}AuClNP$	Chloro[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl]gold(I), 98%	74
$C_{26}H_{36}FeOP_2$	(R,S(p), R(SPO)-1-Phenylphosphinoyl)-2-[1-(di-t-butylphosphino)ethyl] ferrocene, min. 97% JoSPOphos	110
	(S, R(p), S(SPO)-1-Phenylphosphinoyl)-2-[1-(t-butylphosphino)ethyl]ferrocene, min. 97% JoSPOphos	110
$C_{26}H_{36}NOP$	[2-Dicyclohexylphosphino-3-methoxy-N-methyl-N-phenylbenzenamine, 98% Zheda-Phos	294
$C_{26}H_{36}NP$	2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl, 98% DavePhos	293
	2-Dicyclohexylphosphino-4'-(N,N-dimethylamino)-1,1'-biphenyl, 98%	293
$C_{26}H_{40}BF_4P_2Rh$	(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Me-DUPHOS-Rh	350
	(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (S,S)-Me-DUPHOS-Rh	350
$C_{26}H_{40}FeP_2$	1,1'-Bis[(2R,5R)-2,5-diethylphospholano] ferrocene, min. 97%	95
	1,1'-Bis[(2S,5S)-2,5-diethylphospholano] ferrocene, min. 97%	95
$C_{26}H_{40}O_2P_2$	(R)-(+)-2,2'-Bis(di-i-propylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	273
	(S)-(-)-2,2'-Bis(di-i-propylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	273
$C_{26}H_{41}NP_2$	Bis[2-(di-i-propylphosphino)-4-methylphenyl] amine, min. 98%	273

Formula	Description	Page
$C_{26}H_{42}BF_4N_2O_2P_2Rh$	(-)-4,5-Bis[(2R,5R)-2,5-dimethylphospholanyl](1,2-dimethyl-1,2-dihydropyridazine-3,6-dione)(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 95% [catASium® MNN(R)Rh]	352
$C_{26}H_{42}NO_3PPdS$	Methanesulfonato(di-t-butylneopentylphosphine)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DTBNpP Palladacycle Gen. 3]	242
	Methanesulfonato(tri-t-butylphosphino)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [P(t-Bu)$_3$ Palladacycle Gen. 4]	246
$C_{26}H_{44}Cl_2FeP_2Pd$	Dichloro[1,1'-bis(di-t-butylphosphino) ferrocene]palladium(II), 99%	236
$C_{26}H_{44}FeP_2$	1,1'-Bis(di-t-butylphosphino)ferrocene, min. 98% DTBPF	95
$C_{26}H_{44}P_2$	(+)-1,2-Bis((2R,5R)-2,5-di-i-propylphospholano)benzene, 98+% (R,R)-i-Pr-DUPHOS	273
	(-)-1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)benzene, 98+% (S,S)-i-Pr-DUPHOS	273
$C_{26}H_{48}BF_4P_2Rh$	1,2-Bis((2R,5R)-2,5-diethylphospholano)ethane(cyclooctadiene)rhodium(I) tetrafluoroborate	350
	1,2-Bis((2S,5S)-2,5-diethylphospholano)ethane(cyclooctadiene)rhodium(I) tetrafluoroborate	350
$C_{26}H_{48}N_4O_8$	1,4,8,11-Tetraazacyclotetradecane-N,N',N'',N'''-tetraacetic acid, tetraethyl ester, min. 98%	208
$C_{26}H_{48}P_2$	1,2-Bis(dicyclohexylphosphino)ethane, min. 98%	258
$C_{26}H_{50}B_2F_8P_2$	1,2-Bis(dicyclohexylphosphonium)ethane bis(tetrafluoroborate), min. 97%	259
$C_{27}H_{18}O_6$	1,3,5-Tris(4-carboxyphenyl)benzene, min. 98% BTB	221
$C_{27}H_{26}Cl_2FeP_2$	Dichloro[1,3-bis(diphenylphosphino)propane]iron(II), 98%	100
$C_{27}H_{26}Cl_2NiP_2$	1,3-Bis(diphenylphosphino)propane nickel(II) chloride, 99%	172
$C_{27}H_{26}Cl_2P_2Pd$	Dichloro(1,3-bis(diphenylphosphino)propane)palladium(II), 98%	238
$C_{27}H_{26}N_2O_2$	(4S,4'S)-2,2'-(1-Phenylpropane-2,2-diyl) bis(4-phenyl-4,5-dihydrooxazole) (S)-BnPh-SaBOX	205
$C_{27}H_{26}OP_2$	1,3-Bis(diphenylphosphino)propane monooxide, min. 97%	270
$C_{27}H_{26}P_2$	R-(+)-1,2-Bis(diphenylphosphino)propane, 99% (R)-PROPHOS	270
	1,3-Bis(diphenylphosphino)propane, 98% DPPP	270
$C_{27}H_{28}F_3N_2O_4PS$	N-[(11bS)-Dinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-yl]-1,1,1-trifluoromethanesulfonamide triethylamine adduct, min. 97% METAMORPhos	301
$C_{27}H_{33}O_3P$	Tris(4-methoxy-3,5-dimethylphenyl)phosphine, min. 98%	332
$C_{27}H_{33}O_9P$	Tris(2,4,6-trimethoxyphenyl)phosphine, min. 97%	332
$C_{27}H_{33}P$	Tris(2,4,6-trimethylphenyl)phosphine, 98%	332
$C_{27}H_{34}NOP$	1-(Dicyclohexylphosphino)-2-(2-methoxyphenyl)-1H-indole, min. 98% NPCyo-Andole-Phos	294
$C_{27}H_{34}NP$	2-[2-(Dicyclohexylphosphino)phenyl]-1-methyl-1H-indole, min. 98% CM-Phos	295
$C_{27}H_{35}ClN_2$	1,3-Bis(1-adamantyl)benzimidazolium chloride, min. 97%	180
$C_{27}H_{36}AuClN_2$	1,3-Bis(2,6-di-isopropylphenyl)imidazol-2-ylidenegold(I) chloride, 95%	72
$C_{27}H_{36}ClCuN_2$	Chloro[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]copper(I), 98%	56
$C_{27}H_{36}Cl_2N_2$	1,3-Bis(2,6-di-i-propylphenyl)-2-chloroimidazolium chloride, 98+%	183
	1,3-Bis(2,6-di-i-propylphenyl)-2-chloroimidazolium chloride/cesium fluoride admixture (1.0/6.7 molar ratio or 1/2.2 weight ratio) PhenoFluor®Mix	183
$C_{27}H_{36}N_2$	1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene, min. 98%	184
$C_{27}H_{37}AuN_2O$	1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidenegold(I) hydroxide, min. 97%	72
$C_{27}H_{37}ClN_2$	1,3-Bis(2,6-di-i-propylphenyl) imidazolium chloride, min. 97%	184
$C_{27}H_{37}P$	Benzyldi-1-adamantylphosphine, min. 85% [cataCXium® ABn]	251
$C_{27}H_{38}AuClN_2$	Chloro{1,3-bis[2,6-di-i-propylphenyl]-4,5-dihydroimidazol-2-ylidene}gold(I), 98% SIPrAuCl	73
$C_{27}H_{38}N_2$	1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidine, min. 98%	183
$C_{27}H_{39}BF_4N_2$	1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazolium tetrafluoroborate, min. 95%	183
$C_{27}H_{39}Ce$	Tris(1,2,3,4-tetramethyl-2,4-cyclopentadienyl)cerium(III) (99.9%-Ce) (REO)	42
$C_{27}H_{39}ClFeNPPd$	Chloro(di-2-norbornylphosphino)(2-dimethylaminomethylferrocen-1-yl)palladium(II), min. 97%	233
$C_{27}H_{39}ClN_2$	1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazolium chloride, min. 97%	183
$C_{27}H_{39}Er$	Tris(n-butylcyclopentadienyl)erbium(III) (99.9%-Er) (REO)	61
$C_{27}H_{39}Gd$	Tris(tetramethylcyclopentadienyl) gadolinium(III), min. 98%	67
$C_{27}H_{39}NP_2$	4,5-Bis-(di-i-propylphosphinomethyl) acridine, 98+%	273
$C_{27}H_{39}Nd$	Tris(tetramethylcyclopentadienyl)neodymium (99.9%-Nd) (REO)	170
$C_{27}H_{39}Y$	Tris(butylcyclopentadienyl)yttrium (99.9%-Y) (REO)	448
$C_{27}H_{40}F_3O_3P_2RhS$	(-)-1,2-Bis((2R,5R)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (R,R)-Me-DUPHOS-Rh	351
	(+)-1,2-Bis((2S,5S)-2,5-dimethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (S,S)-Me-DUPHOS-Rh	351
$C_{27}H_{41}N_2OP$	2-(Dicyclohexylphosphino)-N,N-bis(1-methylethyl)-1H-indole-1-carboxamide, min. 98% Amidole-Phos	292
$C_{27}H_{45}FeO_6$	Tris(2,6-dimethyl-3,5-heptanedionato) iron(III), 98% Fe(dibm)3	111
$C_{27}H_{48}F_3O_3P_2RhS$	1,2-Bis((2S,5S)-2,5-diethylphospholano) ethane(cyclooctadiene)rhodium(I) trifluoromethanesulfonate	350
$C_{27}H_{52}B_2F_8P_2$	1,3-Bis(dicyclohexylphosphonium)propane bis(tetrafluoroborate), min. 97%	259
$C_{27}H_{59}O_3PS$	Tributyl(tetradecyl)phosphonium methanesulfonate, min. 98% CYPHOS® IL 203	83
$C_{28}H_{22}NO_2P$	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl) benzyl(methyl)amine, 99%	301
	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl) [(1R)-1-phenylethyl]amine, min. 95%	302
$C_{28}H_{24}NOP$	2-(2-Methoxyphenyl)-1-methyl-3-diphenylphosphino)-1H-indole, min. 98% PPh$_2$-Andole-Phos	315
$C_{28}H_{26}NO_2P$	N,N-Bis[(1R)-(+)-phenylethyl]dibenzo[d,f] [1,3,2]dioxaphosphepin-6-amine	278
	N,N-Bis[(1S)-(-)-phenylethyl]dibenzo[d,f] [1,3,2]dioxaphosphepin-6-amine	279
$C_{28}H_{28}Cl_2P_2Pd$	Dichloro[1,4-bis(diphenylphosphino)butane] palladium(II), 99%	237
$C_{28}H_{28}FeNOP$	(S,S)-[2-(4'-i-Propyloxazolin-2'-yl)ferrocenyldiphenylphosphine, min. 97%	110
	(R,R)-[2-(4'-i-Propyloxazolin-2'-yl)ferrocenyl] diphenylphosphine, min. 97%	110
$C_{28}H_{28}Hf$	Tetrabenzylhafnium, min. 97%	77
$C_{28}H_{28}N_2O_4S_2$	(1R,2R)-N,N'-Di-p-tosyl-1,2-diphenyl-1,2-ethylenediamine, min. 98%	199
	(1S,2S)-N,N'-Di-p-tosyl-1,2-diphenyl-1,2-ethylenediamine, min. 98%	199
$C_{28}H_{28}OP_2$	[Bis(2-diphenylphosphino)ethyl]ether, min. 98%	268
$C_{28}H_{28}O_2P_2$	(R,R)-(-)-1,2-Bis[(2-methoxyphenyl)(phenyl) phosphino]ethane, 98% (-)-DIPAMP	278

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Formula	Description	Page
	(S,S)-(+)-1,2-Bis[(2-methoxyphenyl)(phenyl) phosphino]ethane, 98% (+)-DIPAMP	278
$C_{28}H_{28}P_2$	(2S,3S)-(-)-Bis(diphenylphosphino)butane (S,S)-CHIRAPHOS	267
	1,4-Bis(diphenylphosphino)butane, 98% DPPB	267
$C_{28}H_{28}Zr$	Tetrabenzylzirconium, min. 95%	456
$C_{28}H_{29}Cl_2PRu$	Dichloro(p-cymene)triphenylphosphineruthenium(II) dichloromethane adduct, min. 98%	391
$C_{28}H_{29}N_2P$	2-Diphenylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% PhCPhos	303
$C_{28}H_{30}ClNP_2$	Bis[(2-diphenylphosphino)ethyl]ammonium chloride, min. 97%	268
$C_{28}H_{30}N_2O_6Pd_2S_2$	(2'-Methylamino-1,1'-biphenyl-2-yl)methanesulfonatopalladium(II) dimer, min. 98%	247
$C_{28}H_{31}P$	racemic-2-Di-t-butylphosphino-1, 1'-binaphthyl, 98% TrixiePhos	288
$C_{28}H_{32}BClF_4N_2P_2Ru$	Chlorobis[2-(diphenylphosphino)ethanamine]ruthenium(II) tetrafluoroborate, min. 97%	374
$C_{28}H_{32}Cl_2N_2P_2Ru$	Dichlorobis[2-(diphenylphosphino)ethylamine]ruthenium(II), min. 95% (mixture of isomers)	382
$C_{28}H_{32}FeOP_2$	(R,S(p), R(SPO)-(1-t-Butylphosphinoyl)-2-[1-(diphenylphosphino)ethyl] ferrocene, min. 97% JoSPOphos	100
	(S, R(p), S(SPO)-(1-t-Butylphosphinoyl)-2-[1-(diphenylphosphino)ethyl] ferrocene, min. 97% JoSPOphos	100
$C_{28}H_{34}N_3OP$	1-Benzyl-3-[(1S,2S)-2-(di-o-tolylphosphino-amino)cyclohexyl]urea, min. 97%	251
$C_{28}H_{35}AuF_6NO_6PS_2$	Bis(trifluoromethanesulfonyl)imide(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)gold(I), 98%	73
$C_{28}H_{36}AuF_6N_2O_4PS_2$	[2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino))-1,1'-biphenyl][bis(trifluoromethyl) sulfonylimido]gold(I), 98%	74
$C_{28}H_{36}K_2O_2$	(R)-(-)-5,5',6,6',7,7',8,8'-Octahydro-3,3'-di-t-butyl-1,1'-bi-2-naphthol, dipotassium salt	340
	(S)-(+)-5,5',6,6',7,7',8,8'-Octahydro-3,3'-di-t-butyl-1,1'-bi-2-naphthol, dipotassium salt	340
$C_{28}H_{37}ClNPPd$	Chloro(di-2-norbornylphosphino)(2'-dimethylamino-1,1'-biphenyl-2-yl)palladium(II), 97% min.	233
$C_{28}H_{37}P$	Dicyclohexyl(2,2-diphenyl-1-methylcyclopropyl)phosphine Cy-cBRIDP	291
$C_{28}H_{38}ClN_2PPd$	Chloro{[4-(N,N-dimethylamino)phenyl] di-t-butylphosphino}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Amphos Palladacycle Gen. 2]	233
$C_{28}H_{38}N_2O_3$	1,3-Bis(2,6-di-i-propylphenyl)imidazolium bicarbonate, min. 97% IPrH.HCO_3	183
$C_{28}H_{39}F_6MoNO_8S_2$	2,6-Diisopropylphenylimido neophylidenemolybdenum(VI) bis(trifluoromethanesulfonate)dimethoxyethane adduct	137
$C_{28}H_{40}AgF_2N_2$	[1,3-Bis[2,6-bis(i-propyl)phenyl]-2-imidazolidinylidene]difluoromethylsilver(I)	413
$C_{28}H_{40}ClNOP_2Ru$	Chlorocarbonylhydrido[4,5-bis-(di-i-propylphosphinomethyl) acridine] ruthenium(II), min.98% Milstein Acridine Catalyst	376
$C_{28}H_{40}NP$	2-(Di-1-adamantylphosphino) dimethylaminobenzene, 97% Me-DalPhos	284
$C_{28}H_{40}N_2$	2,3-Bis(2,6-di-i-propylphenylimino) butane, 98%	184
$C_{28}H_{41}N_2P$	2-Dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl, min. 98% CPhos	292
$C_{28}H_{43}N_2PPd$	N,N'-[Bis(2,6-dimethylphenyl)-1,3-dimethyl-1,3-propanediylidene](methyl) (triethylphosphine)palladium(II), min. 97%	227
$C_{28}H_{44}P_2$	1,3-Bis(dicyclopentylphosphinomethyl) benzene, 99%	259
$C_{28}H_{46}CaO_2$	Bis(pentamethylcyclopentadienyl)calcium tetrahydrofuran, 98%	34
$C_{28}H_{46}Cl_2P_2Pd$	Dichlorobis(di-t-butylphenylphosphino) palladium(II), 99%	236
$C_{28}H_{47}Cl_2PRu$	Dichloro(p-cymene)tricyclohexylphosphineruthenium(II), min. 97%	391
$C_{28}H_{52}N_2O_4Pd$	trans-Bis(dicyclohexylamine)bis(acetato) palladium(II) DAPCy	227
$C_{28}H_{52}O_6Ti$	Di(i-propoxide)bis(2,2,6,6-tetramethyl-3,5-heptanedionato)titanium(IV), min. 98%	440
$C_{28}H_{53}NP_2$	Bis[2-(dicyclohexylphosphino)ethyl]amine, min. 97%	258
$C_{28}H_{54}B_2F_8P_2$	1,4-Bis(dicyclohexylphosphonium)butane bis(tetrafluoroborate), min. 97%	258
$C_{28}H_{60}BrP$	Hexadecyltri-n-butylphosphonium bromide, 98+%	313
$C_{29}H_{26}FeNP$	(R)-(-)-1-[(S)-2-(Diphenylphosphino)ferrocenyl]benzylamine, min. 98%	103
	(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]benzylamine, min. 98%	103
$C_{29}H_{29}AuBF_4N_3$	1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene(acetonitrile)gold(I) tetrafluoroborate, 95%	72
$C_{29}H_{29}F_6N_3OS$	(2S)-(-)-2-{[[[3,5-Bis(tifluoromethyl)phenyl] amino]thioxomethyl]amino}-N-(diphenylmethyl)-N,3,3-trimethylbutanamide, 95%	188
$C_{29}H_{29}NP_2$	(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino) pyrrolidine, min. 97% (S,S-PPM)	306
	(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino) pyrrolidine, min. 97% (R,R-PPM)	306
$C_{29}H_{30}ClNOP_2Ru$	Carbonylchlorohydrido[bis(2-(diphenylphosphinoethyl)amino]ruthenium(II), min.98% Ru-MACHO™	368
$C_{29}H_{30}P_2$	(2R,4R)-(+)-2,4-Bis(diphenylphosphino) pentane, 99% (R,R)-BDPP	270
	(2S,4S)-(-)-2,4-Bis(diphenylphosphino) pentane, 99% (S,S)-BDPP	270
	1,5-Bis(diphenylphosphino)pentane, min. 98%	270
$C_{29}H_{31}ClIrNO$	Chloro(pentamethylcyclopentadienyl) {2-{1-[(4-methoxyphenyl)imino-kN]ethyl} naphthyl-kC}iridium(III), 99% Iridicycle-Naphth	88
$C_{29}H_{33}N_2P$	1-(2-Di-t-butylphosphinophenyl)-3,5-diphenyl-1H-pyrazole, 98%	289
$C_{29}H_{34}BNOP_2Ru$	Carbonylhydrido(tetrahydroborato)[bis(2-diphenylphosphinoethyl) amino]ruthenium(II), min.98% Ru-MACHO™-BH	369
$C_{29}H_{34}NO_6PPdS$	Methanesulfonato(1,3,5,7-tetramethyl-8-phenyl-2,4,6-trioxa-8-phosphaadamantane)(2'-amino-1,1'-biphenyl-2-yl) palladium(II) dichloromethane adduct, min. 98% [MeCgPPh Palladacycle Gen. 3]	246
$C_{29}H_{36}AuF_6N_3O_4S_2$	[1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene][bis(trifluoromethanesulfonyl) imide]gold(I), min. 95%	72
$C_{29}H_{38}N_2O_2S$	N-[(1R,2R)-2-Amino-1,2-diphenyl) ethyl]-2,4,6-tris(1-methylethyl)benzenesulfonamide, 98% (R,R)-TipsDPEN	178
	N-[(1S,2S)-2-Amino-1,2-diphenyl) ethyl]-2,4,6-tris(1-methylethyl)benzenesulfonamide, 98% (S,S)-TipsDPEN	178
$C_{29}H_{40}BF_4P$	Dicyclohexyl(9-butylfluoren-9-yl)phosphonium tetrafluoroborate, min. 95% [cataCXium® FBu]	291
$C_{29}H_{41}N_2O_3PPdS$	Methanesulfonato{[4-(N,N-dimethylamino) phenyl]di-t-butylphosphino}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Amphos Palladacycle Gen. 3]	245
$C_{29}H_{45}P$	2-Di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuXPhos	290
$C_{29}H_{54}ClNOP_2Ru$	Carbonylchlorohydrido[bis(2-di-cyclohexylphosphinoethyl)amine]ruthenium(II), min. 97%	368
$C_{30}CH_{45}P$	Tris(1-adamantyl)phosphine, 97%	330
$C_{30}H_{20}Na_4O_{12}P_2S_4$	1,2-Bis(di-4-sulfonatophenylphosphino) benzene tetrasodium salt DMSO adduct	274
$C_{30}H_{20}O_8$	1,1,2,2-Tetra(4-carboxylphenyl)ethylene, 99% H_4TCPE	220
$C_{30}H_{21}P$	Tri(1-naphthyl)phosphine, min. 98%	329
$C_{30}H_{22}NP$	9-[2-(Diphenylphosphino)phenyl]-9H-carbazole, min. 97% Ph PhenCar-Phos	307
$C_{30}H_{23}BrCuN_2P$	Bromo(1,10-phenanthroline)(triphenylphosphine)copper(I), min. 97%	55

Formula	Description	Page
$C_{30}H_{24}Cl_2N_6Ru$	Tris(2,2'-bipyridyl)ruthenium(II) chloride hexahydrate, min. 98%	401
$C_{30}H_{24}Cl_2O_6P_2Pd$	Dichloro[(R)-(+)-2,2'-bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl]palladium(II)	237
$C_{30}H_{24}NO_2P$	(2R)-1-(11bS)-(Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl)-2-methyl-1,2,3,4-tetrahydroquinoline, 98%	300
	(2R)-1-(11bR)-(Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl)-2-methyl-1,2,3,4-tetrahydroquinoline, 98%	300
$C_{30}H_{24}O_6P_2$	(R)-(+)-2,2'-Bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	262
	(S)-(-)-2,2'-Bis(di-2-furanylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	262
$C_{30}H_{24}P_2$	1,2-Bis(diphenylphosphino)benzene, 98%	266
$C_{30}H_{25}NP_2$	2-[Bis(diphenylphosphino)methyl]pyridine, 98%	269
$C_{30}H_{25}N_2O_4P$	1-{(2R)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97% UREAPhos	300
	1-{(2S)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%	300
$C_{30}H_{27}ClP_2Ru$	Chloro(cyclopentadienyl)[bis(diphenylphosphino)methane]ruthenium(II), min. 97%	376
$C_{30}H_{28}ClF_5N_2O_2RuS$	Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](pentafluorophenylsulfonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(S,S)-Fsdpen](p-cymene)	370
	Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](pentafluorophenylsulfonyl)amido}(p-cymene)ruthenium(II), min. 90% RuCl[(R,R)-Fsdpen](p-cymene)	370
$C_{30}H_{28}FeO_4P_2$	1,1'-Bis[bis(5-methyl-2-furanyl) phosphino]ferrocene, 98% HiersoPHOS-3	94
$C_{30}H_{30}CeF_{21}O_6$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)cerium(III), 99% $[Ce(FOD)_3]$	42
$C_{30}H_{30}ErF_{21}O_6$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)erbium(III) (99.9%-Er) (REO) $[Er(FOD)_3]$	62
$C_{30}H_{30}EuF_{21}O_6$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)europium(III) hydrate (99.9%-Eu) (REO) $[Eu(FOD)_3]$	63
$C_{30}H_{30}F_{21}LaO_6$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)lanthanum(III), 99% (99.9%-La) (REO) $[La(FOD)_3]$	113
$C_{30}H_{30}F_{21}NdO_6$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionate)neodymium(III), 99% (99.9%-Nd) (REO) $[Nd(FOD)_3]$	170
$C_{30}H_{30}F_{21}O_6Pr$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)praseodymium(III), 99% (99.9%-Pr) (REO) $[Pr(FOD)_3]$	346
$C_{30}H_{30}F_{21}O_6Yb$	Tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3, 5-octanedionate)ytterbium(III), 99% (99.9%-Yb) (REO) $[Yb(FOD)_3]$	447
$C_{30}H_{30}N_{10}$	Tris[(1-benzyl-1H-1,2,3-triazol-4-yl)methyl]amine, 97% TBTA	212
$C_{30}H_{30}N_{20}O_{10}$	Cucurbit[5]uril (CB[5]) ammonium sulfate hydrate, 99+%	192
$C_{30}H_{31}BKN_9$	Potassium hydrotris (3-(6-methyl-3-pyridyl)-5-methylpyrazol-1-yl)borate, 97%	343
$C_{30}H_{31}ClN_2O_2RuS$	{N-[3-(η6-phenyl)propyl]-[(1S-2S)-1,2-diphenyl-1-4-methylbenzenesulfonylamidato(kN')-ethyl-2-amino-(kN)]}ruthenium(II) (S,S)-Teth-TsDpen RuCl WILLS CATALYST	397
	{N-[3-(η6-phenyl)propyl]-[(1R-2R)-1,2-diphenyl-1-4-methylbenzenesulfonylamidato(kN')-ethyl-2-amino-(kN)]}ruthenium(II) (R,R)-Teth-TsDpen RuCl WILLS CATALYST	397
$C_{30}H_{31}N_2O_2P$	1-[(1R,2S)-1-(Di-o-tolylphosphinooxy)-1-phenylpropan-2-yl]-3-phenylurea, min. 97%	312
$C_{30}H_{33}ClN_2O_2RuS$	Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(mesitylene)ruthenium(II), min. 90% RuCl[(S,S)-Tsdpen](mesitylene)	371
	Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(mesitylene)ruthenium(II), min. 90% RuCl[(R,R)-Tsdpen(mesitylene)	371
$C_{30}H_{33}N_2O_4P$	1-{(2R)-1-[(11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%	316
$C_{30}H_{34}NP$	9-[2-(Dicyclohexylphosphino)phenyl]-9H-carbazole, min. 98% PhenCar-Phos	294
$C_{38}H_{34}N_2O_4P_2$	(R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine, min. 97% CTH-(R)-P-Phos	323
	(S)-(-)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine, min. 95% CTH-(S)-P-Phos	323
$C_{30}H_{34}O_3P_2$	1,3,5,7-Tetramethyl-8-(2-di-o-tolylphosphinophenyl)-2,4,6-trioxa-8-phosphaadamantane PAd-DalPhos	324
$C_{30}H_{35}F_{12}MoNO_2$	2,6-Diisopropylphenylimidoneophylidene molybdenum(VI) bis(hexafluoro-t-butoxide) SCHROCK'S CATALYST	137
$C_{30}H_{36}Cl_2N_2P_2Ru$	Dichlorobis[3-(diphenylphosphino]propylamine]ruthenium(II), min. 97%	383
$C_{30}H_{36}FeP_2$	1-Diphenylphosphino-1'-(di-t-butylphosphino)ferrocene, 97%	102
$C_{30}H_{41}ClN_2Pd$	Allylchloro[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]palladium(II), 98%	226
$C_{30}H_{42}NOP$	N-[2-(di-1-adamantylphosphino)phenyl]morpholine, 98% Mor-DalPhos	284
$C_{30}H_{42}NaO_3PS$	2'-Dicyclohexylphosphino-2,6-di-i-propyl-4-sulfonato-1,1'-biphenyl hydrate sodium salt (XPhos-SO_3Na)	293
$C_{30}H_{43}ClN_2Pd$	Allylchloro[1,3-bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene]palladium(II), 97%	226
$C_{30}H_{43}O_2P$	2-Dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl, min. 98% RuPhos	293
$C_{30}H_{44}BF_4Fe\text{-}P_2Rh$	1,1'-Bis((2R,5R)-2,5-dimethylphospholano)ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate	351
	1,1'-Bis((2S,5S)-2,5-dimethylphospholano)ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate	352
$C_{30}H_{47}MoNO_2$	2,6-Diisopropylphenylimidoneophylidene molybdenum(VI) bis(t-butoxide)	137
$C_{30}H_{48}BF_4Fe\text{-}P_2Rh$	1,1'-Bis(di-i-propylphosphino)ferrocene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98%	354
$C_{30}H_{48}BF_4P_2Rh$	(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (R,R)-Et-DUPHOS-Rh	349
	(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, 98+% (S,S)-Et-DUPHOS-Rh	349
$C_{30}H_{48}FeP_2$	1,1'-Bis((2R,5R)-2,5-di-i-propylphospholano)ferrocene, min. 97%	98
	1,1'-Bis((2S,5S)-2,5-di-i-propylphospholano)ferrocene, min. 97%	98
$C_{30}H_{50}Cl_2NO_3PRuS$	{[2-(i-Propoxy)-5-(N,N-dimethylaminosulfonyl)phenyl]methylene}(tricyclohexylphosphine) ruthenium(II) dichloride Zhan Catalyst -1C	398
$C_{30}H_{50}O_4Ru$	Bis(2,2,6,6-tetramethyl-3,5-heptanedionato)(1,5-cyclooctadiene)ruthenium(II), 99% (99.9%-Ru)	366
$C_{30}H_{56}BF_4P_2Rh$	1,2-Bis((2R,5R)-2,5-di-i-propylphospholano)ethane(cyclooctadiene)rhodium(I) tetrafluoroborate	354
	1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)ethane(cyclooctadiene)rhodium(I) tetrafluoroborate	354
$C_{30}H_{57}BiO_6$	Bismuth(III) neodecanoate, superconductor grade ~60% in neodecanoic acid (15-20% Bi)	23

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Formula	Description	Page
$C_{30}H_{57}O_6Y$	Yttrium(III) neodecanoate, superconductor grade (12-16% Y) (99.9%-Y) (REO)	449
$C_{30}H_{68}P_4Pd$	[P,P'-1,3-Bis(di-i-propylphosphino)propane] [P-1,3-bis(di-i-propylphosphino)propane] palladium(0), 98%	228
$C_{31}H_{21}ClN_2O_5$	2-{2-Chloro-6-hydroxy-5-[2-methylquinolin-8-ylaminomethyl]-3-oxo-3H-xanthen-9-yl} benzoic acid FL	191
$C_{31}H_{28}NP$	(1S,2S)-2-[(4R,11bS)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1-phenylpropan-2-amine, min. 97%	297
	(1R,2R)-2-[(4S,11bR)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1-phenylpropan-2-amine, min. 97%	297
$C_{31}H_{28}P_2$	(2R,3R)-(-)-2,3-Bis(diphenylphosphino)-bicyclo[2.2.1]hept-5-ene, min. 95% (R,R)-NORPHOS	267
	(2S,3S)-(+)-2,3-Bis(diphenylphosphino)-bicyclo[2.2.1]hept-5-ene, min. 95% (S,S)-NORPHOS	267
$C_{31}H_{30}O_4$	(4R,5R)-(-)-2,2-Dimethyl-α, α, α', α'-tetraphenyl-1,3-dioxolane-4,5-dimethanol (R,R)-TADDOL	218
$C_{31}H_{32}O_2P_2$	(4S,5S)-(+)-4,5-Bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane, 99.5% (S,S)-DIOP	269
	(4R,5R)-(-)-4,5-Bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane, 99.5% (R,R)-DIOP	269
$C_{31}H_{32}O_4P_2Pd$	Diacetato[1,3-bis(diphenylphosphino) propane]palladium(II), 99%	235
$C_{31}H_{33}ClN_2O_3RuS$	Chloro{N-[(1R,2R)-1,2-diphenyl-2-(2-(4-methylbenzyloxy)ethylamino)-ethyl]-4-methylbenzene sulfonamide(chloro)ruthenium(II) (R,R)-Ts-DENEB™	378
	N-[(1S,2S)-1,2-Diphenyl-2-(2-(4-methylbenzyloxy)ethylamino)-ethyl]-4-methylbenzene sulfonamide(chloro)ruthenium(II) (S,S)-Ts-DENEB™	396
$C_{31}H_{35}BF_4N_2O_2RuS$	{[(1R,2R)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II) tetrafluoroborate, min. 97%	364
	{[(1S,2S)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)ruthenium(II) tetrafluoroborate, min. 97%	364
$C_{31}H_{35}ClN_2O_2RuS$	Chloro{[(1R,2R)-(-)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene) ruthenium(II), min. 95% RuCl[(R,R)-Tsdpen] (p-cymene)	370
	Chloro{[(1S,2S)-(+)-2-amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene) ruthenium(II), min. 90% RuCl[(S,S)-Tsdpen] (p-cymene)	370
$C_{31}H_{37}BF_4N_2P_2Ru$	Allylbis(2-aminoethyldiphenylphosphino) ruthenium(II) tetrafluoroborate, 98%	363
$C_{31}H_{37}Cl_2N_3O_3Ru$	[1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)]-(2-i-propoxy-5-nitrobenzylidene)ruthenium(II) dichloride nitro-Grela	368
$C_{31}H_{44}N_2OP_2$	(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-methyl-1-pyrrolidinecarboxamide, min. 97% (S,S-MCCPM)	306
	(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-methyl-1-pyrrolidinecarboxamide, min. 95% (R,R-MCCPM)	305
$C_{31}H_{46}NO_3PPdS$	Methanesulfonato(tricyclohexylphosphine) (2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [PCy3 Palladacycle Gen. 3]	246
$C_{31}H_{48}F_3O_3P_2RhS$	(-)-1,2-Bis((2R,5R)-2,5-diethylphospholano) benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (R,R)-Et-DUPHOS-Rh	349
	(+)-1,2-Bis((2S,5S)-2,5-diethylphospholano) benzene(1,5-cyclooctadiene)rhodium(I) trifluoromethanesulfonate, 98+% (S,S)-Et-DUPHOS-Rh	349
$C_{31}H_{48}OP_2$	9,9-Dimethyl-4,5-bis(di-t-butylphosphino) xanthene, min. 97% t-Bu-XANTPHOS	298
$C_{31}H_{49}OP$	2-(Di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% RockPhos	289
$C_{31}H_{49}O_2P$	2-(Di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-BuBrettPhos	288
$C_{31}H_{50}F_6IrNP_2$	(Tricyclohexylphosphine)(1,5-cyclooctadiene)(pyridine)iridium(I)hexafluorophosphate, 99% CRABTREE'S CATALYST	93
$C_{32}H_{12}BF_{20}N$	N,N-Dimethylanilinium tetra(pentafluorophenyl)borate, 98%	27
$C_{32}H_{12}BF_{24}Na$	Sodium tetrakis[3,5-bis(trifluoromethyl) phenyl]borate, min. 98% NaBARF	421
$C_{32}H_{16}Cl_2N_8Si$	Silicon(IV) phthalocyanine dichloride, 85%	410
$C_{32}H_{16}Cl_2N_8Sn$	Tin(IV) phthalocyanine dichloride	437
$C_{32}H_{16}CoN_8$	Cobalt(II) phthalocyanine	50
$C_{32}H_{16}CuN_8$	Copper(II) phthalocyanine	58
$C_{32}H_{16}FeN_8$	Iron(II) phthalocyanine, min. 95%	109
$C_{32}H_{16}MgN_8$	Magnesium phthalocyanine, min. 90%	123
$C_{32}H_{16}MnN_8$	Manganese(II) phthalocyanine, min. 97%	127
$C_{32}H_{16}N_8Na_2$	Sodium phthalocyanine	420
$C_{32}H_{16}N_8Ni$	Nickel(II) phthalocyanine, min. 94%	176
$C_{32}H_{16}N_8Sn$	Tin(II) phthalocyanine	437
$C_{32}H_{16}N_8Zn$	Zinc phthalocyanine, min. 95%	453
$C_{32}H_{18}N_8$	Phthalocyanine	205
$C_{32}H_{21}O_4P$	(11bR)-4-Hydroxy-2,6-diphenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	314
$C_{32}H_{22}O_2$	(2R)-(+)-3,3'-Diphenyl-[2,2'-binaphthalene]-1,1'-diol, min. 98% (R)-VANOL	219
	(2S)-(-)-3,3'-Diphenyl-[2,2'-binaphthalene]-1,1'-diol, min. 98% (S)-VANOL	219
$C_{32}H_{24}F_6IrN_4P$	(2,2'-Bipyridine)bis[2-pyridinyl-kN)phenyl-kC] iridium(III) hexafluorophosphate, 99%	86
$C_{32}H_{29}N_2O_4P$	1-{(2S)-1-[(11bS)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%	298
$C_{32}H_{29}O_4P$	(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-diphenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	317
$C_{32}H_{34}N_4O_4$	Deuteroporphyrin IX, dimethyl ester, min. 97%	193
$C_{32}H_{35}N_4P$	5-(Di-t-butylphosphino)-1',3',5'-triphenyl-1,4'-bi-1H-pyrazole, min. 95% t-Bu-BippyPhos	290
$C_{32}H_{36}P_2$	1,8-Bis(diphenylphosphino)octane, 99%	270
$C_{32}H_{37}Cl_2N_3O_2Ru$	Dichloro(1,3-dimesitylimidazolidin-2-ylidene) {2-[(ethoxy-2-oxoethylidene)amino]benzylidene} ruthenium(II) HeatMet	391
$C_{32}H_{38}BF_4P$	Dicyclohexyl(9-benzylfluoren-9-yl)phosphonium tetrafluoroborate, min. 97% [cataCXium® FBn]	291
$C_{32}H_{38}N_4$	Etioporphyrin III	200
$C_{32}H_{39}BF_{10}NO_2P_2Rh$	(-)-2,3-Bis[(2R,5R)-2,5-dimethylphospholanyl]-1-[3,5-bis(trifluoromethyl) phenyl]-1H-pyrrole-2,5-dione(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97% [catASium® MNXylF(R)Rh]	352
$C_{32}H_{40}FeP_2$	(R)-(-)-1-[(S)-2-(Diphenylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%	103
	(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%	103
$C_{32}H_{44}BF_4P_2Rh$	(1R,1'R,2S,2'S)-(+)-2,2'-Di-t-butyl-2,3,2',3'-tetrahydro-1,1'-bi-1H-isophosphindole(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R,S,S)-DUANPHOS-Rh	357
$C_{32}H_{44}Cl_2NP_3Ru$	Dichloro{1,2-bis[(2R,5R)-2,5 dimethylphospholanobenzene]}[2-(diphenylphosphino) ethylamine]ruthenium(II), min. 97%	382
$C_{32}H_{48}BF_4Fe-P_2Rh$	(-)-1,1'-Bis((2S,4S)-2,4-diethylphosphotano) ferrocene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98%	350

Formula	Description	Page
$C_{32}H_{48}NO_3PPdS$	Methanesulfonato(tricyclohexylphosphino)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [PCy_3 Palladacycle Gen. 4]	247
$C_{32}H_{52}FeP_2$	(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino)ferrocenyl]ethyldi-t-butylphosphine, min. 97%	101
$C_{32}H_{52}Rh_4$	Tetrakis(1,5-cyclooctadiene)tetra-μ-hydridotetrarhodium, min. 98%	360
$C_{32}H_{56}Cl_2Ir_2$	Chlorobis(cyclooctene)iridium(I) dimer, 97%	87
$C_{32}H_{56}Cl_2N_2P_2Pd$	Dichlorobis{[4-(N,N-dimethylamino)phenyl]di-t-butylphosphino}palladium(II), min. 98% PdAmphos	237
$C_{32}H_{56}Cl_2Rh_2$	Chlorobis(cyclooctene)rhodium(I) dimer, min. 98%	356
$C_{32}H_{56}N_2P_2Pd$	Bis{[4-(N,N-dimethylamino)phenyl]di-t-butylphosphino}palladium(0), min. 98% Pdamphos	227
$C_{32}H_{60}NbO_8$	Niobium(IV) 2-ethylhexanoate	177
$C_{32}H_{60}O_8Mo$	Molybdenum(IV) 2-ethylhexanoate (15% Mo)	138
$C_{32}H_{60}O_8Rh_2$	Rhodium(II) octanoate dimer, 98%	359
$C_{32}H_{64}O_4Sn$	Di-n-butyltin dilaurate, 98%	435
$C_{32}H_{68}BrP$	Trihexyl(tetradecyl)phosphonium bromide, min. 95% CYPHOS® IL 102	84
	Tetraoctylphosphonium bromide, min. 95%	83
$C_{32}H_{68}ClP$	Trihexyl(tetradecyl)phosphonium chloride, min. 93% CYPHOS® IL 101	84
$C_{32}H_{68}F_6P_2$	Trihexyl(tetradecyl)phosphonium hexafluorophosphate, min. 98% CYPHOS® IL 110	84
$C_{33}H_{18}F_6IrN_3$	Tris[2-(2,4-difluorophenyl)pyridine]iridium(III), 95%	93
$C_{33}H_{19}F_{12}O_4P$	(11aR)-3,7-Bis[3,5-bis(trifluoromethyl)phenyl]-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%	255
	(11aS)-3,7-Bis[3,5-bis(trifluoromethyl)phenyl]-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%	255
$C_{33}H_{20}F_{12}O_2$	(1R)-6,6'-Bis[3,5-bis(trifluoromethyl)phenyl]-2,2',3,3'-tetrahydro-1,1'-spirobi[1H-indene]-7,7'-diol, min. 98%	215
	(1S)-6,6'-Bis[3,5-bis(trifluoromethyl)phenyl]-2,2',3,3'-tetrahydro-1,1'-spirobi[1H-indene]-7,7'-diol, min. 98%	215
$C_{33}H_{21}F_3IrN_3$	Tris[5-fluoro-2-(2-pyridinyl-kN)phenyl-kC]iridium(III), 95%	93
$C_{33}H_{24}IrN_3$	Tris(2-phenylpyridinato-C2,N)iridium(III), 95%	93
$C_{33}H_{25}OP$	(R)-(+)-2-(Diphenylphosphino)-2'-methoxy-1,1'-binaphthyl, 99% (R)-MOP	305
	(S)-(-)-2-(Diphenylphosphino)-2'-methoxy-1,1'-binaphthyl, 99% (S)-MOP	305
$C_{33}H_{31}O_4P$	(11aR)-3,7-Bis(3,5-dimethylphenyl)-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%	265
	(11aS)-3,7-Bis(3,5-dimethylphenyl)-10,11,12,13-tetrahydro-5-hydroxy-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%	265
$C_{33}H_{32}NO_2P$	(11aR)-(+)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (R)-SIPHOS-PE	321
	(11aS)-(-)-10,11,12,13-Tetrahydrodiindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (S)-SIPHOS-PE	321
$C_{33}H_{34}NO_4P$	(3aR,8aR)-(-)-(2,2-Dimethyl-4,4,8,8-tetraphenyl-tetrahydro-[1,3]dioxolo[4,5-e][1,3,2]dioxaphosphepin-6-yl)dimethylamine, min. 98%	300
$C_{33}H_{39}N_6O_4P$	1-Benzyl-3-methylimidazolium phosphate, 99%	81
$C_{33}H_{42}N_3O_3PPdS$	Methanesulfonato[2-diethylphosphino-2',6'-bis(dimethylamino)-1,1-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [EtCPhos Palladacycle Gen. 3]	245
$C_{33}H_{43}Cl_2N_3O_3RuS$	1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene[2-(i-propoxy)-5-(N,N-dimethylaminosulfonyl)phenyl]methyleneruthenium (II) dichloride, Zhan Catalyst-1B, min 96%	367
$C_{33}H_{43}N_3$	2,6-Bis[1-(2,6-di-i-propylphenylimino)ethyl]pyridine, 98%	184
$C_{33}H_{49}OP$	2-Dicyclohexylphosphino-2'-methoxy-4',6'-di-t-butyl-1,1'-biphenyl, min. 98% VPhos	294
$C_{33}H_{49}P$	2-(Dicyclohexylphosphino)-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% XPhos	295
$C_{33}H_{53}OP$	2-Di-t-butylphosphino-4-methoxy-3,5,6-trimethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% [~1:1 mixture with regioisomer, 2-Di-t-butylphosphino-5-methoxy-3,4,6-trimethyl-2',4',6'-tri-i-propylbiphenyl]	289
$C_{33}H_{53}P$	2-Di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propyl)-1,1'-biphenyl, min. 98% Me_4 t-BuXPhos	290
$C_{33}H_{56}LuO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)lutetium(III), 99% (99.9+%-Lu) (REO) [Lu(TMHD)$_3$]	120
$C_{33}H_{57}AlO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)aluminum, 99% (99.9%-Al) [Al(TMHD)$_3$]	5
$C_{33}H_{57}BiO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)bismuth(III), min. 98% (99.9%-Bi) [Bi(TMHD)$_3$]	24
$C_{33}H_{57}CoO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)cobalt(III), 99% (99.9+%-Co) [Co(TMHD)$_3$]	53
$C_{33}H_{57}CrO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)chromium(III), 99% [Cr(TMHD)$_3$]	46
$C_{33}H_{57}DyO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)dysprosium(III), 98+% (99.9%-Dy) (REO) [Dy(TMHD)$_3$]	60
$C_{33}H_{57}ErO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)erbium(III), 99% (99.9%-Er) (REO) [Er(TMHD)$_3$]	62
$C_{33}H_{57}EuO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)europium(III), 99% (99.9%-Eu) (REO) [Eu(TMHD)$_3$]	63
$C_{33}H_{57}FeO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)iron(III), 99% (99.9%-Fe) [Fe(TMHD)$_3$]	111
$C_{33}H_{57}GaO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)gallium(III), 99% (99.999%-Ga) [Ga(TMHD)$_3$] PURATREM	68
$C_{33}H_{57}GdO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)gadolinium(III), 99% (99.9%-Gd) (REO) [Gd(TMHD)$_3$]	67
$C_{33}H_{57}HoO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)holmium(III), 99% (99.9%-Ho) (REO) [Ho(TMHD)$_3$]	79
$C_{33}H_{57}InO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)indium(III), 99% (99.9%-In) [In(TMHD)$_3$]	81
$C_{33}H_{57}LaO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)lanthanum(III), 99% (99.9%-La) (REO) [La(TMHD)$_3$]	113
	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)lanthanum(III) tetraglyme adduct (99.9%-La) (REO)	113
$C_{33}H_{57}MnO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)manganese(III), 99% [Mn(TMHD)$_3$]	127
$C_{33}H_{57}NdO_6$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)neodymium(III), 99% (99.9%-Nd) (REO) [Nd(TMHD)$_3$]	170
$C_{33}H_{57}O_6Pr$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)praseodymium(III), 99% (99.9%-Pr) (REO) [Pr(TMHD)$_3$]	346
$C_{33}H_{57}O_6Ru$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)ruthenium(III), 99% (99.9%-Ru) [Ru(TMHD)$_3$]	401
$C_{33}H_{57}O_6Sc$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)scandium(III), 99% (99.9%-Sc) (REO) [Sc(TMHD)$_3$]	403
$C_{33}H_{57}O_6Sm$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)samarium(III) (99.9%-Sm) (REO) [Sm(TMHD)$_3$]	403

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Formula	Description	Page
$C_{33}H_{57}O_6Tb$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) terbium(III), 99% (99.9%-Tb) (REO) [Tb(TMHD)$_3$]	431
$C_{33}H_{57}O_6Ti$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) titanium(III), min. 97% [Ti(TMHD)$_3$]	443
$C_{33}H_{57}O_6Tm$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) thulium(III), 98% (99.9%-Tm) (REO) [Tm(TMHD)$_3$]	433
$C_{33}H_{57}O_6Y$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)yttrium(III), 98+% (99.9%-Y) (REO) [Y(TMHD)$_3$]	449
	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) yttrium(III) triglyme adduct (99.9%-Y) (REO).	449
$C_{33}H_{57}O_6Yb$	Tris(2,2,6,6-tetramethyl-3,5-heptanedionato) ytterbium(III), 99% (99.9%-Yb) (REO) [Yb(TMHD)$_3$]	447
$C_{34}H_{18}F_{16}IrN_4P$	(2,2'-Bipyridine)bis[3,5-difluoro-2-[5-(trifluoromethyl)-2-pyridinyl-kN][phenyl-kC] iridium(III) hexafluorophosphate, 95%	86
$C_{34}H_{19}F_6O_4P$	(11bS)-4-Hydroxy-2,6-bis[4-(trifluoromethyl) phenyl]-4-oxide-dinaphtho[2,1-d:1',2'-f] [1,3,2]dioxaphosphepin, 95%, (99% ee)	313
$C_{34}H_{22}NO_2P$	(S)-(+)-(3,5-Dioxa-4-phosphacyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl)-5H-dibenz[b,f]azepine, min. 97%	301
$C_{34}H_{26}P_2$	1,8-(Diphenylphosphino)naphthalene, 99%	307
$C_{34}H_{28}ClNO_2Ru$	Chlorodicarbonyl[1-(i-propylamino)-2,3,4,5-tetraphenylcyclopentadienyl] ruthenium(II), min. 95%	377
$C_{34}H_{28}Cl_2CoFeP_2$	Dichloro[1,1'-bis(diphenylphosphino) ferrocene]cobalt(II), 99%	51
$C_{34}H_{28}Cl_2FeNiP_2$	Dichloro[1,1'-bis(diphenylphosphino) ferrocene]nickel(II), 98%	174
$C_{35}H_{30}Cl_4FeP_2Pd$	Dichloro 1,1'-bis(diphenylphosphino)ferrocene palladium (II) dichloromethane, 99%	238
$C_{34}H_{28}FeP_2$	1,1'-Bis(diphenylphosphino)ferrocene, 99% DPPF	97
$C_{34}H_{28}O_2Pd$	Bis(dibenzylideneacetone)palladium(0)	227
$C_{34}H_{29}F_{12}N_2O_2P$	2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-dimethylamino-1,1'-biphenyl, 98%	280
$C_{34}H_{30}F_6N_4O_{10}Pd_2S_2$	Acetato(2,9-dimethyl-1,10-phenanthroline) palladium(II) dimer bis(trifluoromethanesulfonate), 99%	226
$C_{34}H_{30}N_4$	(12a,18a)-5,6,12,12a,13,18,18a,19-Octahydro-5,6-dimethyl-13,18[1',2']-benzenobisbenzimidazo [1,2-b:2',1'-d]benzo[i][2.5] benzodiazocine potassium triflate adduct	204
$C_{34}H_{32}ClFeN_4O_4$	Hemin (Ferriprotoporphyrin IX chloride), min. 95%	106
$C_{34}H_{32}N_3O_3P$	1-Benzyl-3-{(1R,2R)-2-[(11bS)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl-amino]cyclohexyl}urea, min. 97%	251
$C_{34}H_{32}N_4O_4Zn$	Zinc protoporphyrin	453
$C_{34}H_{33}P_3$	Bis(2-diphenylphosphinoethyl)phenylphosphine, 97% TRIPHOS	268
$C_{34}H_{34}N_4O_4$	Protoporphyrin IX	207
$C_{34}H_{34}O_4$	(2R,3R)-1,4-Dioxaspiro[4.5]decane-2,3-diyl-bis(diphenylmethanol), min. 98%	218
	(2S,3S)-1,4-Dioxaspiro[4.5]decane-2,3-diyl-bis(diphenylmethanol), min. 98%	218
$C_{34}H_{36}P_2$	(+)-1,2-Bis((2S,5S)-2,5-diphenylphospholano)ethane, min. 98% (S,S)-Ph-BPE	272
	(-)-1,2-Bis((2R,5R)-2,5-diphenylphospholano)ethane, min. 95% (R,R)-Ph-BPE	272
$C_{34}H_{37}NO_2P_2$	(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (R,R-BPPM)	306
$C_{34}H_{37}P$	11-Dicyclohexylphosphino-12-phenyl-9,10-ethenoanthracene dichloromethane adduct, min. 98% KITPHOS	295
$C_{34}H_{38}F_6FeP_2$	(R)-(-)-1-{(S)-2-[Bis(4-trifluoromethylphenyl) phosphino]ferrocenyl} ethyl-di-t-butylphosphine, min. 97%	99
$C_{34}H_{38}N_4O_4$	Mesoporphyrin IX dihydrochloride	202
$C_{34}H_{38}N_4O_6$	Hematoporphyrin IX dihydrochloride	200
$C_{34}H_{42}BF_4P$	Dicyclohexyl[9-(3-phenylpropyl)fluoren-9-yl] phosphonium tetrafluoroborate, min. 95% [cataCXium® FPrPh]	292
$C_{34}H_{43}O_{10}PS_3$	Dicyclohexyl-{9-[3-(4-sulfonylphenyl) propyl]-2-sulfonylfluoren-9-yl}phosphonium hydrogen sulfate, min. 95% [cataCXium® FSulf]	295
$C_{34}H_{45}ClNO_2PPd$	Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)[2-(2-aminoethylphenyl)] palladium(II) methyl-t-butylether adduct, min. 98% [SPhos Palladacycle Gen. 1]	231
$C_{34}H_{49}NO_2P$	(2S,4S)-(-)-2-(Diphenylphosphinomethyl)-4-(diphenylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (S,S-BPPM)	306
$C_{34}H_{49}NO_2P_2$	(2R,4R)-(+)-2-(Diphenylphosphinomethyl)-4-(dicyclohexylphosphino)-N-(t-butoxycarbonyl)pyrrolidine, min. 97% (R,R-BCPM)	305
$C_{34}H_{52}BF_4FeP_2Rh$	1,1'-Bis((2R,5R)-2,5-diethylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate	350
	1,1'-Bis((2S,5S)-2,5-diethylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate	350
$C_{34}H_{52}Cl_2FeP_2Pd$	Dichloro[1,1'-bis(dicyclohexylphosphino) ferrocene]palladium(II), dichloromethane adduct, 99%	237
$C_{34}H_{52}FeP_2$	1,1'-Bis(dicyclohexylphosphino)ferrocene, min. 98%	95
$C_{34}H_{56}BF_4P_2Rh$	(+)-1,2-Bis((2R,5R)-2,5-di-i-propylphospholano)benzene)1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 98% (R,R)-i-Pr-DUPHOS-Rh	354
	(-)-1,2-Bis((2S,5S)-2,5-di-i-propylphospholano)benzene(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (S,S)-i-Pr-DUPHOS-Rh	354
$C_{34}H_{68}ClN$	Tetraoctylammonium chloride, min. 97%	169
$C_{34}H_{68}F_6NO_4PS_2$	Trihexyl(tetradecyl)phosphonium bis(trifluoromethanesulfonyl)amide, min. 97% CYPHOS® IL 109	83
$C_{34}H_{69}N_3P$	Trihexyl(tetradecyl)phosphonium dicyanamide, min. 95% CYPHOS® IL 105	84
$C_{35}H_{26}$	1,2,3,4,5-Pentaphenyl-1,3-cyclopentadiene, 99%	39
$C_{35}H_{30}N_2O_2$	(R)-7,7'-Bis[(4S)-(phenyl)oxazol-2-yl)]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Ra,S,S)-SpiroBOX	187
	(S)-7,7'-Bis[(4S)-(phenyl)oxazol-2-yl)]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Sa,S,S)-SpiroBOX	187
$C_{35}H_{35}ClN_2$	(S)-4,5-Dihydro-1,3-bis-([2.2]paracyclophan-4-yl)imidazolinium chloride, min. 97%	196
$C_{35}H_{38}Cl_2O_6Ti$	(4R,5R)-(-)-2,2-Dimethyl-α,α,α',α'-tetraphenyl-1,3-dioxolane-4,5-dimethanolato[1,2-bis(dimethoxy)ethane]titanium(IV) dichloride acetonitrile adduct	440
$C_{35}H_{39}OP$	11-Dicyclohexylphosphino-12-(2-methoxyphenyl)-9,10-ethenoanthracene dichloromethane adduct, min. 98% o-MeO-KITPHOS	294
$C_{35}H_{43}BF_4N_4Pd$	[1,3-Bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene]{2-[(dimethylamino-kN) methyl]phenyl-kC}(pyridine)palladium (II) tetrafluoroborate, min. 97% PACC™	228
$C_{35}H_{45}N_2O_3PPdS$	Methanesulfonato[2-(di-t-butylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl] (2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [t-BuDavePhos Palladacycle Gen. 3]	242
$C_{35}H_{48}Cl_3N_3ORu$	[1,3-Bis(2,4,6-trimethylphenyl)-4-[(trimethylammonio)methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene) dichororuthenium(II) chloride StickyCat Cl	368
$C_{35}H_{53}ClN_2$	1,3-Bis[2,6-bis(1-ethylpropyl)phenyl]imidazolium chloride, 98% IPentHCl	181
$C_{35}H_{53}O_2P$	2-(Dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% BrettPhos	293
$C_{36}H_{17}F_{12}O_4P$	(11bR)-2,6-Bis[3,5-bis(trifluoromethyl) phenyl]-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	254

Formula	Description	Page
$C_{36}H_{21}F_9IrN_3$	Tris[(2-(2-pyridinyl-kN)-5-(trifluoromethyl) phenyl-kC]iridium(III), 95%	93
$C_{36}H_{24}F_{12}N_6RuP_2$	Tris(1,10-phenanthroline)ruthenium(II) hexafluorophosphate, 95%	401
$C_{36}H_{26}OP_2$	4,6-Bis(diphenylphosphino) dibenzofuran, 98% DBFphos	267
$C_{36}H_{27}NOP_2$	4,6-Bis(diphenylphosphino) phenoxazine, min. 98% NIXANTPHOS	270
$C_{36}H_{28}Cl_2OP_2Pd$	Dichloro{bis[2-(diphenylphosphino)phenyl] ether}palladium(II), 98%	238
$C_{36}H_{28}OP_2$	Bis(2-diphenylphosphinophenyl)ether, 98% DPEphos	270
$C_{36}H_{28}P_2$	2,2'-Bis(diphenylphosphino)-1,1'- biphenyl, 98% BIPHEP	267
$C_{36}H_{29}N_2O_4P$	1-{(1R,2S)-1-[(11bR)-Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97%	300
$C_{36}H_{30}Br_2NiP_2$	Bis(triphenylphosphine)nickel(II) bromide, 99%	173
$C_{36}H_{30}Br_2P_2Pd$	trans-Dibromobis(triphenylphosphine) palladium(II), 99%	236
$C_{36}H_{30}ClNP_2$	Bis(triphenylphosphine)iminium chloride, 97%	281
$C_{36}H_{30}Cl_2CoP_2$	Dichlorobis(triphenylphosphine)cobalt(II), 98%	51
$C_{36}H_{30}Cl_2NiP_2$	Bis(triphenylphosphine)nickel(II) chloride, 99%	173
$C_{36}H_{30}Cl_2P_2Pd$	trans-Dichlorobis(triphenylphosphine)palladium(II), 99% (99.9+%-Pd)	238
	trans-Dichlorobis(triphenylphosphine) palladium(II)/potassium phosphate admixture [CatKit single-use vials - 6.32 wt% Pd complex]	239
$C_{36}H_{30}Cl_2P_2Pt$	cis-Dichlorobis(triphenylphosphine)platinum(II), 98%	337
$C_{36}H_{30}CuNO_3P_2$	Bis(triphenylphosphine)copper(I) nitrate, 99%	55
$C_{36}H_{30}IO_2P_2Re$	Iododioxobis(triphenylphosphine)rhenium(V), 98%	347
$C_{36}H_{30}NO_2P$	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl) bis[(1R)-1-phenylethyl]amine, dichloromethane adduct, min. 95%	301
	(S)-(+)-(3,5-Dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl) bis[(1S)-1-phenylethyl]amine, min. 95%	301
$C_{36}H_{30}NP$	(1S,2S)-2-[(4R,11bS)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1,2-diphenylethanamine, min. 97%	297
	(1R,2R)-2-[(4S,11bR)-3,5-Dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]-1,2-diphenylethanamine, min. 97%	297
$C_{36}H_{30}Pb_2$	Hexaphenyldilead, min. 98%	114
$C_{36}H_{30}Sn_2$	Hexaphenylditin, 99+%	435
$C_{36}H_{31}F_{12}O_4P$	2-[Bis(3,5-trifluoromethylphenylphosphino)-3,6-dimethoxy]-2',6'-di-i-propoxy-1,1'-biphenyl, 98%	280
$C_{36}H_{32}F_6N_4O_6S_2$	11,12-Bis[N-methyl-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)	186
$C_{36}H_{34}BNP_2$	Bis(triphenylphosphine)iminium borohydride, min. 97%	281
$C_{36}H_{36}F_{12}N_6RuP_2$	Tris(4,4'-dimethyl-2,2'-bipyridine)ruthenium(II) hexafluorophosphate, 95%, DMBPY	401
$C_{36}H_{36}FeO_2P_2$	(S)-(+)-1-[(R)-2-(Di-2-furylphosphino)ferrocenyl]ethyldi- 3,5-xylylphosphine, min. 97%	102
$C_{36}H_{36}N_{24}O_{12}$	Cucurbit[6]uril (CB[6]) hydrate, 99+%	192
$C_{36}H_{37}N_2O_4P$	1-{(1S,2R)-1-[(11bR)-8,9,10,11,12,13,14,15-Octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97%	316
$C_{36}H_{37}O_4P$	(11bR)-2,6-Bis(3,5-dimethylphenyl)-8,9,10,11,12,13,14,15-octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	264
	(11bS)-2,6-Bis(3,5-dimethylphenyl)-8,9,10,11,12,13,14,15-octahydro-4-hydroxy-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	264
$C_{36}H_{38}N_4O_4$	Protoporphyrin IX, dimethyl ester	207
$C_{36}H_{38}N_4O_8$	Coproporphyrin I dihydrochloride (synthetic).	191
	Coproporphyrin III dihydrochloride	192
$C_{36}H_{39}N_4P$	5-(Dicyclohexylphosphino)-1',3',5'-triphenyl-[1,4']-bi-1H-pyrazole, min. 95% Cy-BipyPhos	295
$C_{36}H_{40}BF_4N_3O_2RuS$	{[(1R,2R)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine) ruthenium(II) tetrafluoroborate, min. 97%	363
	{[(1S,2S)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine) ruthenium(II) tetrafluoroborate, min. 97%	364
$C_{36}H_{40}BF_4O_2P_2Rh$	(R,R)-(-)-1,2-Bis[(o-methoxyphenyl)(phenyl) phosphino]ethane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 95%	355
	(S,S)-(+)-1,2-Bis[(o-methoxyphenyl)(phenyl) phosphino]ethane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 95%	355
$C_{36}H_{40}BF_4P_2Rh$	1,4-Bis(diphenylphosphino)butane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, dichloromethane adduct, min. 98%	353
$C_{36}H_{41}N_2O_4PS$	4-Butyl-N-[(11bR)-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yl]benzenesulfonamide triethylamine adduct, min. 97%	282
$C_{36}H_{41}N_2O_4PSi_2$	1-{2S)-1-[(11bR)-2,6-Bis(trimethylsilyl) dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-yloxy]propan-2-yl}-3-phenylurea, min. 97%	281
$C_{36}H_{42}N_4O_4$	Mesoporphyrin IX, dimethyl ester, 97%	202
$C_{36}H_{44}FeP_2$	(S)-(+)-1-[(R)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldiphenylphosphine, min. 97%	101
	(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldicyclohexylphosphine ethanol adduct, min. 97% (R)-(S)-JOSIPHOS	104
	(S)-(+)-1-[(R)-2-(Diphenylphosphino)ferrocenyl]ethyldicyclohexylphosphine ethanol adduct, min. 97% (S)-(R)-JOSIPHOS	104
	(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldiphenylphosphine, min. 97%	101
$C_{36}H_{44}N_4OV$	Vanadyl octaethylporphine	446
$C_{36}H_{45}ClN_2Pd$	Chloro[(1,2,3-η)-3-phenyl-2-propenyl] [1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]palladium(II), min. 97%	234
$C_{36}H_{46}ClN_3OPd$	Chloro{2-[1-(N-methoxy)iminoethyl] phenyl}{[1,3-bis(2,6-di-i-propylphenyl] imidzole-2-ylidene}palladium(II)	233
$C_{36}H_{46}N_4$	Octaethylporphine, 97+% OEP	204
$C_{36}H_{47}ClN_2Pd$	Chloro[(1,2,3-η)-3-phenyl-2-propenyl] [1,3-bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene]palladium(II), min. 97%	234
$C_{36}H_{52}AlClN_2O_2$	(1R,2R)-(-)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]aluminum(III) chloride, 98%	3
	(1S,2S)-(+)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)] aluminum(III) chloride, 98%	3
$C_{36}H_{52}ClCrN_2O_2$	(1R,2R)-(-)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]chromium(III) chloride	46
	(1S,2S)-(+)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)] chromium(III) chloride	46
$C_{36}H_{52}ClMnN_2O_2$	(1R,2R)-(-)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]manganese(III) chloride, 98% (R,R)-Jacobsen Cat.	125
	(1S,2S)-(+)-[1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene)]manganese(III) chloride, 98% (S,S)-Jacobsen Cat.	125
$C_{36}H_{52}CoN_2O_2$	(1R,2R)-(-)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene) cobalt(II)	51

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Formula	Description	Page
	(1S,2S)-(+)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene) cobalt(II)	51
$C_{36}H_{52}OP_2$	Bis(2-dicyclohexylphosphinophenyl)ether, 98%	258
$C_{36}H_{52}P_2$	2,2'-Bis(dicyclohexylphosphino)-1,1'-biphenyl, min. 97%	258
$C_{36}H_{54}Cl_2NiP_2$	trans-Bis(dicyclohexylphenylphosphino) nickel(II) chloride, 99%	172
$C_{36}H_{54}N_2O_2$	(1R,2R)-(-)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene), 98% (R,R)-Jacobsen Ligand	193
	(1S,2S)-(+)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene), 98% (S,S)-Jacobsen Ligand	193
$C_{36}H_{56}FeP_2$	(R)-(-)-1-[(S)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldicyclohexylphosphine, min. 97%	101
	(S)-(+)-1-[(R)-2-(Dicyclohexylphosphino) ferrocenyl]ethyldicyclohexylphosphine, min. 97%	101
$C_{36}H_{66}Cl_2NiP_2$	Bis(tricyclohexylphosphine)nickel(II) chloride, 99%	173
$C_{36}H_{66}Cl_2P_2Pd$	trans-Dichlorobis(tricyclohexylphosphine) palladium(II), 99%	238
	trans-Dichlorobis(tricyclohexylphosphine) palladium(II)/potassium phosphate admixture [CatKit single-use vials - 6.62 wt% Pd complex]	238
$C_{36}H_{66}P_2Pd$	Bis(tricyclohexylphosphine)palladium(0), 98%	228
$C_{36}H_{70}BaO_4$	Barium stearate, tech. gr.	12
$C_{36}H_{70}CaO_4$	Calcium stearate, min. 85%	36
$C_{36}H_{70}CoO_4$	Cobalt stearate (9-10% Co)	50
$C_{36}H_{70}FeO_4$	Iron(II) stearate (9% Fe)	109
$C_{36}H_{70}NiO_4$	Nickel(II) stearate	176
$C_{37}H_{11}F_{15}N_4$	5,10,15-Tri(pentafluorophenyl)corrole	212
$C_{37}H_{30}ClIrOP_2$	Chlorocarbonylbis(triphenylphosphine) iridium(I), 99% VASKA'S COMPLEX	87
$C_{37}H_{30}ClOP_2Rh$	Chlorocarbonylbis(triphenylphosphine) rhodium(I), 99%	356
$C_{37}H_{31}P_3$	1,1,1-Tris(diphenylphosphino)methane, 97%	331
$C_{37}H_{34}NPS$	(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[diphenylphosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-Ph-SpiroSAP-Ph]	319
$C_{37}H_{35}FeNP_2$	(R)-1-[(S)-2-Diphenylphosphinoferrocenyl] (N-methyl)(N-diphenylphosphino)ethylamine (R)-Me-Bophoz	104
	(S)-1-[(R)-2-Diphenylphosphinoferrocenyl] (N-methyl)(N-diphenylphosphino)ethylamine (S)-Me-Bophoz	104
$C_{37}H_{41}ClNiO_3P_2$	Chloro(2-methylphenyl)[1,3,5,7-tetramethyl-8-(2-di-o-tolylphosphinophenyl)-2,4,6-trioxa-8-phosphaadamantane]nickel(II), Stradiotto PAd-DalPhos Nickel Catalyst	174
$C_{37}H_{47}F_6IrN_2P_2$	(Dimethylphenylphosphine)(1,5-cyclooctadiene)[1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene]iridium(I) hexafluorophosphate, min. 98%	91
$C_{37}H_{51}O_3P$	2-[Bis(3,5-di-t-butyl-4-methoxyphenyl) phosphino]benzaldehyde, min. 97%	256
$C_{37}H_{52}NO_3PPdS$	Methanesulfonato(diadamantyl-n-butylphosphino)-2'-amino-1,1'-biphenyl-2-yl) palladium(II) dichloromethane adduct, min. 95% [cataCXium® A Palladacycle Gen. 3]	241
$C_{37}H_{55}ClNPPd$	Chloro(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)[2-(2-aminoethyl) phenyl] palladium(II), min. 98% [t-BuXPhos Palladacycle Gen. 1]	231
$C_{37}H_{56}CuF_3O_5P_4S$	Bis{[1-(2R,5R)-2,5-dimethylphospholanyl]-[2-(2R,5R)-2,5-dimethylphospholanyl-1-oxide]benzene}copper(I) trifluoromethanesulfonate, min. 97%	55
	Bis{[1-(2S,5S)-2,5-dimethylphospholanyl]-[2-(2S,5S)-2,5-dimethylphospholanyl-1-oxide]benzene}copper(I) trifluoromethanesulfonate, min. 97%	55
$C_{38}H_{24}F_4O_4P_2$	R-(-)-5,5'-Bis(diphenylphosphino)-2,2,2',2'-tetrafluoro-4,4'-bi-1,3-benzodioxole, dichloromethane adduct, min. 97% (R)-DIFLUORPHOS™	271
	S-(+)-5,5'-Bis(diphenylphosphino)-2,2,2',2'-tetrafluoro-4,4'-bi-1,3-benzodioxole, dichloromethane adduct, min. 97% (S)-DIFLUORPHOS™	271
$C_{38}H_{28}O_4P_2$	(R)-(+)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(+)-SEGPHOS®	266
	(S)-(-)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(-)-SEGPHOS®	266
$C_{38}H_{29}N_2OP$	(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethoxy]phthalazine, min. 97% (R,R)-O-PINAP	307
	(S)-(-)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethoxy]phthalazine, min. 97% (R,S)-O-PINAP	307
$C_{38}H_{30}Cl_2O_2P_2$	(R)-(+)-5,5'-Dichloro-6,6'- dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl, min. 95% (R)-Cl-MeO-BIPHEP	291
	(S)-(-)-5,5'-Dichloro-6,6'-dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl, min. 95% (S)-Cl-MeO-BIPHEP	291
$C_{38}H_{30}Cl_2O_2P_2Ru$	Dichlorodicarbonylbis(triphenylphosphine) ruthenium(II), min. 98%	391
$C_{38}H_{30}N_3P$	(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethyl]-1-phthalazinamine, min. 97% (R,R)-N-PINAP	307
	(S)-(-)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(R)-1-phenylethyl]-1-phthalazinamine, min. 97% (R,S)-N-PINAP	307
	(R)-(+)-4-[2-(Diphenylphosphino)-1-naphthalenyl]-N-[(S)-1-phenylethyl]-1-phthalazinamine, min. 97% (S,R)-N-PINAP	307
$C_{38}H_{30}NiO_2P_2$	Bis(triphenylphosphine)nickel dicarbonyl, 98%	173
$C_{38}H_{32}O_2P_2$	(R)-(+)-2,2'-Bis(diphenylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% (R)-MeO-BIPHEP	268
	(S)-(-)-2,2'-Bis(diphenylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97% (S)-MeO-BIPHEP	268
$C_{38}H_{32}P_2$	2,2'-Bis(diphenylphosphinomethyl)-1,1'-biphenyl, 99% BISBI	269
$C_{38}H_{33}N_2O_4P$	1-{(1S,2R)-1-[(11bR)-2,6-Dimethyldinaphtho[2,1-d:1',2'-f][1,3,2] dioxaphosphepin-4-yloxy]-1-phenylpropan-2-yl}-3-phenylurea, min. 97%	298
$C_{38}H_{34}NO_4P$	(11bR)-N,N-Bis[(R)-(-)-1-(2-methoxyphenyl) ethyl]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-amine, min. 98%	277
	(11bS)-N,N-Bis[(S)-(+)-1-(2-methoxyphenyl) ethyl]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-4-amine, min. 98%	277
$C_{38}H_{38}N_4$	11,12-Bis[1,3-dihydro-3-(i-propyl)-2H-benzimidazol-2-ylidene-3-methylene]-9,10-dihydro-9,10-ethanoanthracene	182
$C_{38}H_{45}ClNO_2PPd$	Chloro(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II) min. 98% [SPhos Palladacycle Gen. 2]	231
$C_{38}H_{46}ClN_2PPd$	Chloro[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [DavePhos Palladacycle Gen. 2]	232
$C_{38}H_{46}P_2$	racemic-trans-1,2-Bis[di(3,5-dimethylphenyl) phosphinomethyl]cyclobutane, min. 95%	261
$C_{38}H_{50}Cl_2Zr$	(+)-Bis[1-{(1'R,2'R,5'R)-2'-i-propyl-5'-methylcyclohexyl}indenyl]zirconium(IV) dichloride	455
$C_{38}H_{53}ClNO_2PPd$	Chloro(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl) [2-(2-aminoethylphenyl)]palladium(II), methyl-t-butylether adduct, min. 98% [RuPhos Palladacycle Gen. 1]	232

Formula	Description	Page
$C_{38}H_{60}BF_4FeP_2Rh$	1,1'-Bis((2R,5R)-2,5-di-i-propylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate	354
	1,1'-Bis((2S,5S)-2,5-di-i-propylphospholano) ferrocene(cyclooctadiene)rhodium(I) tetrafluoroborate	354
$C_{39}H_{32}Cl_2OP_2Pd$	Dichloro[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene]palladium(II), min. 98%	239
$C_{39}H_{32}OP_2$	9,9-Dimethyl-4,5-bis(diphenylphosphino) xanthene, min. 98% XANTPHOS	298
$C_{39}H_{32}O_2P_2$	R-(-)-1,13-Bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin, 97% (R)-C_3-TUNEPHOS	268
	(S)-(+)-1,13-Bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin, 95% (S)-C_3-TUNEPHOS	268
$C_{39}H_{34}NOP$	(R)-(+)-7-[4(S)-(Benzyl)oxazol-2-yl]-7'-diphenylphosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Ra,S)-Ph-Bn-SIPHOX	252
	(S)-(-)-7-[4(S)-(Benzyl)oxazol-2-yl]-7-diphenylphosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Sa,S)-Ph-Bn-SIPHOX	252
$C_{39}H_{34}P_2$	Bis[2-(4-methyldiphenylphosphino)phenyl] methane, 90%	278
$C_{39}H_{37}F_{12}O_2P$	2-Di[3,5-bis(trifluoromethyl)phenylphosphino]-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% JackiePhos	285
$C_{39}H_{40}BF_4P_2Rh$	(2S,3S)-(+)-2,3-Bis(diphenylphosphino) bicyclo[2.2.1]hept-5-ene(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97% (S,S)-NORPHOS-Rh	353
	(2R,3R)-(-)-2,3-Bis(diphenylphosphino) bicyclo[2.2.1]hept-5-ene(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97% (R,R)-NORPHOS-Rh	353
$C_{39}H_{42}ClF_2FeNNiP_2$	Chloro(4-cyanophenyl){(R)-1-[(S)-2-(bis(4-fluorophenyl)phosphinoferrocenyl] ethyl(di-t-butylphosphine)}nickel(II)	173
$C_{39}H_{44}ClFeNNiP_2$	Chloro(4-cyanophenyl){(R)-1-[(S)-2-(diphenylphosphino)ferrocenyl]ethyl(di-t-butyl) phosphine} nickel(II)	174
$C_{39}H_{48}NO_5PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl) (2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct min. 98% [SPhos Palladacycle Gen. 3]	243
$C_{39}H_{49}N_2O_3PPdS$	Methanesulfonato[2-(dicyclohexylphosphino)-2'-(N,N-dimethylamino)-1,1'-biphenyl] (2'-amino-1,1'-biphenyl-2-yl)palladium(II) CH_2Cl_2 adduct, min. 98% [DavePhos Palladacycle Gen. 3]	244
$C_{39}H_{50}Cl_2F_3N_3O_2Ru$	[1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene]-[2-i-propoxy-5-(trifluoroacetamido)phenyl]methyleneruthenium(II) dichloride M71-S1Pr	365
$C_{39}H_{52}ClO_2PPd$	Chloro(1-t-butylindenyl)[2-(dicyclohexylphosphino)-2',6'-dimethoxy-1,1'-biphenyl] palladium(II)	230
$C_{39}H_{53}Cl_2N_3O_3Ru$	[1,3-Bis(2,6-di-i-propylphenyl)imidazolidin-2-ylidene]{2-[[1-(methoxy(methyl) amino)-1-oxopropan-2-yl]oxy]benzylidene} ruthenium(II) dichloride GreenCat	365
$C_{39}H_{55}Cl_3N_4ORu$	[1,3-Bis(2,4,6-trimethylphenyl)-4-[(4-ethyl-4-methylpiperazin-1-ium-1-yl)methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene) dichlororuthenium(II) chloride AquaMet	367
$C_{39}H_{56}Cl_2P_2Ru$	3-Phenyl-1H-inden-1-ylidene[bis(i-butylphoban)]ruthenium(II) dichloride	397
$C_{39}H_{57}FeNO_3P_2PdS$	Methanesulfonato(1,1'-bis(di-t-butylphosphino)ferrocene)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [DTBPF Palladacycle Gen. 3]	240
$C_{40}H_{26}N_8$	meso-Tetra(4-pyridyl)porphine, 97%	209
$C_{40}H_{26}O_2$	(3R)-(-)-2,2'-Diphenyl-[3,3'-biphenanthrene]-4,4'-diol dichloromethane adduct, min. 98% (R)-VAPOL	219
	(3S)-(+)-2,2'-Diphenyl-[3,3'-biphenanthrene]-4,4'-diol dichloromethane adduct, min. 98% (S)-VAPOL	219
$C_{40}H_{31}ClN_4O_5$	9-(2-Carboxyphenyl)-2-chloro-5-[{2-(di(2-pyridyl)aminomethyl)phenyl}aminomethyl]-6-hydroxy-3-xanthanone Zinpyr-4	190
$C_{40}H_{32}Cl_8Cu_2N_4$	μ-Benzenebis[N,N'-(1,3-dimethyl-1,3-propanediylidene)bis(2,6-dichlorobenzenaminato)] dicopper(I), benzene adduct, min. 98%	54
$C_{40}H_{32}O_2P_2$	6,6'-Bis(diphenylphosphino)-1,1',3,3'-tetrahydro[5,5']biisobenzofuran, 99%	271
$C_{40}H_{32}O_4P_2$	R-(+)-6,6'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-5,5'-bi-1,4-benzodioxin, min. 94% (R)-SYNPHOS™	271
	S-(-)-6,6'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-5,5'-bi-1,4-benzodioxin, min. 97% (S)-SYNPHOS™	271
$C_{40}H_{33}O_4P$	(11bR)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-2-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	317
	(11bS)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-1-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	317
$C_{40}H_{34}P_2$	(R)-(-)-4,12-Bis(diphenylphosphino)-[2.2]-paracyclophane, min. 95% (R)-PHANEPHOS	270
	(S)-(+)-4,12-Bis(diphenylphosphino)-[2.2]-paracyclophane, min. 95% (S)-PHANEPHOS	270
$C_{40}H_{36}Cl_2FeN_2P_2Ru$	Dichloro[1,1'-bis(diphenylphosphino)ferrocene](2-aminomethylpyridine)ruthenium(II) $RuCl_2$(AMPY)(DPPF)	386
$C_{40}H_{36}F_6N_4O_6S_2$	11,12-Bis[N-benzyl-1H-imidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)	180
$C_{40}H_{36}OP_2$	2,2'-(Di-o-tolylphosphino)diphenylether, min. 97% DTP-DPEphos	311
$C_{40}H_{36}O_4P_2$	(S)-2,2'-Bis(diphenylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Ph-Garphos™	272
	(R)-2,2'-Bis(diphenylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-Ph-Garphos™	272
$C_{40}H_{36}O_4P_2Pd$	Diacetatobis(triphenylphosphine)palladium(II), 99%	235
$C_{40}H_{40}F_6IrN_4P$	(4,4'-Di-t-butyl-2,2'-bipyridine)bis[2-(2-pyridinyl-kN)phenyl-kC]iridium(III) hexafluorophosphate, 99%	90
$C_{40}H_{40}F_6N_4O_6S_2$	11,12-Bis[N-(i-propyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate)	188
$C_{40}H_{40}F_{12}FeP_2$	(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino]ferrocenyl}ethyldicyclohexylphosphine, min. 97%	98
$C_{40}H_{40}FeP_2$	(R)-(-)-1-[(S)-2-(Diphenylphosphino) ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%	104
	1,1'-Bis(1-diphenylphosphino-1-methylethyl) ferrocene ethanol adduct, 97% Hierso-PHOS-6 (Sylphos)	97
$C_{40}H_{41}ClN_2Pd$	Chloro(1-t-butylindenyl)[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-yl]palladium(II), 98%	230
$C_{40}H_{43}Cl_2N_3O_2P_2Ru$	Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane] [(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 98%	387
	Dichloro[(4R,5R)-(-)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane] [(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%	387
$C_{40}H_{46}N_4O_8$	Coproporphyrin I tetramethyl ester, 98% (synthetic)	191
$C_{40}H_{50}NO_5PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct min. 98% [SPhos Palladacycle Gen. 4]	244
$C_{40}H_{60}Cl_4Ru_4$	Chloro(pentamethylcyclopentadienyl)ruthenium(II) tetramer, min. 95%	379

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Formula	Description	Page
$C_{40}H_{84}O_4Si$	Tetradecyloxysilane	410
$C_{41}H_{30}F_6O_5P_2Ru$	Carbonylbis(trifluoroacetato)bis(triphenylphosphine)ruthenium(II) methanol adduct, min. 98%	368
$C_{41}H_{34}FeOP_2$	(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl][2-diphenylphosphinophenyl]methanol, min. 97%	103
$C_{41}H_{34}P_2$	(R)-(+)-7,7'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-SDP	272
	(S)-(-)-7,7'-Bis(diphenylphosphino)-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-SDP	272
$C_{41}H_{35}ClFeNiP_2$	Chloro(2-methylphenyl)[1,1'-bis(diphenylphosphino)ferrocene]nickel (II), 98%	174
$C_{41}H_{35}ClP_2Ru$	Chloro(cyclopentadienyl)bis(triphenylphosphine)ruthenium(II), 99%	376
$C_{41}H_{39}P_3$	1,1,1-Tris(diphenylphosphinomethyl)ethane, min. 97% TRIPHOS	331
$C_{41}H_{42}NPS$	(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[bis(3,5-dimethylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-Xyl-SpiroSAP-Ph]	319
$C_{41}H_{44}NO_3PPdS$	Methanesulfonato(2-di-t-butylphosphino-1,1'-binaphthyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 95% [TrixiePhos Palladacycle Gen. 3]	242
$C_{41}H_{46}N_2O_2$	(4S,4'S)-2,2'-(1,3-Bis[4-(t-butyl)phenyl]propane-2,2-diyl]bis(4-phenyl-4,5-dihydrooxazole) (S)-BTBBPh-SaBOX	181
$C_{41}H_{48}ClN_3Pd$	Chloro{2-[(1-(N-phenyl)iminoethyl]phenyl}{[1,3-bis(2,6-di-i-propylphenyl]imidzole-2-ylidene}palladium(II)	234
$C_{41}H_{50}O_3P_2$	(11aS)-1,2,10,11-Tetramethyl-4,8-bis(t-butyl)-6-[[(2S,5S)-(2,5-diphenyl-1-phospholanyl) methoxy]-dibenzo[d,f][1,3,2]dioxaphosphepin] S_{ax}S,S-BOBPHOS	324
$C_{41}H_{54}N_3O_3PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',6'-bis(dimethylamino)-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), 98% [CPhos Palladacycle Gen. 3]	243
$C_{41}H_{55}BF_4N_4Pd$	[1,3-Bis(2,6-di-i-propylphenyl)-4,5-dihydroimidazol-2-ylidene]{2-[(dimethylamino-kN)methyl]phenyl-kC}(pyridine)palladium(II) tetrafluoroborate, min. 97% PACC™	228
$C_{41}H_{59}ClNPPd$	Chloro(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)[2-(2-aminoethyl)phenyl] palladium(II) methyl-t-butylether adduct, min. 98% [XPhos Palladacycle Gen. 1]	232
$C_{42}H_{27}LaO_5$	Di-[3-((S)-2,2'-dihydroxy-1,1'-binaphthylmethyl)]ether, lanthanum(III) salt, tetrahydrofuran adduct SCT-(S)-BINOL	111
$C_{42}H_{34}F_{16}IrN_4P$	(4,4'-Di-t-butyl-2,2'-bipyridine)bis[3,5-difluoro-2-[5-trifluoromethyl-2-pyridinyl-kN) phenyl-kC]iridium(III) hexafluorophosphate, 99%	90
$C_{42}H_{34}O_8P_2Ru$	Diacetato[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]ruthenium(II) $Ru(OAc)_2$[(R)-segphos®]	380
	Diacetato[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]ruthenium(II) $Ru(OAc)_2$[(S)-segphos®]	380
$C_{42}H_{35}ClNiP_2$	Chlorobis(triphenylphosphino)phenylnickel(II), 98%	173
$C_{42}H_{36}BrF_6N$	(11bR)-4,4-Dibutyl-2,6-bis(3,4,5-trifluorophenyl)-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]azepinium bromide	194
	(11bS)-4,4-Dibutyl-2,6-bis(3,4,5-trifluorophenyl)-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]azepinium bromide	194
$C_{42}H_{36}FeP_2$	(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldiphenylphosphine, min. 97%	104
$C_{42}H_{40}O_2P_2$	(R)-(+)-2,2'-Bis(di-p-tolylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	275
	(S)-(-)-2,2'-Bis(di-p-tolylphosphino)-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	275
$C_{42}H_{42}Cl_2P_2Pd$	trans-Dichlorobis(tri-o-tolylphosphine)palladium(II), min. 95%	239
$C_{42}H_{42}N_{28}O_{14}$	Cucurbit[7]uril (CB[7]) hydrate, 99+%	192
$C_{42}H_{42}P_2Pd$	Bis(tri-o-tolylphosphine)palladium(0), min. 98%	229
$C_{42}H_{42}P_4$	Tris[2-(diphenylphosphino)ethyl]phosphine, 98% PP_3	331
$C_{42}H_{47}Cl_2N_3O_2P_2Ru$	Dichloro[(4S,5S)-(+)-4,5-bis(diphenyphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	387
	Dichloro[(4R,5R)-(-)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(R)-(+)-2-(i-propyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	387
$C_{42}H_{48}BF_4P_2Rh$	(-)-1,2-Bis((2R,5R)-2,5-diphenylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (R,R)-Ph-BPE-Rh	353
	(+)-1,2-Bis((2S,5S)-2,5-diphenylphospholano)ethane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 98% (S,S)-Ph-BPE-Rh	353
$C_{42}H_{48}FeP_2$	(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldicyclohexylphosphine, min. 97%	104
$C_{42}H_{53}ClNO_2PPd$	Chloro(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 2]	232
$C_{42}H_{53}Fe_2NP_2$	1-{[(R)-Ferrocenyl-2-(S)-ethyl-1-dimethylamino)phenyl]-(R)-phosphino}-1'- dicyclohexylphosphinoferrocene, min. 97% Chenphos	106
	1-{[(S)-Ferrocenyl-2-(R)-ethyl-1-dimethylamino)phenyl]-(S)-phosphino}-1'- dicyclohexylphosphinoferrocene, min. 97% Chenphos	106
$C_{42}H_{56}FeO_2P_2$	(R)-(-)-1-{(S)-2-[Bis(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocenyl}ethyldicyclohexylphosphine, min. 97%	97
$C_{42}H_{58}NO_3PPdS$	Methanesulfonato(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [t-BuXPhos Palladacycle Gen. 3]	243
$C_{42}H_{63}O_3P$	Tris(2,4-di-t-butylphenyl)phosphite, 98%	331
$C_{42}H_{87}O_2P$	Trihexyl(tetradecyl)phosphonium decanoate, min. 95% CYPHOS® IL 103	84
$C_{43}H_{15}BF_{20}$	Trityltetra(pentafluorophenyl)borate, min. 97%	31
$C_{43}H_{37}ClNiP_2$	Bis(triphenylphosphino)(2-methylphenyl) chloronickel(II), 99%	173
$C_{43}H_{39}FeNP_2$	(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl](N,N-dimethylamino) (2-diphenylphosphinophenyl)methane, min. 97% TANIAPHOS	103
	(R)-(+)-[(R)-2-Diphenylphosphinoferrocenyl](N,N-dimethylamino)(2-diphenylphosphinophenyl)methane, min. 97%	103
$C_{43}H_{46}Cl_4N_4Ru$	1,3-Bis(2,4,6-trimethylphenyl)-2-imidazolidinylidene)(3-phenyl-1H-inden-1-ylidene)(4,5-dichloro-1,3-diethyl-1,3-dihydro-2H-imidazol-2-ylidene)ruthenium(II) chloride	367
$C_{43}H_{48}ClFeNiP_2$	Chloro(4-cyanophenyl){(R)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl]ethyl (diphenylphosphine)}nickel(II)	173
$C_{43}H_{48}Cl_2N_3O_2P_2Ru$	Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(i-butyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	386
	Dichloro[(4S,5S)-(+)-4,5-bis(diphenylphosphinomethyl)-2,2-dimethyl-1,3-dioxolane][(S)-(-)-2-(t-butyl)methanamine)-1H-benzimidazole]ruthenium(II), min. 97%	386
$C_{43}H_{52}Cl_2N_3PRuS$	Tricyclohexylphosphine[2,4-dihydro-2,4,5-triphenyl-3H-1,2,4-triazol-3-ylidene][2-thienylmethylene]ruthenium(II) dichloride, min. 95% [catMETium® RF 4]	399

Formula	Description	Page
$C_{43}H_{55}N_2O_4PPdS$	Methanesulfonato{N-[2-(di-1-adamantylphosphino)phenyl]morpholine}(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [Mor-Dalphos Palladacycle Gen. 3]	241
$C_{43}H_{56}NO_5PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 3]	244
$C_{43}H_{59}CoN_2O_5S$	(1S,2S)-(+)-1,2-Cyclohexanediamino-N,N'-bis(3,5-di-t-butylsalicylidene) cobalt(III) p-toluenesulfonate monohydrate	51
$C_{43}H_{60}ClFeNNiP_2$	Chloro(4-cyanophenyl){(R)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl]ethyl (dicyclohexylphosphine)}nickel(II)	173
$C_{43}H_{58}ClO_2PPd$	Chloro(1-t-butylindenyl)[2-(dicyclohexylphosphino)-2',6'-di-i-propoxy-1,1'-biphenyl] palladium(II)	230
$C_{43}H_{60}NO_3PPdS$	Methanesulfonato(2-di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [t-BuXphos Palladacycle Gen. 4]	243
$C_{43}H_{61}ClNiP_2$	Chlorobis(dicyclohexylphenylphosphino)(2-methylphenyl)nickel(II), 99%	173
$C_{43}H_{61}O_2P$	2-(Di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 95% AdBrettPhos	284
$C_{43}H_{63}ClNO_2PPd$	Chloro[2-(dicyclohexylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl][2-(2-aminoethyl)phenyl]palladium(II), min. 98% [BrettPhos Palladacycle Gen. 1]	231
$C_{43}H_{63}FeNP_2$	(S)-(-)-[(S)-2-Dicyclohexylphosphinoferrocenyl](N,N-dimethylamino)(2-dicyclohexylphosphinophenyl)methane, min. 97%	101
	(R)-(+)-[(R)-2-Dicyclohexylphosphinoferrocenyl](N,N-dimethylamino)(2-dicyclohexylphosphinophenyl)methane, min. 97%	101
$C_{43}H_{72}Cl_2P_2RuS$	Bis(tricyclohexylphosphine)[(phenylthio)methylene]ruthenium(II) dichloride, min. 97%	366
$C_{44}H_{26}N_4Na_4O_{12}S_4$	Tetrasodium-meso-tetra(4-sulfonatophenyl) porphine dodecahydrate, min. 95%	209
$C_{44}H_{28}ClCrN_4$	Chromium(III) tetraphenylporphine chloride	46
$C_{44}H_{28}ClFeN_4$	Iron(III) meso-tetraphenylporphine chloride	109
$C_{44}H_{28}CoN_4$	Cobalt(II) meso-tetraphenylporphine	50
$C_{44}H_{28}MgN_4$	Magnesium meso-tetraphenylporphine hydrate	123
$C_{44}H_{28}N_4Ni$	Nickel(II) meso-tetraphenylporphine	175
$C_{44}H_{28}N_4OV$	Vanadyl meso-tetraphenylporphine	446
$C_{44}H_{28}N_4Zn$	Zinc meso-tetraphenylporphine	453
$C_{44}H_{30}N_4$	meso-Tetraphenylporphine, min. 97% TPP (contains 1-3% chlorin)	209
	meso-Tetraphenylporphine TPP (chlorin free)	209
$C_{44}H_{32}Cl_2Ir_2N_4$	Di-μ-chlorotetrakis[2-(2-pyridinyl-kN)phenyl-kC]diiridium(III), 99%	91
$C_{44}H_{32}Cl_2P_2Pd$	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]palladium(II), min. 98%	237
	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]palladium(II), min. 98%	237
$C_{44}H_{32}Cl_2P_2Ru$	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1, 1'-binaphthyl]ruthenium(II), min. 95%	386
	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II), min. 95%	386
$C_{44}H_{32}P_2$	racemic-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% rac-BINAP	267
	(R)-(+)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% (R)-(+)-BINAP	267
	(S)-(-)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl, 98% (S)-(-)-BINAP	267
$C_{44}H_{34}Cl_2N_8O_5$	9-(2-Carboxyphenyl)-2,7-dichloro-4,5-bis[(2-picolyl)(pyrazin-2-ylmethyl)aminomethyl]-6-hydoxy-3-xanthanone ZPP1	190
$C_{44}H_{36}F_{12}FeP_2$	(R)-(-)-1-{(S)-2-[Bis(3,5-di-trifluoromethylphenyl)phosphino]ferrocenyl}ethyldi-3,5-xylylphosphine, min. 97%	98
$C_{44}H_{38}O_2P_2$	(+)-1,13-Bis(diphenyl)phosphino-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano [3,2-d]xanthene, 97% (R,R,R)-(+)-Ph-SKP	269
	(-)-1,13-Bis(diphenyl)phosphino-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano [3,2-d]xanthene, 97% (S,S,S)-(-)-Ph-SKP	269
$C_{44}H_{40}N_2O_2P_2$	(1R,2R)-(+)-1,2-Diaminocyclohexane-N,N'-bis(2'-diphenylphosphinobenzoyl), 98% (R,R)-DACH-Phenyl Trost Ligand	285
	(1S,2S)-(-)-1,2-Diaminocyclohexane-N,N'-bis(2'-diphenylphosphinobenzoyl), 95% (S,S)-DACH-Phenyl Trost Ligand	285
$C_{44}H_{40}P_2$	(R)-(+)-2,2'-Bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl (R)-(+)-H_8-BINAP	270
	(S)-(-)-2,2'-Bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl (S)-(-)-H_8-BINAP	270
	3,3'-Bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro [2,2'] binaphthalene chloroform adduct, 99%	269
$C_{44}H_{42}N_2P_2$	(S)-(-)-2,2'-Bis(N-diphenylphosphinoamino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl, min. 95% CTH-(S)-BINAM	266
$C_{44}H_{42}O_4P$	(R)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane R-An-Phanephos	278
	(S)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane S-An-Phanephos	278
$C_{44}H_{44}Cl_2N_2P_2Ru$	Dichloro{(1R,2R)-N,N-bis[2-(diphenylphosphino)benzyl]cyclohexane-1,2-diamine} ruthenium(II), min. 97%	382
	Dichloro{(1S,2S)-N,N-bis[2-(diphenylphosphino)benzyl]cyclohexane-1,2-diamine} ruthenium(II), min. 97%	382
$C_{44}H_{44}N_2P_2$	(1R,2R)-N,N-Bis[2-(diphenylphosphino) benzyl]cyclohexane-1,2-diamine, min. 97%	266
	(1S,2S)-N,N-Bis[2-(diphenylphosphino) benzyl]cyclohexane-1,2-diamine, min. 97%	266
$C_{44}H_{44}O_4P_2$	(S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Tol-Garphos™	275
	(R)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-Tol-Garphos™	275
$C_{44}H_{48}F_6IrN_4P$	4,4'-Bis(t-butyl-2,2'-bipyridine]bis[5-methyl-2-(4-methyl-2-pyridinyl-kN)phenyl-kC]iridium hexafluorophosphate, 95%	86
$C_{44}H_{48}P_2S$	(+)-{4-[(1R,4S)-3-(Diphenylphosphino)-1,7,7-trimethylbicyclo[2.2.1]hept-2-en-2-yl]-2,5-dimethyl-3-thien-3-yl}bis(3,5-dimethylphenyl)phosphine, min. 95% [catASium® T3]	309
$C_{44}H_{49}FeP_3$	4-(t-Butyl)-1,2-bis(diphenylphosphino)-1'-(di-i-propylphosphino)ferrocene, 98% HiersoPHOS-4	99
$C_{44}H_{57}N_2O_4PPdS$	Methanesulfonato{N-[2-(di-1-adamantylphosphino)phenyl]morpholine}(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% MorDalphos Palladacycle Gen. 4	241
$C_{44}H_{58}NO_5PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RuPhos Palladacycle Gen. 4]	245
$C_{44}H_{61}Cl_2N_2PRuS$	Tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl) imidazol-2-ylidene][2-thienylmethylene]ruthenium(II) dichloride, min. 95% [catMETium® RF 2]	399
$C_{44}H_{62}NO_4PPdS$	Methanesulfonato(2-(di-t-butylphosphino)-3-methoxy-6-methyl-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [RockPhos Palladacycle Gen. 3]	242

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Formula	Description	Page
$C_{44}H_{62}NO_5PPdS$	Methanesulfonato(2-(di-t-butylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), dichloromethane adduct, min. 98%[t-BuBrettPhos Palladacycle Gen. 3]	242
$C_{44}H_{69}NP_2$	Bis[2-(di-1-adamantylphosphino)ethyl] amine, min. 97%	256
$C_{44}H_{76}CeO_8$	Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato)cerium(IV), min. 97% (99.9%-Ce) (REO) [Ce(TMHD)$_4$]	42
$C_{44}H_{76}HfO_8$	Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato)hafnium(IV), 99%	78
$C_{44}H_{76}NbO_8$	Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato)niobium(IV), 99% [Nb(TMHD)$_4$]	177
$C_{44}H_{76}O_8Zr$	Tetrakis(2,2,6,6-tetramethyl-3,5-heptanedionato) zirconium(IV), 99% [Zr(TMHD)$_4$]	457
$C_{44}H_{85}O_3PS$	Tributyl(tetradecyl)phosphonium dodecylbenzenesulfonate, min. 98% CYPHOS® IL 201	83
$C_{45}H_8F_{20}N_4ORu$	Carbonyl[5,10,15,20-tetrakis(2,3,4,5,6-pentafluorophenyl)-21H,23H-porphinato] ruthenium(II), min. 98%	369
$C_{45}H_{31}O_4P$	(11aR)-10,11,12,13-Tetrahydro-5-hydroxy-3,7-di-9-phenanthrenyl-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%	322
	(11aS)-10,11,12,13-Tetrahydro-5-hydroxy-3,7-di-9-phenanthrenyl-5-oxide-diindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin, min. 98%	322
$C_{45}H_{36}FeN_2$	(R)-(+)-4-Dimethylaminopyrindinyl(pentaphenylcyclopentadienyl)iron, min. 98% (R)-C$_5$Ph$_5$-DMAP	102
$C_{45}H_{37}ClP_2Ru$	Chloro(indenyl)bis(triphenylphosphine) ruthenium(II), dichloromethane adduct, min. 98%	378
$C_{45}H_{40}BClN_6P_2Ru$	Chloro[hydrotris(pyrazol-1-yl)borato] bis(triphenylphosphine)ruthenium(II) ethanol adduct	378
$C_{45}H_{42}P_2$	(R)-(+)-7,7'-Bis[di(4-methylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-Tol-SDP	264
	(S)-(-)-7,7'-Bis[di(4-methylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-Tol-SDP	265
$C_{45}H_{49}O_4P$	(3aR,8aR)-(-)-4,4,8,8-Tetrakis (3,5-dimethylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin	323
	(3aS,8aS)-(+)-4,4,8,8-Tetrakis(3,5-dimethylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin	323
$C_{45}H_{57}Cl_2N_2O_3PRu$	Tri(i-propoxy)phosphine(3-phenyl-1H-inden-1-ylidene)[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene]ruthenium (II) dichloride, min. 95% cis-Caz-1	400
$C_{45}H_{59}ClNPPd$	Chloro(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [XPhos Palladacycle Gen. 2]	232
$C_{45}H_{65}FeNO_3P_2PdS$	Methanesulfonato{(R)-(-)-1-[(S)-2-(dicyclohexylphosphino)ferrocenyl]ethyldi-t-butylphosphine}(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [Josiphos Palladacycle Gen. 3]	245
$C_{45}H_{71}Cl_3N_4O_3Ru$	(1,3-Bis(2,6-diisopropylphenyl)-4-((4-ethyl-4-methylpiperzain-1-ium-1-yl)methyl)imidazolidin-2-ylidene)(2-isopropoxybenzylidene) ruthenium(II) chloride dihydrate FixCat	365
$C_{45}H_{72}CuF_3O_5P_4S$	Bis{[1-(2R,5R)-2,5-diethylphospholanyl]-[2-(2R,5R)-2,5-diethylphospholanyl-1-oxide] benzene}copper(I) trifluoromethanesulfonate, min. 97%	54
	Bis{[1-(2S,5S)-2,5-diethylphospholanyl]-[2-(2S,5S)-2,5-diethylphospholanyl-1-oxide] benzene}copper(I) trifluoromethanesulfonate, min. 97%	54
$C_{46}H_{31}MnN_4O_2$	Manganese(III) meso-tetraphenylporphine acetate	127
$C_{46}H_{32}F_{12}FeP_2$	(R)-(-)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethylbis(di-3,5-trifluoromethylphenyl)phosphine, min. 97%	104
$C_{46}H_{36}Cl_2N_6O_5$	9-(2-Carboxyphenyl)-2,7-dichloro-4,5-bis[di(2-pyridyl)aminomethyl]-6-hydroxy-3-xanthanone ZINPYR-1	191
$C_{46}H_{36}N_4O_{11}$	2-{4,5-Bis[(6-(2-ethoxy-2-oxohydroxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2A	185
$C_{46}H_{38}BrF_{12}P$	(11bS)-(-)-4,4-Dibutyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% S-Maruoka CAT P-NB	286
	(11bR)-(+)-4,4-Dibutyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% R-MARUOKA CAT P-NB	286
	(11bR)-(+)-4,4-Di-t-butyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% R-MARUOKA CAT P-TB	286
	(11bS)-(-)-4,4-Di-t-butyl-2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,5-dihydro-3H-dinaphtho[2,1-c:1',2'-e]phosphepinium bromide, 99% S-MARUOKA CAT P-TB	286
$C_{46}H_{43}Cl_2FeNOP_2Ru$	(-)-Dichloro[(4S)-4-(i-propyl)-2-{(S)-2-(diphenylphosphino)ferrocenyl}oxazoline] (triphenylphosphine)ruthenium(II)	392
	(+)-Dichloro[(4R)-4-(i-propyl)-2-{(R)-2-(diphenylphosphino)ferrocenyl}oxazoline] (triphenylphosphine)ruthenium(II)	392
$C_{46}H_{44}F_{12}FeP_2$	(R)-(+)-1-[(R)-2-(2'-Dicyclohexylphosphinophenyl)ferrocenyl]ethylbis(3,5-trifluoromethylphenyl)phosphine, min. 97%	102
$C_{46}H_{44}FeP_2$	(R)-(+)-1-[(R)-2-(2'-Diphenylphosphinophenyl)ferrocenyl]ethyldi(3,5-xylyl)phosphine, min. 97%	105
$C_{46}H_{44}O_4P_2$	(R)-(+)-5,5'-Bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(+)-DM-SEGPHOS®	276
	(S)-(-)-5,5'-Bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(-)-DM-SEGPHOS®	276
$C_{46}H_{44}O_8P_2$	6,6'-[(3,3'-Di-t-butyl-5,5'-dimethoxy-1,1'-biphenyl-2,2'-diyl)bis(oxy)] bis(dibenzo[d,f][1,3,2]dioxaphosphepin) hemi ethyl acetate adduct, min. 95% BIPHEPHOS	287
$C_{46}H_{45}ClP_2Ru$	Chloro(pentamethylcyclopentadienyl)bis(triphenylphosphine)ruthenium(II), 99%	379
$C_{46}H_{46}BF_4N_2O_4P_2Rh$	(R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	360
	(S)-(-)-2,2',6,6'-Tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	360
$C_{46}H_{46}B_2O_9$	3',6'-Bis{[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)oxy]-3H-[spiro(isobenzofuran-1,9,-xanthen]-3-one} FBBBE	25
$C_{46}H_{46}O_4P_2Pd_2$	trans-Di(μ-acetato)bis[o-(di-o-tolylphosphino)benzyl]dipalladium(II), 97+% [cataCXium® C]	235
$C_{46}H_{48}O_2P_2$	(R)-(+)-2,2'-Bis[di(3,5-xylyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	277
	(S)-(-)-2,2'-Bis[di(3,5-xylyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	277
$C_{46}H_{48}O_{10}P_2$	(R)-(+)-2,2'-Bis[di(3,5-dimethoxyphenyl) phosphino]-6,6'-dimethoxy-1,1'-biphenyl, 98% (R)-ECNU-Phos	260
$C_{46}H_{50}N_2O_4P_2$	(R)-(+)-2,2',6,6'-Tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine, min. 97% CTH-(R)-Xylyl-P-PHOS	324
	(S)-(-)-2,2',6,6'-Tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine, min. 95% CTH-(S)-Xylyl-P-Phos	324
$C_{46}H_{61}MoNO_2$	2,6-Diisopropylphenylimidoneophylidene[racemic-BIPHEN]molybdenum(VI), min. 97% rac-SCHROCK-HOVEYDA CATALYST	137

Formula	Description	Page
	2,6-Diisopropylphenylimidoneophylidene [(R)-(+)-BIPHEN]molybdenum(VI), min. 97% (R) SCHROCK-HOVEYDA CATALYST	137
	2,6-Diisopropylphenylimidoneo-phylidene[(S)-(-)-BIPHEN]molybdenum(VI), min. 97% (S) SCHROCK-HOVEYDA CATALYST	137
$C_{46}H_{62}NO_3PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II) dichloromethane adduct, min. 98% [Xphos Palladacycle Gen. 3]	245
$C_{46}H_{64}ClPPd$	Chloro(1-t-butylindenyl)[2-(dicyclohexylphosphino)-2',4',6'-tri-i-propyl-1,1'-biphenyl]palladium(II)	230
$C_{46}H_{65}ClN_2OPRu$	[1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)](tricyclohexylphosphine)-(2-oxobenzylidene)ruthenium(II) chloride LatMet	368
$C_{46}H_{65}Cl_2N_2PRuS$	Tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene][(phenylthio)methylene]ruthenium(II) dichloride	399
	Tricyclohexylphosphine[4,5-dimethyl-1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene][2-thienylmethylene]ruthenium(II) dichloride, min. 95% [catMETium® RF 3]	400
$C_{46}H_{66}NO_3PPdS$	Methanesulfonato(2-di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propylbiphenyl)(2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 95% [Me4 t-ButylXPhos Palladacycle Gen. 3]	243
$C_{47}H_{36}Cl_2O_4Ti$	(4R,5R)-(-)-2,2-Dimethyl-α,α,α',α'-tetra(1-naphthyl)-1,3-dioxolane-4,5-dimethanolatotitanium(IV) dichloride acetonitrile adduct	440
$C_{47}H_{38}O_4$	(4R,5R)-(-)-2,2-Dimethyl-α,α,α',α'-tetra(1-naphthyl)-1,3-dioxolane-4,5-dimethanol, min. 97% (R,R)-1-Nph-TADDOL	218
$C_{47}H_{40}F_6FeOP_2$	(S)-(-)-[(S)-2-Di(3,5-xylyl)phosphinoferrocenyl][2-di(4-trifluoromethylphenyl)phosphinophenyl]methanol, min. 97%	105
$C_{47}H_{41}FeNO_3P_2PdS$	Methanesulfonato[1,1'-bis(diphenylphosphino)ferrocene)](2'-amino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [DPPF Palladacycle Gen. 3]	240
$C_{47}H_{46}O_2P_2$	racemic-8,8'-Bis(diphenylphosphino)-3,3',4,4'-tetrahydro-4,4,4',4',6,6'-hexamethyl-2,2'-spirobi[2H-1-benzopyran], min. 95% SPANphos	272
$C_{47}H_{47}FeO_3P_2$	(S)-(-)-[(S)-2-Diphenylphosphinoferrocenyl][2-bis(3,5-dimethyl-4-methoxyphenyl)phosphinophenyl]methanol, min. 97%	103
$C_{47}H_{51}F_6IrN_2P_2$	Triphenylphosphine(1,5-cyclooctadiene)[1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene]iridium(I) hexafluorophosphate, min. 98%	93
$C_{47}H_{63}ClNO_2PPd$	Chloro(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 2]	231
$C_{47}H_{64}NO_3PPdS$	Methanesulfonato(2-dicyclohexylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [XPhos Palladacycle Gen. 4]	245
$C_{48}H_{20}Cl_2F_{20}Ir_2N_4$	Di-μ-chlorotetrakis[3,5-difluoro-2-[5-trifluoromethyl-2-pyridinyl-kN)phenyl-kC] diiridium(III), 99%	90
$C_{48}H_{28}F_{24}O_4P_2$	(S)-2,2'-Bis[bis(3,5-trifluoromethylphenyl) phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-BTFM-Garphos™	255
	(R)-2,2'-Bis[bis(3,5-trifluoromethylphenyl) phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-BTFM-Garphos™	255
$C_{48}H_{28}O_{32}Zr_6$	Zirconium 1,4-dicarboxybenzene MOF (UiO-66)	457
$C_{48}H_{30}N_4O_8$	meso-Tetra(4-carboxyphenyl)porphine, 98%	209
$C_{48}H_{36}BF_{24}Ir$	Bis(1,5-cyclooctadiene)iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 98%	86
$C_{48}H_{36}CoN_4O_4$	Cobalt(II) meso-tetra(4-methoxyphenyl) porphine, min. 96%	50
$C_{48}H_{38}CuN_3O_3P_2$	(1,10-Phenanthroline)bis (triphenylphosphine)copper(I) nitrate dichloromethane adduct, 98%	59
$C_{48}H_{38}O_4P_2Ru$	Diacetato[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(R)-binap]	380
	Diacetato[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(S)-binap]	380
$C_{48}H_{40}P_2$	(R)-(+)-2,2'-Bis(di-p-tolylphosphino)-1,1'-binaphthyl, 98% (R)-(+)-TolBINAP	275
	(S)-(-)-2,2'-Bis(di-p-tolylphosphino)-1,1'-binaphthyl, 98% (S)-(-)-TolBINAP	275
$C_{48}H_{41}NP_2$	Bis{2-[(11bR)-3,5-dihydro-4H-dinaphtho[2,1-c:1',2'-e]phosphepin-4-yl]ethyl}amine, min. 97%	262
$C_{48}H_{42}Cl_2O_4P_2Ru$	Chloro[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((R)-segphos®)]Cl	371
	Chloro[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole](p-cymene) ruthenium(II) chloride [RuCl(p-cymene)((S)-segphos®)]Cl	372
$C_{48}H_{44}Cl_4O_2P_2Ru$	Chloro[(R)-(+)-5,5'-dichloro-6,6'-dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl](p-cymene)ruthenium(II) chloride CH_2Cl_2 adduct	377
	Chloro[(S)-(-)-5,5'-dichloro-6,6'-dimethoxy-2,2'-bis(diphenylphosphino)-1,1'-biphenyl](p-cymene)ruthenium(II) chloride CH_2Cl_2 adduct	377
$C_{48}H_{44}FeP_2$	(R)-(-)-1-[(S)-2-(Di-1-naphthylphosphino) ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%	102
$C_{48}H_{44}O_8P_2$	Tetramethyl 6,6'-bis(diphenylphosphino)-1,1',3,3'-tetrahydro[5,5']biindenyl-2,2',2,2'-tetracarboxylate, 99%	324
$C_{48}H_{46}BF_4P_2Rh$	(R)-(-)-4,12-Bis(diphenylphosphino)[2.2]paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	353
	(S)-(+)-4,12-Bis(diphenylphosphino)[2.2]paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	353
$C_{48}H_{46}O_2P_2$	(+)-1,13-Bis[di(4-methylphenyl)phosphino]-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (R,R,R)-(+)-Tol-SKP	264
	(-)-1,13-Bis[di(4-methylphenyl)phosphino]-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (S,S,S)-(-)-Tol-SKP	264
$C_{48}H_{46}O_4P_2Ru$	Diacetato[(R)-(+)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(R)-H_8-binap]	380
	Diacetato[(S)-(-)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(S)-H_8-binap]	380
$C_{48}H_{47}FeP$	1,2,3,4,5-Pentaphenyl-1'-(di-t-butylphosphino)ferrocene, 95% CTC-Q-PHOS	110
$C_{48}H_{48}N_{32}O_{16}$	Cucurbit[8]uril (CB[8]) hydrate, 99+%	192
$C_{48}H_{50}P_2$	(R)-(-)-4,12-Bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane, min. 97% CTH-(R)-3,5-xylyl-PHANEPHOS	277
	(S)-(+)-4,12-Bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane, min. 97% CTH-(S)-3,5-xylyl-PHANEPHOS	277
$C_{48}H_{52}N_2P_2$	(1R,2R)-N,N-Bis[2-(di-p-tolylphosphino) benzyl]cyclohexane-1,2-diamine, min. 97%	274
	(1S,2S)-N,N-Bis[2-(di-p-tolylphosphino) benzyl]cyclohexane-1,2-diamine, min. 97%	274
$C_{48}H_{52}O_4P_2$	(S)-2,2'-Bis[bis(3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Xyl-Garphos™	253

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	(R)-2,2'-Bis[bis(3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy-)-1,1'-biphenyl, min. 97% (R)-Xyl-Garphos™	253
$C_{48}H_{54}N_4O_{16}$	Uroporphyrin I, octamethyl ester	212
	Uroporphyrin III, octamethyl ester	213
$C_{48}H_{57}FeP_3$	1',4-Bis(t-butyl)-1,2-bis(diphenylphosphino)-3'-(di-i-propylphosphino)ferrocene, 98% HiersoPHOS-1	94
$C_{48}H_{66}NO_5PPdS$	Methanesulfonato(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BrettPhos Palladacycle Gen. 3]	244
$C_{48}H_{102}O_2P_2$	Trihexyl(tetradecyl)phosphonium bis(2,4,4-trimethylpentyl)phosphinate, min. 95% CYPHOS® IL 104	83
$C_{49}H_{35}IrN_2O_8P_2$	[(S)-(-)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole][4-cyano-3-nitrobenzenecarboxylato][1,2,3-η-2-propenyl] iridium(III), min. 98%	86
	[(R)-(+)-5,5'-Bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole][4-cyano-3-nitrobenzenecarboxylato][1,2,3-n-2-propenyl] iridium(III), min. 97%	86
$C_{49}H_{40}N_2O_4P_2PdS$	Methanesulfonato[4,6-bis(diphenylphosphino)phenoxazine](2'-amino-1,1'-biphenyl-2-yl) palladium(II), 98% [NiXantphos Palladacycle Gen. 3]	240
$C_{49}H_{46}Cl_2O_2P_2Ru$	Chloro{(R)-(-)-1,13-bis(diphenylphosphino)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin}(p-cymene)ruthenium(II) chloride (R)-C_3-TUNEPHOS-Ru	374
$C_{49}H_{50}FeOP_2$	(S)-(-)-[(S)-2-Di(3,5-xylyl)phosphinoferrocenyl][2-di(3,5-xylyl)phosphinophenyl] methanol, min. 97%	105
$C_{49}H_{50}P_2$	(R)-(+)-7,7'-Bis[di(3,5-dimethylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (R)-Xyl-SDP	261
	(S)-(-)-7,7'-Bis[di(3,5-dimethylphenyl) phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (S)-Xyl-SDP	261
$C_{49}H_{52}F_6N_3P_3Ru$	Acetonitrilebis[2-diphenylphosphino-6-t-butylpyridine]cyclopentadienylruthenium(II) hexafluorophosphate, min. 98%	363
$C_{49}H_{66}O_{10}P_2$	(+)-6,6'-{[(1R,3R)-1,3-Dimethyl-1,3-propanediyl]bis(oxy)}bis[4,8-bis(t-butyl)-2,10-dimethoxy-bibenzo[d,f][1,3,2]dioxaphosphepin], min. 95% (R,R)-Chiraphite	299
	(-)-6,6'-{[(1S,3S)-1,3-Dimethyl-1,3-propanediyl]bis(oxy)}bis[4,8-bis(t-butyl)-2,10-dimethoxy-bibenzo[d,f][1,3,2]dioxaphosphepin], min. 95% (S,S)-Chiraphite	299
$C_{49}H_{68}NO_5PPdS$	Methanesulfonato(2-dicyclohexylphosphino-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl)(2'-methylamino-1,1'-biphenyl-2-yl) palladium(II), min. 98% [BrettPhos Palladacycle Gen. 4]	244
$C_{50}H_{44}F_6N_4O_6S_2$	11,12-Bis[N-(2-methylbenzyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate), min. 95%	186
$C_{50}H_{44}N_4O_{11}$	2-{4,5-Bis[(6-(2-ethoxy-2-oxoethoxy)-2-methylquinolin-8-ylamino)methyl]-6-hydoxy-3-oxo-3H-xanthen-9-yl}benzoic acid FL2E	184
$C_{50}H_{44}O_2P_2$	(2R,2'R,3R,3'R)-4,4'-Di(anthracen-9-yl)-3,3'-di-t-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole, min 98% (>90% ee), [(2R,2'R,3R,3'R)-WingPhos]	285
	(2S,2'S,3S,3'S)-4,4'-Di(anthracen-9-yl)-3,3'-di-t-butyl-2,2',3,3'-tetrahydro-2,2'-bibenzo[d][1,3]oxaphosphole, min 98%, (>99% ee), [(2S,2'S,3S,3'S)-WingPhos]	285
$C_{50}H_{46}BClF_4N_2P_2Ru$	Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-cyclohexane-1,2-diamine)]ruthenium(II) tetrafluoroborate, min. 97%	372
	Chloro[(S)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-cyclohexane-1,2-diamine]ruthenium(II) tetrafluoroborate, min. 97%	372
$C_{50}H_{47}ClN_4O_3Ru$	[1,3-Bis(2,4,6-trimethylphenyl)-2-imidazolidinylidene]-[2-[[(4-methylphenyl)imino] methyl]-4-nitrophenolyl]-[3-phenyl-1H-inden-1-ylidene]ruthenium(II) chloride	367
$C_{50}H_{48}ClN_3ORu$	[1,3-Bis(2,4,6-trimethylphenyl)-2-imidazolidinylidene]-[2-[[(2-methylphenyl)imino] methyl]phenolyl]-[3-phenyl-1H-inden-1-ylidene]ruthenium(II) chloride	367
$C_{50}H_{50}O_8P_2Ru$	Diacetato{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(R)-dm-segphos®]	381
	Diacetato{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(S)-dm-segphos®]	381
$C_{50}H_{52}FeP_2$	(R)-(+)-1-[(R)-2-(2'-Di-3,5-xylylphosphinophenyl)ferrocenyl]ethyldi-3,5-xylylphosphine, min. 97%	105
$C_{50}H_{54}Fe_3N_2P_2$	1,1'-Bis{1-[(S)-ferrocenyl-2-(R)-ethyl-1-(dimethylamino) phenyl]-(S)-phosphino} ferrocene, min. 97% Trifer	98
	1,1'-Bis{1-[(R)-ferrocenyl-2-(S)-ethyl-1-(diethylamino) phenyl]-(R)-phosphino} ferrocene, min. 97% Trifer	98
$C_{50}H_{56}O_{14}P_2$	(R)-(+)-2,2'-Bis[di(3,4,5-trimethoxyphenyl) phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	276
	(S)-(-)-2,2'-Bis[di(3,4,5-trimethoxyphenyl) phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	276
$C_{50}H_{57}F_6IrN_2P_2$	Tribenzylphosphine(1,5-cyclooctadiene) [1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene]iridium(I) hexafluorophosphate, min. 98%	93
$C_{50}H_{65}O_4P$	(S)-3,3'-Bis2,4,6-triisopropylphenyl)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl-2,2'-diyl Hydrogenphosphate, 98%, (99% ee)	281
	(R)-3,3'-Bis2,4,6-triisopropylphenyl)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl-2,2'-diyl Hydrogenphosphate, 98%, (99% ee)	281
$C_{50}H_{66}NPS_2$	(R)-(+)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP]	311
	(S)-(-)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(S)-DTB-SpiroSAP]	311
$C_{50}H_{68}ClIrNPS_2$	{(R)-(+)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane} chlorodihydroiridium(III), 97+% [Ir-(R)-DTB-SpiroSAP]	91
	{(S)-(-)-7-[N-(1,3-Dithian-2-yl)methylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane} chlorodihydroiridium(III), 97+% [Ir-(S)-DTB-SpiroSAP]	91
$C_{51}H_{35}NO_2P_2$	(S)-2-(1-Naphthyl)-8-diphenylphosphino-1-[(R)-3,5-dioxa-4-phospha-cyclohepta[2,1-a;3,4-a']dinaphthalen-4-yl]-1,2-dihydroquinoline toluene adduct, min. 97% (Ra,Sc)-(1-Nph)-Quinaphos	316
$C_{51}H_{41}ClP_2Ru$	Chloro(1-phenylindenyl)bis(triphenylphosphine)ruthenium(II), min. 98%	379
$C_{51}H_{42}ClNOP_2Pd$	Chloro[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene][2'-amino-1,1'-biphenyl] palladium(II) dichloromethane adduct, min. 98% [Xantphos Palladacycle Gen. 2]	233
$C_{51}H_{42}O_3Pd_2$	Tris(dibenzylideneacetone)dipalladium(0)	249
$C_{51}H_{42}O_3Pd_2$/ $C_{12}H_{28}BF_4P$	Tris(dibenzylideneacetone)dipalladium(0)/ tri-t-butylphosphonium tetrafluoroborate admixture (molar Pd/P = 1:1.2)	249

Formula	Description	Page
	Tris(dibenzylideneacetone)dipalladium(0)/ tri-t-butylphosphonium tetrafluoroborate admixture (molar Pd/P = 1:2)	249
$C_{51}H_{42}O_3Pt$	Tris(dibenzylideneacetone)platinum(0), min. 98%	340
$C_{51}H_{42}O_3Pt_2$	Tris(dibenzylideneacetone)diplatinum(0), min. 98%	340
$C_{51}H_{52}BN_6P_2Rh$	[Tris(3,5-dimethyl-1H-pyrazolato)hydroborato]bis(triphenylphosphine)rhodium(I) toluene adduct, 99%	361
$C_{51}H_{62}N_2O_2$	(3aS,3a'S,8aR,8a'R)-2,2'-(1,3-Bis(3,5-di-t-butylphenyl)propane-2,2-diyl) bis(8,8a-dihydro-3aH-indeno[1,2-d]oxazole) (S,R)-BDTBIn-SaBOX	182
$C_{51}H_{63}N_2P$	(R)-(+)-7-Bis(3,5-di-t-butylphenyl) phosphino-7'-[(pyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP	257
	(S)-(-)-7-Bis(3,5-di-t-butylphenyl) phosphino-7'-[(pyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (S)-DTB-SpiroPAP	257
$C_{51}H_{76}Cl_2P_2Ru$	Bis(tricyclohexylphosphine)-3-phenyl-1H-inden-1-ylideneruthenium(II) dichloride	366
$C_{52}H_{43}Cl_3O_3Pd_2$	Tris(dibenzylideneacetone)dipalladium(0) chloroform adduct	249
$C_{52}H_{44}F_{12}FeO_2P_2$	(R)-(+)-1-{(R)-2-[2'-Bis(3,5-dimethyl-4-methoxyphenyl)phosphinophenyl]ferrocenyl} ethylbis(di-3,5-tri fluoromethylphenyl) phosphine, min. 97%	97
$C_{52}H_{44}N_2O_2P_2$	(1R,2R)-(+)-1,2-Diaminocyclohexane-N,N'-bis(2-diphenylphosphino-1-naphthoyl), min. 94% (R,R)-DACH-Naphthyl Trost Ligand	285
	(1S,2S)-(-)-1,2-Diaminocyclohexane-N,N'-bis(2-diphenylphosphino-1-naphthoyl), min. 94% (S,S)-DACH-Naphthyl Trost Ligand	285
$C_{52}H_{45}NO_4P_2PdS$	Methanesulfonato[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene][2'-amino-1,1'-biphenyl]palladium(II) dichloromethane adduct, min. 98% [Xantphos Palladacycle Gen. 3]	246
$C_{52}H_{46}O_4P_2Ru$	Diacetato[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(R)-tolbinap]	381
	Diacetato[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]ruthenium(II) $Ru(OAc)_2$[(S)-tolbinap]	381
$C_{52}H_{48}P_2$	(R)-(+)-2,2'-Bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl, 98% (R)-(+)-XylBINAP	276
	(S)-(-)-2,2'-Bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl, 98% (S)-(-)-XylBINAP	276
	(3S,3'S,4S,4'S,11bS,11'bS)-(+)-4,4'-Di-t-butyl-4,4',5,5'-tetrahydro-3,3'-bi-3H-dinaphtho[2,1-c:1',2'-e]phosphepin, 97% (S)-BINAPINE	290
$C_{52}H_{48}P_4Pd$	Bis[1,2-bis(diphenylphosphino)ethane] palladium(0), 98%	227
$C_{52}H_{50}Cl_2N_4O_4P_2Ru$	Dichloro[(R)-(+)-2,2',6,6'-tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%	393
	Dichloro[(S)-(-)-2,2',6,6'-tetramethoxy-4,4'-bis(diphenylphosphino)-3,3'-bipyridine][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%	393
$C_{52}H_{50}F_{12}NO_5PPdS$	Methanesulfonato[2-bis(3,5-di(trifluoromethyl)phenylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl] (2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [JackiePhos Palladacycle Gen. 3]	241
$C_{52}H_{50}FeN_2P_2$	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino) (phenyl) methyl]-1,1'-bis(diphenylphosphino) ferrocene, min. 97%	96
$C_{52}H_{54}BF_4O_4P_2Rh$	(R)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	355
	(S)-4,12-Bis(4-methoxyphenyl)-[2.2]-paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	355
$C_{52}H_{54}O_2P_2$	(+)-1,13-Bis[di(3,5-dimethylphenyl)phosphino]-(5aR,8aR,14aR)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (R,R,R)-(+)-Xyl-SKP	260
	(-)-1,13-Bis[di(3,5-dimethylphenyl)phosphino]-(5aS,8aS,14aS)-5a,6,7,8,8a,9-hexahydro-5H-[1]benzopyrano[3,2-d]xanthene, 97% (S,S,S)-(-)-Xyl-SKP	261
$C_{52}H_{60}N_2P_2$	(1R,2R)-N,N-Bis{2-[bis(3,5-dimethylphenyl) phosphino]benzyl}cyclohexane-1,2-diamine, min. 97%	252
	(1S,2S)-N,N-Bis{2-[bis(3,5-dimethylphenyl) phosphino]benzyl}cyclohexane-1,2-diamine, min. 97%	252
$C_{52}H_{60}O_8P_2$	(S)-2,2'-Bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-DMM-Garphos™	254
	(R)-2,2'-Bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-DMM-Garphos™	254
$C_{52}H_{65}N_2P$	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(6-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-6-Me	257
	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-3-Me	256
	(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (S)-DTB-SpiroPAP-3-Me	257
$C_{52}H_{67}ClIrN_2P$	Chlorodihydrido{(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane}iridium(III), >97% (>99% ee) Ir-(R)-DTB-SpiroPAP-3-Me	87
	Chlorodihydrido{(S)-(-)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(3-methylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane}iridium(III), >97% (>99% ee) Ir-(S)-DTB-SpiroPAP-3-Me	87
$C_{52}H_{67}F_4OP$	2-(Diadamantylphosphino)-3-methoxy-2',4',6'-tri-i-propyl-3'-(2,3,5,6-tetrafluoro-4-butylphenyl)-1,1'-biphenyl AlPhos	284
$C_{52}H_{74}FeN_2P_2$	(S,S)-(+)-2,2'-Bis[(R)-(N,N-dimethylamino) (phenyl)methyl]-1,1'-bis(dicyclohexylphosphino)ferrocene, min. 97%	96
$C_{52}H_{106}O$	2-Methyl-3-[polyisobutyl(12)]propanol (50% in heptane/polyisobutylene)	39
$C_{53}H_{43}Cl_2N_3P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%	385
	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%	385
$C_{53}H_{47}NO_4P_2PdS$	Methanesulfonato[9,9-dimethyl-4,5-bis(diphenylphosphino)xanthene](2'-methylamino-1,1'-biphenyl-2-yl)palladium(II), 98% [Xantphos Palladacycle Gen. 4]	246
$C_{53}H_{56}O_8P_2$	Methyl α-D-glucopyranoside-2,6-dibenzoate-3,4-di(bis(3,5-dimethylphenyl)phosphinite), min. 95% CARBOPHO	316
$C_{53}H_{65}O_4P$	(3aR,8aR)-(-)-4,4,8,8-Tetrakis(3,5-diethylphenyl) tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo [4,5-e]dioxaphosphepin	322
	(3aS,8aS)-(+)-4,4,8,8-Tetrakis(3,5-diethylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin	323

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$C_{53}H_{66}NPS$	(R)-(+)-7-[N-(2-Phenylthio)ethylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP-Ph]	319
$C_{54}H_{40}FeP_2$	1,1'-Bis{(S)-4,5-dihydro-3H-binaphtho[1,2-c:2',1'-e]phosphino}ferrocene, min. 98% (S,S)-f-Binaphane	96
$C_{54}H_{45}Au_3BF_4OP_3$	Tris[triphenylphosphinegold(I)]oxonium tetrafluoroborate, 98%	76
$C_{54}H_{45}BrP_3Rh$	Bromotris(triphenylphosphine)rhodium(I), 99% (99.9%-Rh)	355
$C_{54}H_{45}ClCoP_3$	Chlorotris(triphenylphosphine)cobalt(I), min. 98%	48
$C_{54}H_{45}ClP_3Rh$	Chlorotris(triphenylphosphine)rhodium(I), 99% WILKINSON'S CATALYST	357
$C_{54}H_{45}Cl_2P_3Ru$	Dichlorotris(triphenylphosphine)ruthenium(II), 99%	393
$C_{54}H_{46}ClP_3Ru$	Chlorohydridotris(triphenylphosphine)ruthenium(II) toluene adduct, 98%	378
$C_{54}H_{46}Cl_2P_2Ru$	Chloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-binap)]Cl	373
	Chloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-binap)]Cl	373
$C_{54}H_{48}Cl_2N_2P_2Ru$	Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](2-aminomethylpyridine) ruthenium(II) $RuCl_2$(AMPY)[(R)Tol-Binap]	387
	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](2-aminomethylpyridine) ruthenium(II) $RuCl_2$(AMPY)[(S)-Tol-Binap]	388
$C_{54}H_{53}FeP_3$	1',4-Bis(t-butyl)-1,2,3'-tris(diphenylphosphino) ferrocene, 98% HiersoPHOS-2	94
$C_{54}H_{54}Cl_2P_2Ru$	Chloro[(R)-(+)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-H_8-binap)]Cl	374
	Chloro[(S)-(-)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-H_8-binap)]Cl	374
$C_{54}H_{67}Cl_2N_2PRu$	Tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene][3-phenyl-1H-inden-1-ylidene]ruthenium(II) dichloride, min. 95% [catMETium® RF1]	399
$C_{54}H_{68}NPS$	(R)-(+)-7-[N-(2-Benzylthio)ethylamino]-7'-[bis(3,5-di-t-butylphenyl)phosphino]-2,2',3,3'-tetrahydro-1,1'-spirobindane, 97+% (>99% ee) [(R)-DTB-SpiroSAP-Bn]	252
$C_{54}H_{69}Cl_2N_2PRu$	Tricyclohexylphosphine[3-phenyl-1H-inden-1-ylidene][1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene] ruthenium(II) dichloride, min. 95%	400
$C_{54}H_{72}Cl_4N_4Pd_2$	Dichloro(di-μ-chloro)bis[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]dipalladium(II), 97%	239
$C_{54}H_{72}F_{12}N_6RuP_2$	Tris[4,4'-bis(t-butyl)-2,2'-bipyridine]ruthenium(II) hexafluorophosphate, 95%	401
$C_{54}H_{72}N_4P_2$	1,2-Bis[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]diphosphine, min. 95%	253
$C_{54}H_{72}N_4Si_2$	1,2-Bis[1,3-bis(2,6-di-i-propylphenyl)imidazol-2-ylidene]disilene	405
$C_{54}H_{73}Au_2BF_4N_4O$	Bis{1,3-bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2H-imidazol-2-ylidene}-μ-hydroxydigold(I) tetrafluoroborate, 99%	72
$C_{54}H_{105}AlO_6$	Aluminum stearate	3
$C_{54}H_{105}CeO_6$	Cerium(III) stearate, tech. gr.	42
$C_{55}H_{45}CuF_3P_3$	Tris(triphenylphosphine)(trifluoromethyl) copper(I), 99%	59
$C_{55}H_{46}ClOP_3Ru$	Carbonylchlorohydridotris(triphenylphosphine)ruthenium(II), 99%	369
$C_{55}H_{46}IrOP_3$	Hydridocarbonyltris(triphenylphosphine) iridium(I), 99%	91
$C_{55}H_{46}OP_3Rh$	Hydridocarbonyltris(triphenylphosphine) rhodium(I), 98%	358
$C_{55}H_{47}Cl_2N_3P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	386
	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	385
$C_{55}H_{47}OP_3Ru$	Carbonyl(dihydrido)tris(triphenylphosphine) ruthenium (II), 99%	369
$C_{55}H_{66}NOP$	(S)-(-)-7'-[4(S)-(Benzyl)oxazol-2-yl]-7-di(3,5-di-t-butylphenyl)phosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Sa,S)-DTB-Bn-SIPHOX	252
	(R)-(+)-7'-[4(S)-(Benzyl)oxazol-2-yl]-7-di(3,5-di-t-butylphenyl)phosphino-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 97% (Ra,S)-DTB-Bn-SIPHOX	251
$C_{55}H_{71}N_2P$	(R)-(+)-7-Bis(3,5-di-t-butylphenyl)phosphino-7'-[(4-t-butylpyridine-2-ylmethyl)amino]-2,2',3,3'-tetrahydro-1,1'-spirobiindane, min. 98% (>99% ee) (R)-DTB-SpiroPAP-4-t-Bu	256
$C_{56}H_{40}P_2$	12,12'-Bis(diphenylphosphino)-9,9',10,10'-tetrahydro-11,11'-bi-9,10-ethenoanthracene, min. 98% CATPHOS	271
$C_{56}H_{41}O_4PSi_2$	(R)-(-)-3,3'-Bis(triphenylsilyl)-1,1'-binaphthyl-2,2'-diyl hydrogen phosphate, min. 98% [(R)-TiPSY]	281
	(S)-(+)-3,3'-Bis(triphenylsilyl)-1,1'-binaphthyl-2,2'-diyl hydrogen phosphate, min. 98% [(S)-TiPSY]	281
$C_{56}H_{49}Cl_2N_3P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(t-butyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	384
$C_{56}H_{52}Cl_2N_4Ru$	Dichloro[5,10,15,20-tetrakis(2,4,6-trimethylphenyl)-21H,23H-porphinato]ruthenium(IV), min. 98%	392
$C_{56}H_{54}O_4P_2Ru$	Diacetato{(R)-(+)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}ruthenium(II) $Ru(OAc)_2$[(R)-xylbinap]	381
	Diacetato{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}ruthenium(II) $Ru(OAc)_2$[(S)-xylbinap]	381
$C_{56}H_{58}ClO_4P_2Ru$	Chloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene) ruthenium(II) chloride [RuCl(p-cymene) ((R)-dm-segphos®)]Cl	375
$C_{56}H_{58}Cl_2O_4P_2Ru$	Chloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene) ruthenium(II) chloride [RuCl(p-cymene) ((S)-dm-segphos®)]Cl	375
$C_{56}H_{58}FeN_2P_2$	(R,R)-(+)-2,2'-Bis[(S)-(N,N-dimethylamino) (phenyl)methyl]-1,1'-bis(di(2-methylphenyl) phosphino)ferrocene, min. 97%	96
$C_{56}H_{62}BF_4P_2Rh$	(R)-(-)-4,12-Bis(di-3,5-xylylphosphino)[2.2] paracyclophane(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate, min. 97%	354
	(S)-(+)-4,12-Bis(di-3,5-xylylphosphino) [2.2]paracyclophane(1,5-cyclooctadiene) rhodium(I) tetrafluoroborate, min. 97%	355
$C_{56}H_{72}F_6IrN_4P$	[4,4'-Di-t-butyl-2,2'-bipyridine][bis[5-(t-butyl)-2-[4-(t-butyl)-2-pyridinyl-kN]phenyl-kC] iridium(III) hexafluorophosphate, 95%	90
$C_{56}H_{74}NO_5PPdS$	Methanesulfonato[2-(di-1-adamantylphosphino)-3,6-dimethoxy-2',4',6'-tri-i-propyl-1,1'-biphenyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [AdBrettPhos Palladacycle Gen. 3]	241
$C_{56}H_{107}N$	4-[Polyisobutyl(12)]-2-ethylaniline (50% in heptane/polyisobutylene)	206
$C_{57}H_{45}NO_3P_2PdS$	Methanesulfonato[2,2'-bis(diphenylphosphino)-1,1'-binaphthyl](2'-amino-1,1'-biphenyl-2-yl)palladium(II), min. 98% [BINAP Palladacycle Gen. 3]	240
$C_{57}H_{51}Cl_2N_3P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 97%	388

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	Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-methylmethanamine)-1H-benzimidazole]ruthenium(II), min. 95%	388
$C_{57}H_{52}N_4ORu$	Carbonyl[5,10,15,20-tetrakis(2,4,6-trimethylphenyl)-21H,23H-porphinato]ruthenium(II), min. 98%	370
$C_{58}H_{48}BClF_4NP_3Ru$	Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][2-(diphenylphosphino)ethanamine]ruthenium(II) tetrafluoroborate, min. 97%	374
$C_{58}H_{48}Cl_2NP_3Ru$	Dichloro[(R)-bis(diphenylphosphino)-1,1-binaphthyl][2-(diphenylphosphino)ethylamine]ruthenium(II), min. 97%	383
	Dichloro[(S)-bis(diphenylphosphino)-1,1-binaphthyl][2-(diphenylphosphino)ethylamine]ruthenium(II), min. 97%	383
$C_{58}H_{48}Cl_2N_2P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 98%	385
	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 98%	385
	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II), min. 90%	384
	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 90%	385
$C_{58}H_{54}Cl_2P_2Ru$	Chloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-tolbinap)]Cl	375
	Chloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl](p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-tolbinap)]Cl	375
$C_{59}H_{55}Cl_2N_3P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	389
	Dichloro[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(R)-(+)-2-(α-(i-propyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 95%	388
$C_{60}H_{36}Li_3O_6Y$	Lithium tris(S-(-)-1,1'-binaphthyl-2,2'-diolato) yttrate(III) tetrahydrofuran adduct, min. 97%	119
$C_{60}H_{40}BF_{20}N_3O_2RuS$	{[(1R,2R)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine) ruthenium(II) tetrakis(pentafluorophenyl) borate, min. 97%	364
	{[(1S,2S)-2-Amino-1,2-diphenylethyl](4-toluenesulfonyl)amido}(p-cymene)(pyridine) ruthenium(II) tetrakis(pentafluorophenyl) borate, min. 97%	364
$C_{60}H_{42}F_{24}FeN_2P_2$	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-trifluoromethylphenyl)phosphino]ferrocene, min. 97%	97
$C_{60}H_{57}Cl_2N_3P_2Ru$	Dichloro[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl][(S)-(-)-2-(α-(t-butyl) methanamine)-1H-benzimidazole]ruthenium(II), min. 97%	388
$C_{60}H_{60}Cl_2N_2O_4P_2Ru$	Dichloro{(R)-(+)-5,5'-bis[di(3,5-xylyl) phosphino]-4,4'-bi-1,3-benzodioxole} [(1R,2R)-(+)-1,2-diphenylethylenediamine] ruthenium(II) $RuCl_2$[(R)-dm-segphos®] [(R,R)-dpen]	389
	Dichloro{(S)-(-)-5,5'-bis[di(3,5-xylyl) phosphino]-4,4'-bi-1,3-benzodioxole} [(1S,2S)-(-)-1,2-diphenylethylenediamine] ruthenium(II) $RuCl_2$[(S)-dm-segphos®] [(S,S)-dpen]	389
$C_{60}H_{66}Cl_2N_4O_4P_2Ru$	Dichloro[(S)-(-)-2,2',6,6'-tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine] [(1S,2S)-(-)-1,2-diphenylethylenediamine] ruthenium(II), min. 95%	393
	Dichloro[(R)-(+)-2,2',6,6'-tetramethoxy-4,4'-bis(di(3,5-xylyl)phosphino)-3,3'-bipyridine] [(1R,2R)-(+)-1,2-diphenylethylenediamine] ruthenium(II), min. 95%	393
$C_{60}H_{66}FeN_2P_2$	(R,R)-(+)-2,2'-Bis[(S)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97%	96
	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis(di(3,5-dimethylphenyl)phosphino)ferrocene, min. 97%	96
$C_{60}H_{69}Br_3N_4NiO_{12}P_8$	Bis{P,P'-1,5-diphenyl-3,7-bis[(4-hydrogenphosphonate)phenyl]-1,5,3,7-diazadiphosphocine} nickel(II) bromide (hydrogen bromide adduct)	172
$C_{61}H_{81}O_4P$	(3aR,8aR)-(-)-4,4,8,8-Tetrakis (3,5-di-i-propylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin	323
	(3aS,8aS)-(+)-4,4,8,8-Tetrakis(3,5-di-i-propylphenyl)tetrahydro-2,2-dimethyl-6-phenyl-1,3-dioxolo[4,5-e]dioxaphosphepin	323
$C_{62}H_{42}O_6Ru_2$	1-Hydroxytetraphenylcyclopentadienyl(tetraphenyl-2,4-cyclopentadien-1-one)-μ-hydrotetracarbonyldiruthenium(II), 98% SHVO'S CATALYST	397
$C_{62}H_{52}F_6N_4O_6S_2$	11,12-Bis[N-(2,2-diphenyl-1-ethyl)-1H-benzimidazolium-3-methylene]-9,10-dihydro-9,10-ethanoanthracene bis(trifluoromethanesulfonate), min. 95%	183
$C_{62}H_{60}N_4O_4Pd_2$	1,3-Bis(2,4,6-trimethylphenyl)imidazol-2-ylidene(1,4-naphthoquinone)palladium(0) dimer, 96%	229
$C_{62}H_{62}ClP_2Ru$	Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-xylbinap)]Cl	375
$C_{62}H_{62}Cl_2P_2Ru$	Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-xylbinap)]Cl	375
$C_{62}H_{66}Cl_2N_2P_2Ru$	Dichloro[(R)-(-)-4,12-bis(di(3,5-xylyl)phosphino)-[2.2]-paracyclophane][(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II), min. 95%	391
	Dichloro[(S)-(+)-4,12-bis(di(3,5-xylyl) phosphino)-[2.2]-paracyclophane] [(1R,2R)-(+)-1,2-diphenylethylenediamine] ruthenium(II), min. 95%	391
$C_{63}H_{54}O_{15}Pd_2$	Tris[di(4-acetoxybenzylidene)acetone]dipalladium(0) di(4-acetoxybenzylidene)acetone adduct, min. 97%	249
$C_{63}H_{58}BClF_4N_2O_2P_2Ru$	Chloro[(R)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(R)-1,1-bis(4-methoxyphenyl)-3-methylbutane-1,2-diamine] ruthenium(II) tetrafluoroborate, min. 97%	372
	Chloro[(S)-(−)-2,2'-bis[diphenylphosphino]-1,1'-binaphthyl][(S)-1,1-bis(4-methoxyphenyl)-3-methylbutane-1,2-diamine] ruthenium(II) tetrafluoroborate, min. 97%	372
$C_{63}H_{58}Cl_2N_2O_2P_2Ru$	Dichloro[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine] ruthenium(II) dichloromethane adduct, min. 97%	384
	Dichloro[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine] ruthenium(II) dichloromethane adduct, min. 97%	384
$C_{64}H_{74}FeN_2O_4P_2$	(S,S)-(-)-2,2'-Bis[(R)-(N,N-dimethylamino)(phenyl)methyl]-1,1'-bis[di(3,5-dimethyl-4-methoxyphenyl)phosphino]ferrocene, min. 97%	96
$C_{65}H_{54}Cl_2NP_3Ru$	Dichloro[(R)-bis(diphenylphosphino)-1,1-binaphthyl][(1R,2R)-2-amino-1-phenylpropyldiphenylphosphine]ruthenium(II), min. 97%	384
	Dichloro[(R)-bis(diphenylphosphino)-1,1-binaphthyl][1S,2S)-2-amino-1-phenylpropyldiphenylphosphine]ruthenium(II), min. 97%	384
$C_{65}H_{70}Cl_2N_2O_6P_2Ru$	Dichloro{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(R)-dm-segphos®][(R)-daipen]	389

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	Dichloro{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}[(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine]ruthenium(II) $RuCl_2$[(S)-dm-segphos®][(S)-daipen]	389
$C_{66}H_{62}FeBFP_4$	Tris{[2-(diphenylphosphino)ethyl]phosphine}(fluoro)iron(II) tetraphenylborate, min. 98%	111
$C_{66}H_{62}FeP_4$	4,4'-Bis(t-butyl)-1,1',2,2'-tetrakis(diphenylphosphino)ferrocene, 98% HiersoPHOS-5	94
$C_{66}H_{64}Cl_2N_2P_2Ru$	Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1R,2R)-(+)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(R)-xylbinap][(R,R)-dpen]	390
	Dichloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(1S,2S)-(-)-1,2-diphenylethylenediamine]ruthenium(II) $RuCl_2$[(S)-xylbinap][(S,S)-dpen]	390
$C_{66}H_{117}O_{21}$	DL-α-Tocopherol methoxypolyethylene glycol succinate solution (2 wt% in water) TPGS-750-M	221
$C_{67}H_{54}BF_{24}IrNOP$	1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-(i-propyl)oxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD)Ir[iPr-SpinPHOX]	89
$C_{68}H_{137}Br$	2-Methyl-3-[polyisobutyl(12)]propyl bromide (50% in heptane/polyisobutylene)	39
$C_{69}H_{56}N_2O_2$	N,N'-Bis(2,6-bis(diphenylmethyl)-4-methoxyphenyl)imidazol-2-ylidene, min. 98% IPr*OMe	180
$C_{69}H_{62}Cl_2NP_3Ru$	Dichloro{(R)-2,2'-bis[bis(4-methylphenyl)]-1,1'-binaphthyl}[(1R,2R)-2-amino-1-phenylpropyldiphenylphosphine] ruthenium(II), min. 97%	382
$C_{70}H_{52}BF_{24}IrNOP$	1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-phenyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD)Ir[Ph-SpinPHOX]	89
	1,5-Cyclooctadiene{(4S)-(-)-2-[(5R)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-phenyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (R,S)-(COD)Ir[Ph-SpinPHOX]	89
$C_{70}H_{56}BClF_4NP_3Ru$	Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-2-(diphenylphosphino)-1,2-diphenylethanamine] ruthenium(II) tetrafluoroborate, min. 97%	373
$C_{70}H_{65}BF_{24}IrN_3O$	{1-[(4S)-2-(1-Adamantyl-4,5-dihydrooxazolyl)ethyl]-3-(2,6-di-i-propylphenyl)imidazolin-2-ylidene}(1,5-cyclooctadiene)iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 99%	84
$C_{70}H_{67}BF_{24}IrN_3O$	{1-[(4R)-2-(1-Adamantyl-4,5-dihydrooxazolyl)ethyl]-3-(2,6-di-i-propylphenyl)imidazolin-2-ylidene}(1,5-cyclooctadiene)iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 99%	84
$C_{70}H_{84}Co_2F_6N_4O_{20}S_2$	Cyclic-Oligo Bis[(1R,2R)-(+)-1,2-cyclohexanediamino-N,N'-bis(3,3'-di-t-butylsalicylidene) cobalt(III)triflate]-5,5'-bis(2-carboxyethyl)ether	51
	Cyclic-Oligo Bis[(1S,2S)-(-)-1,2-cyclohexanediamino-N,N'-bis(3,3'-di-t-butylsalicylidene) cobalt(III)triflate]-5,5'-bis(2-carboxyethyl)ether	51
$C_{70}H_{96}O_2P_2$	(R)-(+)-2,2'-Bis[di(3,5-di-t-butylphenyl) phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	260
	(S)-(-)-2,2'-Bis[di(3,5-di-t-butylphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	260
$C_{70}H_{100}N_4O_2P_2$	(R)-(-)-2,2'-Bis[di(3,5-di-i-propyl-4-dimethylaminophenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	261
	(S)-(+)-2,2'-Bis[di(3,5-di-i-propyl-4-dimethylaminophenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	261
$C_{71}H_{54}BF_{24}IrNOP$	1,5-Cyclooctadiene{(4S)-(+)-2-[(5S)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-benzyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (S,S)-(COD)Ir[Bn-SpinPHOX]	89
	1,5-Cyclooctadiene{(4S)-(-)-2-[(5R)-6-(diphenylphosphino)spiro[4.4]nona-1.6-dien-1-yl]-4,5-dihydro-4-benzyloxazole}iridium(I) tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, 97% (R.S)-(COD)Ir[Bn-SpinPHOX]	89
$C_{71}H_{73}ClN_2O_2P_2Ru$	Chloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl} [(2R)-(-)-1-(4-methoxyphenyl)- 1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butanediamine]ruthenium(II) (R)-RUCY™-XylBINAP	376
	Chloro{(S)-(-)-2,2'-bis[di(3,5-xylyl) phosphino]-1,1'-binaphthyl}[(2S)- (+)-1-(4-methoxyphenyl)-1'-(4-methoxyphenyl-kC)-3-methyl-1,2-butanediamine]ruthenium(II) (S)-RUCY™-XylBINAP	376
$C_{71}H_{74}Cl_2N_2O_2P_2Ru$	Dichloro{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2R)-(-)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine] ruthenium(II) $RuCl_2$[(R)-xylbinap][(R)-daipen]	390
	Dichloro{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}[(2S)-(+)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine] ruthenium(II) $RuCl_2$[(S)-xylbinap][(S)-daipen]	390
$C_{72}H_{27}F_{54}P_3Pd$	Tris{tris[3,5-bis(trifluoromethyl)phenyl] phosphine}palladium(0), 99%	250
$C_{72}H_{60}P_4Pd$	Tetrakis(triphenylphosphine)palladium(0), 99% (99.9+%-Pd)	248
$C_{72}H_{60}P_4Pt$	Tetrakis(triphenylphosphine)platinum(0), 98%	339
$C_{72}H_{60}P_4Ru$	Dihydrotetrakis(triphenylphosphine)ruthenium(II), 95%	394
$C_{72}H_{61}P_4Rh$	Hydridotetrakis(triphenylphosphine)rhodium(I), 99%	358
$C_{72}H_{84}N_{24}O_{24}$	Perallyloxycucurbit[6]uril (AOCB[6]) potassium sulfate, 94+%	205
$C_{72}H_{88}N_4O_{16}Rh_2$	Tetrakis[5-t-butyl-phthaloyl-N-(S)-tert-leucinato]dirhodium bis(ethyl acetate) adduct Rh2(S-tertPTTL)4	360
$C_{74}H_{46}BClF_{20}N_2P_2Ru$	Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-cyclohexane-1,2-diamine]ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%	373
	Chloro[(S)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1S,2S)-cyclohexane-1,2-diamine]ruthenium(II) tetrakis(pentafluorophenyl)borate, min. 97%	373
$C_{74}H_{60}BCl_2CoF_{24}N_6$	lambda-Tris[(1S,2S)-1,2-diphenyl-1,2-ethanediamine]cobalt(III) chloride tetrakis[3,5-bis(trifluoromethyl)phenyl]borate dihydrate SKJ-1	52
	delta-Tris[(1S,2S)-1,2-diphenyl-1,2-ethanediamine]cobalt(III) chloride tetrakis[3,5-bis(trifluoromethyl)phenyl]borate trihydrate SKJ-3	53
$C_{74}H_{84}N_4O_4Pd_2$	1,3-Bis(2,6-di-i-propylphenyl)imidazol-2-ylidene(1,4-naphthoquinone)palladium(0) dimer, 96%	228
$C_{74}H_{100}O_8P_2$	(R)-(-)-5,5'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (R)-(-)-DTBM-SEGPHOS®	259
	(S)-(+)-5,5'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole, min. 98% (S)-(+)-DTBM-SEGPHOS®	260
$C_{74}H_{104}O_6P_2$	(R)-(-)-2,2'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	260
	(S)-(+)-2,2'-Bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-6,6'-dimethoxy-1,1'-biphenyl, min. 97%	260
$C_{76}H_{108}O_8P_2$	(R)-2,2'-Bis[bis(4-methoxy-3,5-di-t-butylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (R)-DTBM-Garphos™	253

Formula	Description	Page
	(S)-2,2'-Bis[bis(4-methoxy-3,5-di-t-butylphenyl)phosphino]-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-DTBM-Garphos™	253
$C_{77}H_{58}BF_{24}IrNO_2P$	((4S,5S)-(-)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl]-diphenylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (S,S)-[COD]Ir[Ph_2PThrePHOX]	85
	((4R,5R)-(+)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl] (diphenylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (R,R)-[COD]Ir[Ph_2PThrePHOX]	85
$C_{77}H_{76}BF_{24}IrNO_2P$	((4S,5S)-(-)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl]-dicyclohexylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (S,S)-[COD]Ir[cy_2PThrePHOX]	85
	((4R,5R)-(+)-O-[1-Benzyl-1-(5-methyl-2-phenyl-4,5-dihydrooxazol-4-yl)-2-phenylethyl] (dicyclohexylphosphinite)(1,5-COD)iridium(I) tetrakis(3,5-bis(trifluoromethyl)phenylborate, min. 97% (R,R)-[COD]Ir[cy_2PThrePHOX]	85
$C_{78}H_{55}Cl_5NO_8P_4Ru_2$	Dimethylammonium dichlorotri(μ-chloro) bis[(R)-(+)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-segphos®})\}_2(\mu\text{-}Cl)_3]$	395
	Dimethylammonium dichlorotri(μ-chloro) bis[(S)-(-)-5,5'-bis(diphenylphosphino)-4,4'-bi-1,3-benzodioxole]diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-segphos®})\}_2(\mu\text{-}Cl)_3]$	395
$C_{78}H_{65}ClN_2Pd$	Chloro[(1,2,3-η)-1-phenyl-2-propen-1-yl]-{[1,3-bis[2,6-bis(diphenylmethyl)-4-methylphenyl]-2H-imidazol-2-ylidene}palladium(II), min. 97%	234
$C_{78}H_{106}O_{12}P_2Ru$	Diacetato{(R)-(-)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(R)-dtbm-segphos®]	379
	Diacetato{(S)-(+)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}ruthenium(II) $Ru(OAc)_2$[(S)-dtbm-segphos®]	380
$C_{78}H_{150}O$	4-[Polyisobutyl(18)]phenol (50% in heptane/polyisobutylene)	40
$C_{79}H_{150}O_2$	5-[Polyisobutyl(18)]-2-hydroxybenzaldehyde (50% in heptane/polyisobutylene)	39
$C_{80}H_{80}N_4O_{16}Rh_2$	Tetrakis[(R)-(-)-(1-adamantyl)-(N-phthalimido)acetato]dirhodium(II) Rh_2(R-PTAD)$_4$	359
	Tetrakis[(S)-(+)-(1-adamantyl)-(N-phthalimido)acetato]dirhodium(II) Rh_2(S-PTAD)$_4$	359
$C_{82}H_{158}O$	4-[Polyisobutyl(18)]-2-(t-butyl)phenol (50% in heptane/polyisobutylene)	39
$C_{83}H_{158}O_2$	5-[Polyisobutyl(18)]-2-hydroxy-3-(t-butyl) benzaldehyde (50% in heptane/polyisobutylene)	40
$C_{84}H_{114}Cl_2O_8P_2Ru$	Chloro{(R)-(-)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((R)-dtbm-segphos®)]Cl	371
	Chloro{(S)-(+)-5,5'-bis[di(3,5-di-t-butyl-4-methoxyphenyl)phosphino]-4,4'-bi-1,3-benzodioxole}(p-cymene)ruthenium(II) chloride [RuCl(p-cymene)((S)-dtbm-segphos®)]Cl	371
$C_{84}H_{163}N$	4-[Polyisobutyl(18)]-2,6-(di-i-propyl)aniline (50% in heptane/polyisobutylene)	205
$C_{87}H_{58}BClF_{20}N_2O_2P_2Ru$	Chloro[(S)-(−)-2,2'-bis[diphenylphosphino]-1,1'-binaphthyl][(S)-1,1-bis(4-methoxyphenyl)-3-methylbutane-1,2-diamine] ruthenium(II) tetrakis(pentafluorophenyl) borate, min. 97%	372
$C_{88}H_{56}Fe_2N_8O$	Iron(III) meso-tetraphenylporphine-μ-oxo dimer	109
$C_{88}H_{64}Br_4O_8Rh_2$	Tetrakis[(R)-(-)-[(1R)-1-(4-bromophenyl)-2,2-diphenylcyclopropanecarboxylato]dirhodium(II) Rh_2(R-BTPCP)$_4$	359
	Tetrakis[(S)-(+)-[(1S)-1-(4-bromophenyl)-2,2-diphenylcyclopropanecarboxylato]dirhodium(II) Rh_2(S-BTPCP)$_4$	359
$C_{88}H_{171}N$	4-[Polyisobutyl(20)]-2,6-dimethylaniline (50% in heptane/polyisobutylene)	205
$C_{90}H_{71}Cl_5NP_4Ru_2$	Dimethylammonium dichlorotri(μ-chloro) bis[(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-binap})\}_2(\mu\text{-}Cl)_3]$	395
	Dimethylammonium dichlorotri(μ-chloro) bis[(S)-(-)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-binap})\}_2(\mu\text{-}Cl)_3]$	395
$C_{90}H_{87}Cl_5NP_4Ru_2$	Dimethylammonium dichlorotri(μ-chloro) bis[(R)-(+)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-}H_8\text{-binap})\}_2(\mu\text{-}Cl)_3]$	396
	Dimethylammonium dichlorotri(μ-chloro) bis[(S)-(-)-2,2'-bis(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-}H_8\text{-binap})\}_2(\mu\text{-}Cl)_3]$	396
$C_{92}H_{144}N_4O_{16}Rh_2S_4$	Tetrakis[(R)-(+)-N-(p-dodecylphenylsulfonyl) prolinato]dirhodium(II) Rh_2(R-DOSP)$_4$	360
	Tetrakis[(S)-(-)-N-(p-dodecylphenylsulfonyl) prolinato]dirhodium(II) Rh_2(S-DOSP)$_4$	360
$C_{94}H_{56}BClF_{20}NP_3Ru$	Chloro[(R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl][(1R,2R)-2-(diphenylphosphino)-1,2-diphenylethanamine] ruthenium(II) , tetrakis(pentafluorophenyl) borate, min. 97%	373
$C_{94}H_{95}Cl_5NO_8P_4Ru_2$	Dimethylammonium dichlorotri(μ-chloro) bis{(R)-(+)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-dm-segphos®})\}_2(\mu\text{-}Cl)_3]$	394
	Dimethylammonium dichlorotri(μ-chloro) bis{(S)-(-)-5,5'-bis[di(3,5-xylyl)phosphino]-4,4'-bi-1,3-benzodioxole}diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-dm-segphos®})\}_2(\mu\text{-}Cl)_3]$	394
$C_{96}H_{179}P$	{2-Methyl-3-[polyisobutyl(20)]propyl}diphenylphosphine (50% in heptane/polyisobutylene)	315
$C_{98}H_{87}Cl_5NP_4Ru_2$	Dimethylammonium dichlorotri(μ-chloro) bis[(R)-(+)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-tolbinap})\}_2(\mu\text{-}Cl)_3]$	396
	Dimethylammonium dichlorotri(μ-chloro) bis[(S)-(-)-2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl]diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-tolbinap})\}_2(\mu\text{-}Cl)_3]$	396
$C_{106}H_{103}Cl_5NP_4Ru_2$	Dimethylammonium dichlorotri(μ-chloro) bis{(R)-(+)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}diruthenate(II) $[NH_2Me_2][\{RuCl((R)\text{-xylbinap})\}_2(\mu\text{-}Cl)_3]$	394
	Dimethylammonium dichlorotri(μ-chloro) bis{(S)-(-)-2,2'-bis[di(3,5-xylyl)phosphino]-1,1'-binaphthyl}diruthenate(II) $[NH_2Me_2][\{RuCl((S)\text{-xylbinap})\}_2(\mu\text{-}Cl)_3]$	394
$C_{106}H_{191}OP$	4-Diphenylphosphinophenyl{2-methyl-3-[polyisobutyl(21)]propyl}ether (50% in heptane/polyisobutylene)	308
$C_{112}H_{146}F_8O_2P_2Pd_2$	Bis{[2-(Diadamantylphosphino)-3-methoxy-2',4',6'-tri-i-propyl-3'-(2,3,5,6-tetrafluoro-4-butylphenyl)-1,1'-biphenyl] palladium(0)}1,5-cyclooctadiene, [AlPhos Palladium complex]	227
$C_{12}H_{32}N_4Si$	Tetrakis(ethylmethylamino)silane, 98%, TEMAS	410
$C_{16}H_{28}NP$	[2-(N,N-Dimethylamino)phenyl]di-t-butylphosphine, min. 95%	298
$C_{179}H_{343}N_2Cl$	1,3-Bis{2,3-dimethyl-4-[polyisobutyl(20)] phenyl}imidazolium chloride (50% in hexanes/polyisobutylene)	183
$C_{187}H_{359}N_2Cl$	1,3-Bis{2,6-di-i-propyl-4-[polyisobutyl(20)] phenyl}imidazolium chloride (50% in hexanes/polyisobutylene)	184

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Formula	Description	Page
$C_{211}H_{407}N_2BF_4$	1,3-Bis{2,3-dimethyl-4-[polyisobutyl(24)] phenyl}-4,5-dihydroimidazolium tetrafluoroborate (50% in hexanes/polyisobutylene)	182
$C_{216}H_{168}Au_{55}Cl_6$ $Na_{12}P_{12}O_{36}S_{12}$	Hexachlorododecakis[diphenyl(m-sulfonophenyl)phosphine]pentapentacontagold, dodecasodium salt (water soluble) Schmid Au_{55} Cluster	158
$C_{216}H_{180}Au_{55}Cl_6$ P_{12}	Hexachlorododecakis(triphenylphosphine) pentapentacontagold Schmid Au_{55} Cluster	158
$C_{40}H_{33}O_4P$	(11bR)-8,9,10,11,12,13,14,15-Octahydro-4-hydroxy-2,6-di-1-naphthalenyl-4-oxide-dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 98%, (99% ee)	317
C_5H_5In	Cyclopentadienylindium(I), elec. gr. (99.99+%-In) PURATREM, 97-3425, contained in 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD	79
$CaCl_2$	Calcium chloride hydrate (99.999+%-Ca) PURATREM	35
$CaCl_2O_8$	Calcium perchlorate hydrate, 99%	36
$CaCrO_4$	Calcium chromate, min. 95%	35
CaF_2	Calcium fluoride (99.9%-Ca)	35
$CaHO_4P$	Calcium phosphate, dibasic (99.95%-Ca)	36
CaH_2	Calcium hydride, 95%	35
	Calcium hydride, min. 97%	35
$CaH_4O_8P_2$	Calcium phosphate, monobasic, monohydrate, 99%	36
CaI_2	Calcium iodide, anhydrous, 98+%	35
	Calcium iodide hydrate, min. 98%	35
CaI_2O_6	Calcium iodate, 98%	35
$CaMoO_4$	Calcium molybdate (99.9+%-Ca)	35
CaN_2O_6	Calcium nitrate tetrahydrate, 99%	35
CaO	Calcium oxide, 98%	35
	Calcium oxide (99.95%-Ca)	35
CaO_3Ti	Calcium titanate, 99%	36
CaO_4S	Calcium sulfate dihydrate, 98+% (ACS)	36
CaO_4W	Calcium tungstate, 98%	36
CaS	Calcium sulfide (99.9+%-Ca)	36
$CaSi_2$	Calcium silicide, 90% (~4% Fe, ~6% Ba+Al)	36
$Ca_2O_7P_2$	Calcium pyrophosphate (99.95%-Ca)	36
Ca_3N_2	Calcium nitride (99%-Ca)	35
Ca_3P_2	Calcium phosphide, 97%	36
$Ca_{10}H_2O_{26}P_6$	Calcium phosphate, tribasic (~37% Ca)	36
$CdCl_2$	Cadmium chloride hydrate (99.998%-Cd) PURATREM	32
	Cadmium chloride, anhydrous (99.995%-Cd) PURATREM	32
	Cadmium chloride, (99.999%-Cd) (O_2 < 50ppm) PURATREM	32
	Cadmium chloride, anhydrous, 99+% (ACS)	32
$CdCl_2O_8$	Cadmium perchlorate hexahydrate, 99%	32
CdF_2	Cadmium fluoride (99.98%-Cd)	32
	Cadmium fluoride, 99%	32
CdI_2	Cadmium iodide, 99%	32
CdN_2O_6	Cadmium nitrate tetrahydrate, 98%	32
CdO	Cadmium oxide (99.999%-Cd) PURATREM	32
	Cadmium oxide (99.99%-Cd) PURATREM	32
	Cadmium oxide, 99%	32
CdO_4S	Cadmium sulfate hydrate, 98+% (ACS)	33
CdS	Cadmium sulfide (99.9+%-Cd)	33
	Cadmium sulfide, 98%	33
	Cadmium sulfide (99.999%-Cd) PURATREM	33
CdSe/CdS	Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 560nm peak emission	139
	Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 590nm peak emission	139
	Cadmium selenide/cadmium sulfide CANdot® quantum rod (CdSe/CdS elongated core/shell), 5 mg/ml in hexanes, 620nm peak emission	139
CdSe	Cadmium selenide (99.999+%-Cd) PURATREM	32
	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 525nm peak emission	139
	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 550nm peak emission	139
	Cadmium selenide CANdot® quantum dot (CdSe core), 50umol/L in hexanes, 575nm peak emission	139
CdTe	Cadmium telluride (99.999%-Cd) PURATREM	34
	Cadmium telluride (99.999%-Cd) PURATREM	34
Cd_3As_2	Cadmium arsenide (99.999%-Cd) PURATREM	32
$CeCl_3$	Cerium(III) chloride hydrate (99.99%-Ce) (REO) PURATREM	41
	Cerium(III) chloride hydrate (99.9%-Ce) (REO)	41
	Cerium(III) chloride, anhydrous (H_2O < 0.5%) (99.9%-Ce) (REO)	40
$CeCl_3O_{12}$	Cerium(III) perchlorate hexahydrate, reagent	42
CeF_3	Cerium(III) fluoride (99.9%-Ce) (REO)	41
CeF_4	Cerium(IV) fluoride, anhydrous, 99%	41
	Cerium(IV) fluoride, hydrate	41
CeH_4O_4	Cerium(IV) hydroxide, min. 85%	41
$CeH_8N_8O_{18}$	Ammonium cerium(IV) nitrate, 98.5+% (ACS)	5
CeI_3	Cerium(III) iodide hydrate	41
CeN	Cerium nitride (99.9%-Ce)	41
CeN_3O_9	Cerium(III) nitrate hexahydrate (99.9%-Ce) (REO)	41
	Cerium(III) nitrate hexahydrate (99.99%-Ce) (REO) PURATREM	41
CeO_2	Cerium(IV) oxide (99.995%-Ce) PURATREM	41
	Cerium(IV) oxide (99.9%-Ce) (REO)	41
	Cerium(IV) oxide nanopowder	150
	Cerium(IV) oxide [contains some Ce(III)] in water at pH = 9.0 +-0.5 (CEO-W290)	149
	Cerium(IV) oxide [contains some Ce(III)] in water at pH = 3.5 +-0.75 (CEO-W320)	150
CeO_4P	Cerium(III) phosphate (99.9%-Ce) (REO)	42
$CeO2/Fe_2O_3$	Mixed metal oxides of cerium(IV) [contains some Ce(III)] and iron(III) in water at pH 4.75 +-0.25 (CEF-W420)	149
$Ce_2O_{12}S_3$	Cerium(III) sulfate octahydrate (99%-Ce) (REO)	42
$Ce_2O_{12}W_3$	Cerium(III) tungstate (99.9%-Ce) (REO)	42
ClCs	Cesium chloride (99.9%-Cs)	43
	Cesium chloride (99+%-Cs)	43
	Cesium chloride (99.999%-Cs) PURATREM	43
$ClCsO_4$	Cesium perchlorate (99.9%-Cs)	44
ClCu	Copper(I) chloride (99.99%-Cu) PURATREM	56
	Copper(I) chloride, anhydrous, 97+%	56
ClH_4N	Ammonium chloride, 99.5+% (ACS)	5
	Ammonium chloride (99.999%) PURATREM	5
ClIn	Indium(I) chloride, anhydrous (99.99%-In) PURATREM	80
ClK	Potassium chloride, 99+% (99.99+%-K) optical grade PURATREM	341
	Potassium chloride (99.999%-K) PURATREM	341
	Potassium chloride, 99+% (ACS)	341
$ClKO_3$	Potassium chlorate, 99% (ACS)	341
$ClKO_4$	Potassium perchlorate, 99%	343
ClLi	Lithium chloride, 99% (ACS)	116
	Lithium chloride hydrate (99.996%-Li) PURATREM	116
$ClLiO_4$	Lithium perchlorate trihydrate, 98%	118
	Lithium perchlorate, anhydrous, 95+% (ACS)	118
ClNa	Sodium chloride (99.999%-Na) PURATREM	417
	Sodium chloride, 99+% (ACS)	417
$ClNaO_3$	Sodium chlorate, 99%	417
$ClNaO_4$	Sodium perchlorate, anhydrous, 98% (ACS)	420
	Sodium perchlorate monohydrate, 98%	420
ClO_4Rb	Rubidium perchlorate, anhydrous (99.9%-Rb)	362

Formula	Description	Page
ClRb	Rubidium chloride (99.8%-Rb)	361
	Rubidium chloride (99%-Rb)	361
Cl_2Co	Cobalt(II) chloride, anhydrous, 99+%	48
	Cobalt(II) chloride hexahydrate, 98+%	48
	Cobalt(II) chloride hexahydrate (99.999%-Co) PURATREM	48
Cl_2CoO_8	Cobalt(II) perchlorate hexahydrate, 98+%	49
Cl_2Cr	Chromium(II) chloride, anhydrous (99.9%-Cr)	45
Cl_2CrO_2	Chromyl chloride, 99.5%	46
Cl_2Cu	Copper(II) chloride, anhydrous, min. 98%	56
	Copper(II) chloride dihydrate, 99+% (ACS)	56
	Copper(II) chloride dihydrate (99.999%-Cu) PURATREM	56
Cl_2CuO_8	Copper(II) perchlorate hexahydrate, 98+%	57
Cl_2Fe	Iron(II) chloride, anhydrous, 98%	107
	Iron(II) chloride tetrahydrate, 99%	107
$Cl_2H_6N_2Pd$	trans-Dichlorodiammine palladium(II), 99%	239
$Cl_2H_6N_2Pt$	cis-Dichlorodiammine platinum(II), 99% CISPLATIN	337
	trans-Dichlorodiammine platinum(II), 99%	337
$Cl_2H_{12}N_4Pt$	Tetraammineplatinum(II) chloride monohydrate, 99% (99.95%-Pt)	339
$Cl_2H_{18}N_6Ni$	Hexaamminenickel(II) chloride, 98%	174
$Cl_2H_{18}N_6Ru$	Hexaammineruthenium(II) chloride, 98%	397
Cl_2HfO	Hafnium(IV) dichloride oxide octahydrate (98+%-Hf, 1.5% Zr)	77
Cl_2Hg	Mercury(II) chloride, 99+%	127
Cl_2HgO_8	Mercury(II) perchlorate trihydrate, 99+%	128
Cl_2Hg_2	Mercury(I) chloride, 99.5+% (ACS)	127
Cl_2Mg	Magnesium chloride, 97.5% (H_2O - 2% max.)	122
Cl_2MgO_8	Magnesium perchlorate, reagent (99.9%-Mg)	123
	Magnesium perchlorate hexahydrate, 99%	123
Cl_2Mn	Manganese(II) chloride, anhydrous, 97%	126
	Manganese(II) chloride tetrahydrate (99.995%-Mn) PURATREM	126
	Manganese(II) chloride tetrahydrate, 98+% (ACS)	126
Cl_2MnO_8	Manganese(II) perchlorate hexahydrate, 99%	127
Cl_2Ni	Nickel(II) chloride hexahydrate (99.999+%-Ni) PURATREM	175
	Nickel(II) chloride, anhydrous, 98%	175
	Nickel(II) chloride hexahydrate (99.9+%-Ni)	175
Cl_2NiO_8	Nickel(II) perchlorate hexahydrate, 99%	176
Cl_2OSe	Selenium dichloride oxide, 97%	404
Cl_2OZr	Zirconium(IV) dichloride oxide hydrate (99.99+%-Zr) PURATREM	457
	Zirconium(IV) dichloride oxide hydrate (99.9%-Zr)	457
Cl_2O_8Pb	Lead(II) perchlorate, trihydrate, 97+% (ACS)	114
Cl_2O_8Sr	Strontium perchlorate hydrate (99.9%-Sr)	423
Cl_2O_8Zn	Zinc perchlorate hexahydrate, 99%	453
Cl_2Pb	Lead(II) chloride, 99%	114
Cl_2Pd	Palladium(II) chloride (99.9%-Pd)	248
Cl_2Pt	Platinum(II) chloride (99.9%-Pt)	338
Cl_2Se_2	Selenium(I) chloride (99%-Se)	404
Cl_2Sn	Tin(II) chloride, anhydrous, 98%	436
	Tin(II) chloride dihydrate, 98%	436
Cl_2Sr	Strontium chloride, anhydrous, min. 95%	422
	Strontium chloride hexahydrate, 99% (ACS)	423
Cl_2Zn	Zinc chloride, anhydrous, min. 97% (ACS)	452
	Zinc chloride (99.99%-Zn) PURATREM	452
	Zinc chloride 2.2M (25wt% ±1wt%) in 2-methyltetrahydrofuran	452
$Cl_3CoH_{18}N_6$	Hexaamminecobalt(III) chloride (99.999%-Co) PURATREM	51
Cl_3Cr	Chromium(III) chloride hexahydrate	45
	Chromium(III) chloride, anhydrous (99.9%-Cr)	45
	Chromium(III) chloride, anhydrous, 99%	45
Cl_3Dy	Dysprosium(III) chloride, anhydrous (99.9%-Dy) (REO)	60
	Dysprosium(III) chloride hexahydrate (99.9%-Dy) (REO)	60
Cl_3DyO_{12}	Dysprosium(III) perchlorate, 50% aqueous solution (99.9%-Dy) (REO)	60
Cl_3Er	Erbium(III) chloride hydrate (99.999%-Er) (REO) PURATREM	61
	Erbium(III) chloride hydrate (99.999+%-Er) (low Ca, Fe, Mg) PURATREM	61
	Erbium(III) chloride, anhydrous (99.9%-Er) (REO)	61
	Erbium(III) chloride hydrate (99.9%-Er) (REO)	61
Cl_3ErO_{12}	Erbium(III) perchlorate, 50% aqueous solution (99.9%-Er) (REO)	61
Cl_3Eu	Europium(III) chloride, anhydrous (99.9%-Eu) (REO)	62
	Europium(III) chloride hexahydrate (99.9%-Eu) (REO)	62
Cl_3EuO_{12}	Europium(III) perchlorate, 50% aqueous solution (99.9%-Eu) (REO)	62
Cl_3Fe	Iron(III) chloride hexahydrate, 97+% (ACS)	107
	Iron(III) chloride, anhydrous, 98%	107
Cl_3FeO_{12}	Iron(III) perchlorate hydrate (yellow)	109
	Iron(III) perchlorate hydrate (purple)	109
Cl_3Ga	Gallium(III) chloride, anhydrous, granular (99.999%-Ga) PURATREM	68
	Gallium(III) chloride, anhydrous, fused lump (99.999%-Ga) PURATREM	68
Cl_3Gd	Gadolinium(III) chloride, anhydrous (99.9%-Gd) (REO)	66
	Gadolinium(III) chloride hydrate (99.9%-Gd) (REO)	66
Cl_3GdO_{12}	Gadolinium(III) perchlorate, 40-50% aqueous solution (99.9%-Gd) (REO)	67
Cl_3H_3KNPt	Potassium trichloroammineplatinate(II)	344
$Cl_3H_{15}N_5Rh$	Chloropentaamminerhodium(III) chloride, 99%	357
$Cl_3H_{15}N_5Ru$	Chloropentaammineruthenium(III) chloride, 98%	379
$Cl_3H_{18}N_6Ru$	Hexaammineruthenium(III) chloride, 99%	397
Cl_3Ho	Holmium(III) chloride, anhydrous (99.9%-Ho) (REO)	78
	Holmium(III) chloride hexahydrate (99.9%-Ho) (REO)	78
Cl_3In	Indium(III) chloride tetrahydrate (99.99%-In) PURATREM	80
	Indium(III) chloride, anhydrous (99.999%-In) PURATREM	80
Cl_3InO_{12}	Indium(III) perchlorate octahydrate (99.9%-In)	80
Cl_3Ir	Iridium(III) chloride hydrate (99.9%-Ir)	92
	Iridium(III) chloride, anhydrous (99.95+%-Ir)	92
Cl_3La	Lanthanum(III) chloride hydrate (99.999+%-La) (low Ca, Fe, Mg) PURATREM	112
	Lanthanum(III) chloride hydrate (99.999%-La) (REO) PURATREM	112
	Lanthanum(III) chloride, anhydrous (99.9%-La) (REO)	112
	Lanthanum(III) chloride hexahydrate (99.9%-La) (REO)	112
Cl_3LaO_{12}	Lanthanum(III) perchlorate hexahydrate	113
Cl_3Lu	Lutetium(III) chloride, anhydrous (99.9%-Lu) (REO)	119
	Lutetium(III) chloride hexahydrate (99.9%-Lu) (REO)	119
Cl_3LuO_{12}	Lutetium(III) perchlorate, 50% aqueous solution (99.9%-Lu) (REO)	119
Cl_3Mo	Molybdenum(III) chloride (99.5%-Mo)	137
Cl_3NORu	Ruthenium(III) nitrosyl chloride monohydrate, 99%	398
Cl_3Nd	Neodymium(III) chloride hydrate (99.997%-Nd) (REO) PURATREM	169
	Neodymium(III) chloride, anhydrous (99.9%-Nd) (REO)	169
	Neodymium(III) chloride hexahydrate (99.9%-Nd) (REO)	169
Cl_3NdO_{12}	Neodymium(III) perchlorate, 50% aqueous solution (99.9%-Nd) (REO)	170
Cl_3OP	Phosphorus oxychloride, 98+%	320
	Phosphorus oxychloride, elec. gr. (99.999%-P) PURATREM	320

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Formula	Description	Page
Cl_3OV	Vanadium(V) trichloride oxide, min. 99%	446
$Cl_3O_{12}Pr$	Praseodymium(III) perchlorate, 50% aqueous solution (99.9%-Pr) (REO)	346
$Cl_3O_{12}Sm$	Samarium(III) perchlorate, 50% aqueous solution (99.9%-Sm) (REO)	402
$Cl_3O_{12}Tb$	Terbium(III) perchlorate, 50% aqueous solution (99.9%-Tb) (REO)	431
$Cl_3O_{12}Y$	Yttrium(III) perchlorate, 50% aqueous solution (99.9%-Y) (REO)	449
$Cl_3O_{12}Yb$	Ytterbium(III) perchlorate, 50% aqueous solution (99.9%-Yb) (REO)	448
Cl_3Os	Osmium(III) chloride hydrate	213
	Osmium(III) chloride hydrate (99.95+%-Os)	213
Cl_3P	Phosphorus(III) chloride (99.998%-P) PURATREM	320
	Phosphorus(III) chloride, 98+%	320
Cl_3PS	Thiophosphoryl chloride, 98%	325
Cl_3Pr	Praseodymium(III) chloride, anhydrous (99.9%-Pr) (REO)	345
	Praseodymium(III) chloride heptahydrate (99.9%-Pr) (REO)	345
Cl_3Rh	Rhodium(III) chloride, anhydrous	359
	Rhodium(III) chloride hydrate (38-41% Rh)	359
Cl_3Ru	Ruthenium(III) chloride, anhydrous	398
	Ruthenium(III) chloride hydrate (40-43% Ru) (99.9%-Ru)	398
	Ruthenium(III) chloride hydrate (40-43% Ru) (99.99+%-Ru) PURATREM [free of Ru(II) and Ru(IV) by electrochemical analysis]	398
Cl_3Sb	Antimony(III) chloride (99%-Sb)	8
	Antimony(III) chloride, elec. gr. (99.999%-Sb) PURATREM	8
Cl_3Sc	Scandium (III) chloride, anhydrous (99.99%-Sc) (REO), sublimed, PURATREM	403
	Scandium(III) chloride hexahydrate (99.9%-Sc) (REO)	403
Cl_3Sm	Samarium(III) chloride, anhydrous (99.9%-Sm) (REO)	402
	Samarium(III) chloride hexahydrate (99.9%-Sm) (REO)	402
Cl_3Tb	Terbium(III) chloride hydrate (99.995%-Tb) (REO) PURATREM	431
	Terbium(III) chloride hexahydrate (99.9%-Tb) (REO)	431
	Terbium(III) chloride, anhydrous (99.9%-Tb) (REO)	431
Cl_3Ti	Titanium(III) chloride, Al reduced, 98+%	441
Cl_3Tl	Thulium(III) chloride, anhydrous (99.9%-Tm) (REO)	433
Cl_3Tm	Thulium(III) chloride hydrate (99.9%-Tm) (REO)	433
Cl_3V	Vanadium(III) chloride, anhydrous, min. 95%	445
Cl_3Y	Yttrium(III) chloride hexahydrate (99.9%-Y) (REO)	449
	Yttrium(III) chloride, anhydrous (99.9%-Y) (REO)	449
Cl_3Yb	Ytterbium(III) chloride hydrate (99.99+%-Yb) (REO) PURATREM	447
	Ytterbium(III) chloride hexahydrate (99.9%-Yb) (REO)	447
	Ytterbium(III) chloride, anhydrous (99.9%-Yb) (REO)	447
$Cl_4CuH_8N_2$	Ammonium copper(II) chloride dihydrate	5
Cl_4CuLi_2	Lithium tetrachlorocuprate, 0.1M in THF	118
Cl_4Ga	Gallium(II) chloride, anhydrous (99.999%-Ga) PURATREM	67
Cl_4Ge	Germanium(IV) chloride (99.99%-Ge) PURATREM	69
	Germanium(IV) chloride (99.9999%-Ge) PURATREM	69
$Cl_4H_6N_2Pt$	cis-Tetrachlorodiammine platinum(IV), 99%	339
	trans-Tetrachlorodiammine platinum(IV), 98%	339
$Cl_4H_8N_2Pd$	Ammonium tetrachloropalladate(II) (99.998%-Pd) PURATREM	6
	Ammonium tetrachloropalladate(II), 99%	6
$Cl_4H_8N_2Pt$	Ammonium tetrachloroplatinate(II), 99%	7
$Cl_4H_{12}N_4Pd_2$	Tetraammine palladium(II) tetrachloropalladate(II), 99%	248
$Cl_4H_{12}N_4Pt_2$	Tetrammineplatinum(II) tetrachloroplatinate(II), 99%	339
Cl_4Hf	Hafnium(IV) chloride, sublimed grade (99.9+%-Hf, <1.0% Zr)	77
	Hafnium(IV) chloride, sublimed grade (99.9+%-Hf, <0.05% Zr)	77
Cl_4Ir	Iridium(IV) chloride, hydrate	92
Cl_4K_2Pd	Potassium tetrachloropalladate(II), 99%	344
Cl_4K_2Pt	Potassium tetrachloroplatinate(II) (99.9%-Pt)	344
Cl_4MoO	Molybdenum(VI) tetrachloride oxide, min. 97%	138
Cl_4Na_2Pd	Sodium tetrachloropalladate(II) trihydrate, 99%	421
Cl_4Na_2Pt	Sodium tetrachloroplatinate(II) hydrate	421
Cl_4OW	Tungsten(VI) oxychloride, 98%	444
Cl_4Pt	Platinum(IV) chloride (99.9%-Pt)	338
Cl_4Se	Selenium(IV) chloride (99.8%-Se)	404
Cl_4Si	Silicon(IV) chloride, fiber optic grade (99.9999%-Si, 50ppm-Fe) PURATREM	409
	Silicon(IV) chloride, fiber optic grade (99.9999%-Si, 50ppm-Fe) PURATREM, 98-0147, contained in a 50 ml electropolished Swagelok® cylinder (96-1077) for CVD/ALD	410
Cl_4Sn	Tin(IV) chloride, anhydrous, 98%	436
	Tin(IV) chloride pentahydrate, 98%	436
	Tin(IV) chloride, anhydrous (99.99-Sn%) PURATREM	436
Cl_4Te	Tellurium(IV) chloride (99.9%-Te)	430
Cl_4Ti	Titanium(IV) chloride, 99%	441
	Titanium(IV) chloride, 99%, 22-1150, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD	441
Cl_4W	Tungsten(IV) chloride, 97%	444
Cl_4Zr	Zirconium(IV) chloride, sublimed grade (99.95+%-Zr)	457
	Zirconium(IV) chloride (99.5+%-Zr)	457
Cl_5IrKNO	Potassium pentachloronitrosyl iridium(III), 99%	343
Cl_5K_2Ru	Potassium pentachlororuthenate(III) hydrate	343
Cl_5Mo	Molybdenum(V) chloride, anhydrous, 99.6%	138
Cl_5Nb	Niobium(V) chloride (99.99%-Nb) (20-200ppm Ta) PURATREM	177
	Niobium(V) chloride (99+%-Nb)	177
Cl_5P	Phosphorus(V) chloride, 98%	320
Cl_5Re	Rhenium(V) chloride (99.9%-Re)	347
Cl_5Sb	Antimony(V) chloride, (99.999%-Sb) PURATREM	8
	Antimony(V) chloride, 99%	8
Cl_5Ta	Tantalum(V) chloride, anhydrous (99.9%-Ta)	429
	Tantalum(V) chloride, resublimed (99.99+%-Ta) PURATREM	429
Cl_6H_2Ir	Dihydrogen hexachloroiridate(IV) hydrate (99.9%-Ir)	91
Cl_6H_2Os	Dihydrogen hexachloroosmate(IV) hexahydrate	213
Cl_6H_2Pt	Chloroplatinic acid hexahydrate (38-40% Pt) (99.9%-Pt)	337
$Cl_6H_8IrN_2$	Ammonium hexachloroiridate(IV), 99%	5
$Cl_6H_8N_2Pd$	Ammonium hexachloropalladate(IV), 99+%	5
$Cl_6H_8N_2Pt$	Ammonium hexachloroplatinate(IV), 99%	5
$Cl_6H_8N_2Ru$	Ammonium hexachlororuthenate(IV), 99%	5
$Cl_6H_{12}IrN_3$	Ammonium hexachloroiridate(III) hydrate (~39% Ir)	5
$Cl_6H_{12}N_3Rh$	Ammonium hexachlororhodate(III) monohydrate (99.995%-Rh) PURATREM	5
	Ammonium hexachlororhodate(III) hydrate	5
Cl_6IrK_2	Potassium hexachloroiridate(IV), 99%	342
Cl_6IrNa_2	Sodium hexachloroiridate(IV) hexahydrate, 99%	418
Cl_6IrNa_3	Sodium hexachloroiridate(III) hydrate	418
Cl_6K_2Os	Potassium hexachloroosmate(IV), 99%	342
	Potassium hexachloroosmate (IV), 99% (99.98+%-Os)	342
Cl_6K_2Pd	Potassium hexachloropalladate(IV), 99%	342
Cl_6K_2Pt	Potassium hexachloroplatinate(IV), 99%	342
Cl_6K_2Re	Potassium hexachlororhenate(IV) (99.9%-Re)	342
$Cl_6N_3P_3$	Phosphonitrilic chloride trimer, 98.5%	320

Formula	Description	Page
Cl_6Na_2Os	Sodium hexachloroosmate(IV) hydrate	418
	Sodium hexachloroosmate((IV) hydrate (99.98+%-Os)	418
Cl_6Na_2Pd	Sodium hexachloropalladate(IV), 98+%	418
Cl_6Na_2Pt	Sodium hexachloroplatinate(IV) hexahydrate, 98+%	418
Cl_6Na_3Rh	Sodium hexachlororhodate(III) hydrate	418
Cl_6W	Tungsten(VI) chloride (99.9%-W)	444
$CoCl_2$	Cobalt(II) chloride, anhydrous (99.999%-Co) PURATREM	48
CoF_2	Cobalt(II) fluoride, anhydrous, 99%	49
CoF_3	Cobalt(III) fluoride, 99%	49
CoH_2O_2	Cobalt(II) hydroxide (97%-Co)	49
CoI_2	Cobalt(II) iodide, anhydrous, min. 95% (99.5%-Co)	49
$CoLiO_2$	Lithium cobalt(III) oxide, min. 98%	116
$CoMoO_4$	Cobalt(II) molybdate, anhydrous (99.9%-Co)	49
CoN_2O_6	Cobalt(II) nitrate hexahydrate, 99%	49
	Cobalt(II) nitrate hexahydrate (99.999%-Co) PURATREM	49
$CoN_6Na_3O_{12}$	Sodium hexanitritocobaltate(III), (ACS)	419
CoO	Cobalt oxide-molybdenum oxide on alumina (3.5% CoO, 14% MoO_3)	49
CoO_4S	Cobalt(II) sulfate heptahydrate, 98+%	50
	Cobalt(II) sulfate heptahydrate (99.999%-Co) PURATREM	50
CoO_4W	Cobalt(II) tungstate (99.9%-Co)	50
CoS	Cobalt(II) sulfide (99.5%-Co)	50
Co_3O_4	Cobalt(II,III) oxide (99.9985%-Co) PURATREM	49
	Cobalt(II,III) oxide, 99.5%	49
$Co_3O_8P_2$	Cobalt(II) phosphate hydrate	50
CrF_2	Chromium(II) fluoride, anhydrous, 95%	45
CrF_3	Chromium(III) fluoride, anhydrous, 98%	45
$CrLi_2O_4$	Lithium chromate, min. 95%	116
CrN_3O_9	Chromium(III) nitrate nonahydrate, 99%	46
$CrNa_2O_4$	Sodium chromate tetrahydrate, 99+%	417
CrO_3	Chromium(VI) oxide, 99.5%	46
Cr_2CuO_4	Copper chromite, barium promoted (62-64% Cr_2CuO_4, 22-24% CuO, 6%BaO, 0-4% Graphite, 1% CrO_3, 1% Cr_2O_3)	56
$Cr_2K_2O_7$	Potassium dichromate, 99+% (ACS)	341
Cr_2O_3	Chromium(III) oxide hydrate, 98%	46
	Chromium(III) oxide, 98%	46
	Chromium(III) oxide, 99%	46
$Cr_2O_{12}S_3$	Chromium(III) sulfate hydrate	46
CsF	Cesium fluoride (99.9%-Cs)	43
	Cesium fluoride (99+%-Cs)	43
CsHO	Cesium hydroxide, 50% aqueous solution (99.9%-Cs)	43
	Cesium hydroxide, hydrate (99.9%-Cs)	43
CsI	Cesium iodide (99.9%-Cs)	43
	Cesium iodide (99.999%-Cs) PURATREM	43
	Cesium iodide (99%-Cs)	43
$CsNO_3$	Cesium nitrate (99.99%-Cs) PURATREM	44
	Cesium nitrate (99.9%-Cs)	44
Cs_2O_4S	Cesium sulfate (99.9%-Cs)	44
CuF_2	Copper(II) fluoride, anhydrous, 99%	56
$CuH_{12}N_4O_4S$	Tetraamminecopper(II) sulfate hydrate	59
CuI	Copper(I) iodide (99.999%-Cu) PURATREM	57
	Copper(I) iodide, 98%	57
	Copper(I) iodide/cesium carbonate admixture [5.50 wt% CuI]	57
CuN_2O_6	Copper(II) nitrate trihydrate, 99.5%	57
	Copper(II) nitrate trihydrate (99.999%-Cu) PURATREM	57
CuO	Copper(II) oxide (99.995%-Cu) PURATREM	57
	Copper(II) oxide (99.5+%-Cu)	57
	Copper(II) oxide, min. 97% (99+%-Cu)	57
CuO_4S	Copper(II) sulfate, anhydrous, 98%	58
	Copper(II) sulfate pentahydrate, 98+% (ACS)	58
	Copper(II) sulfate pentahydrate (99.999%-Cu) PURATREM	58
CuS	Copper(II) sulfide (99.5%-Cu)	58
Cu_2O	Copper(I) oxide, min. 95%	57
	Copper(I) oxide (99.9%-Cu)	57
Cu_2S	Copper(I) sulfide (99.5%-Cu)	58
DLi	Lithium deuteride, 99+% isotopic purity	116
DyF_3	Dysprosium(III) fluoride, anhydrous (99.9%-Dy) (REO)	60
DyN_3O_9	Dysprosium(III) nitrate hexahydrate (99.9%-Dy) (REO)	60
Dy_2O_3	Dysprosium(III) oxide (99.9%-Dy) (REO)	60
	Dysprosium(III) oxide (99.998%-Dy) (REO) PURATREM	60
ErI_3	Erbium(III) iodide, anhydrous (99.9%-Er) (REO)	61
ErN_3O_9	Erbium(III) nitrate hydrate (99.9%-Er) (REO)	61
Er_2O_3	Erbium(III) oxide (99.9%-Er) (REO)	61
	Erbium(III) oxide (99.995%-Er) (REO) PURATREM	61
EuF_3	Europium(III) fluoride, anhydrous (99.99%-Eu) (REO) PURATREM	62
EuN	Europium nitride (99.9%-Eu)	62
EuN_3O_9	Europium(III) nitrate hexahydrate (99.9%-Eu) (REO)	62
Eu_2O_3	Europium(III) oxide (99.99%-Eu) (REO) PURATREM	62
$Eu_2O_{12}S_3$	Europium(III) sulfate octahydrate (99.99%-Eu) (REO) PURATREM	63
	Europium(III) sulfate octahydrate (99.9%-Eu) (REO)	62
FH_2O_3P	Fluorophosphoric acid, 60-70%	313
FH_4N	Ammonium fluoride, 98+% (ACS)	5
FK	Potassium fluoride dihydrate, 98%	341
	Potassium fluoride, anhydrous (99.97%-K)	341
	Potassium fluoride, anhydrous, 98%	341
FLi	Lithium fluoride (99.9%-Li)	117
	Lithium fluoride, 99.9% (99.9+%-Li)	117
	Lithium fluoride, 99+%	117
FNa	Sodium fluoride (99.99+%-Na) PURATREM	418
	Sodium fluoride, 99% (ACS)	418
FNa_2O_3P	Sodium fluorophosphate, 94%	418
FRb	Rubidium fluoride, anhydrous (99.8%-Rb)	362
FTl	Thallium(I) fluoride, 99%	432
F_2Fe	Iron(II) fluoride, anhydrous, 99%	107
F_2HK	Potassium hydrogen fluoride, 99+%	342
F_2HO_2P	Difluorophosphoric acid hemihydrate, tech. gr.	297
F_2Hg	Mercury(II) fluoride, 98%	127
F_2Hg_2	Mercury(I) fluoride, 95+%	127
$F_2KNO_4S_2$	Potassium bis(fluorosulfonyl)imide, 98%	340
F_2Mg	Magnesium fluoride, 99%	122
	Magnesium fluoride (99.99+%-Mg) PURATREM	122
F_2Mn	Manganese(II) fluoride, 99%	126
F_2Ni	Nickel(II) fluoride tetrahydrate, 98+%	175
	Nickel(II) fluoride, anhydrous, 99%	175
F_2Pb	Lead(II) fluoride, 99+%	114
F_2Sn	Tin(II) fluoride, 97.5%	436
F_2Sr	Strontium fluoride (99.99%-Sr) PURATREM	423
	Strontium fluoride, reagent, 99%	423
F_2Xe	Xenon(II) fluoride, 99.5%	446
F_2Zn	Zinc fluoride, anhydrous, 99%	452
	Zinc fluoride tetrahydrate, 98%	452
F_3Fe	Iron(III) fluoride, anhydrous, 99+%	107
	Iron(III) fluoride trihydrate, 98%	108
F_3Ga	Gallium(III) fluoride trihydrate, 99.5%	68
$F_3GaH_6O_3$	Gallium (III) fluoride trihydrate (99.99%-Ga) PURATREM	68
F_3Gd	Gadolinium(III) fluoride, anhydrous (99.9%-Gd) (REO)	67
F_3In	Indium(III) fluoride, anhydrous, 98%	80
F_3La	Lanthanum(III) fluoride, anhydrous (99.99%-La) (REO) PURATREM	112
	Lanthanum(III) fluoride, anhydrous (99.9%-La) (REO)	112
F_3Mn	Manganese(III) fluoride, 98%	126
F_3Nd	Neodymium(III) fluoride, anhydrous (99.9%-Nd) (REO)	169
F_3OV	Vanadium(V) trifluoride oxide, 98+%	446
F_3Pr	Praseodymium(III) fluoride (99.9%-Pr) (REO)	345
F_3Sb	Antimony(III) fluoride, 98%	9
F_3Sc	Scandium(III) fluoride (99.9%-Sc) (REO)	403

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Formula	Description	Page
F_3Sm	Samarium(III) fluoride (99.9%-Sm) (REO)	402
F_3Ti	Titanium(III) fluoride, min. 98%	442
F_3Y	Yttrium(III) fluoride (99.9%-Y) (REO)	449
F_3Yb	Ytterbium(III) fluoride (99.999%-Yb) (REO) PURATREM	447
	Ytterbium(III) fluoride (99.9%-Yb) (REO)	447
F_4Sn	Tin(IV) fluoride, 98.5%	436
F_4Th	Thorium(IV) fluoride, anhydrous (99.9%-Th)	433
F_4Ti	Titanium(IV) fluoride, 98%	442
F_4Zr	Zirconium(IV) fluoride, 98%	458
	Zirconium(IV) fluoride (99.9%-Zr)	458
F_5Nb	Niobium(V) fluoride, 99.5%	177
F_5Ta	Tantalum(V) fluoride, 99.5%	429
$F_6GeH_8N_2$	Ammonium hexafluorogermanate, 99%	6
F_6HP	Hexafluorophosphoric acid, 60-70% in water	313
F_6HSb	Hydrogen hexafluoroantimonate(V), 65-70% aqueous solution	9
F_6H_2Ti	Hexafluorotitanic acid, 60% aqueous solution	440
F_6H_4NP	Ammonium hexafluorophosphate, 99%	6
$F_6H_8N_2Si$	Ammonium hexafluorosilicate, min. 98%	6
$F_6H_8N_2Ti$	Ammonium hexafluorotitanate(IV), min. 98%	6
F_6KP	Potassium hexafluorophosphate, 99.5%	342
F_6K_2Ni	Potassium hexafluoronickelate(IV), 99%	342
F_6K_2Si	Potassium hexafluorosilicate, 99%	342
F_6LiP	Lithium hexafluorophosphate (99.9+%-Li)	117
	Lithium hexafluorophosphate, 99+%	117
F_6LiSb	Lithium hexafluoroantimonate, min. 97%	117
F_6Li_2Sn	Lithium hexafluorostannate(IV), 99%	117
F_6MgSi	Magnesium hexafluorosilicate hexahydrate, 98%	122
F_6NOP	Nitrosonium hexafluorophosphate, min. 97%	204
F_6NOSb	Nitrosonium hexafluoroantimonate, min. 97%	204
F_6NO_2P	Nitronium hexafluorophosphate, min. 97%	204
F_6NO_2Sb	Nitronium hexafluoroantimonate, min. 97%	204
F_6NaP	Sodium hexafluorophosphate, 99%	418
F_6NaSb	Sodium hexafluoroantimonate(V), 99%	418
F_6Na_2Si	Sodium hexafluorosilicate, 99%	418
F_6Na_2Sn	Sodium hexafluorostannate(IV), 99%	418
F_6Na_2Ti	Sodium hexafluorotitanate(IV), 98%	419
F_6PTl	Thallium(I) hexafluorophosphate, min. 97%	432
$FeHO_2$	Iron(III) oxyhydroxide in water at pH = 3.0 +- 0.5 (FEO-W320)	159
$FeH_4N_2O_6S_2$	Iron(II) sulfamate, (38-42%) aqueous solution	109
$FeH_8N_2O_8S_2$	Ammonium iron(II) sulfate hexahydrate, 98.5+% (ACS)	6
FeN_3O_9	Iron(III) nitrate nonahydrate, 98+%	108
	Iron(III) nitrate nonahydrate (99.999%-Fe) PURATREM	108
FeO_4P	Iron(III) phosphate hydrate	109
FeO_4S	Iron(II) sulfate heptahydrate, 99+% (ACS)	109
FeS	Iron(II) sulfide (99.9%-Fe)	109
	Iron(II) sulfide (99%-Fe)	109
FeS_2	Iron disulfide (Iron pyrite), 95%	107
$FeSi_2$	Iron silicide, 99%	109
Fe_2O_3	Iron(III) oxide (99.995%-Fe) PURATREM	108
	Iron(III) oxide, red (Hematite) (99.8%-Fe)	108
	Iron(III) oxide monohydrate, yellow (99.9+%-Fe)	108
$Fe_2O_{12}S_3$	Iron(III) sulfate hydrate, tech. gr.	109
Fe_3O_4	Iron(II,III) oxide, black (Magnetite), min. 95%	108
	Iron(II,III) oxide (Magnetite) aqueous magnetic fluid [3.5 vol%, Ms = 15-16 kA/m]	158
	Iron(II,III) oxide (Magnetite) aqueous magnetic fluid [7.0 vol%, Ms = 30-31 kA/m]	158
GaI_3	Gallium(III) iodide, anhydrous, 99%	68
GaN_3O_9	Gallium(III) nitrate hydrate (99.99%-Ga) PURATREM	68
GaP	Gallium phosphide (99.999%-Ga) PURATREM	68
Ga_2O_3	Gallium(III) oxide (99.998%-Ga) PURATREM	68
$Ga_2O_{12}S_3$	Gallium(III) sulfate hydrate (99.999%-Ga) PURATREM	68
GdH_3O_3	Gadolinium(III) hydroxide hydrate (99.9%-Gd) (REO)	67
GdN_3O_9	Gadolinium(III) nitrate hexahydrate (99.9%-Gd) (REO)	67
Gd_2O_3	Gadolinium(III) oxide (99.99%-Gd) (REO) PURATREM	67
$Gd_2O_{12}S_3$	Gadolinium(III) sulfate octahydrate (99.9%-Gd) (REO)	67
GeI_2	Germanium(II) iodide (99.99+%-Ge) PURATREM	69
GeI_4	Germanium(IV) iodide (99.999%-Ge) PURATREM	69
GeO_2	Germanium(IV) oxide (99.999%-Ge) PURATREM	69
	Germanium(IV) oxide, elec. gr. (99.9999%-Ge) PURATREM	69
GeS	Germanium(II) sulfide (99.99+%-Ge) (contains 1-5% germanium metal) PURATREM	69
$GeSe_2$	Germanium(IV) selenide (99.999%-Ge) PURATREM	69
HK	Potassium hydride, 30-35% in oil	342
HKO	Potassium hydroxide, pellets, 85+% (ACS)	343
HKS	Potassium hydrogen sulfide, anhydrous, min. 95%	342
HK_2O_4P	Potassium hydrogen phosphate, 98+% (ACS)	342
HLi	Lithium hydride, min. 95%	117
HLiO	Lithium hydroxide monohydrate, min. 98%	117
	Lithium hydroxide, anhydrous, 95%	117
HNa	Sodium hydride, 60% in oil	419
HNaO	Sodium hydroxide, pellets, 97+% (ACS)	419
	Sodium hydroxide monohydrate (99.996%-Na) PURATREM	419
HNaS	Sodium hydrogen sulfide, anhydrous	419
HNa_2O_4P	Sodium hydrogen phosphate, 99+% (ACS)	419
HORb	Rubidium hydroxide, 50% aqueous solution (99+%-Rb)	362
	Rubidium hydroxide hydrate, fused solid (99.8%-Rb)	362
HO_4Re	Perrhenic acid, aqueous solution (50-54% Re) (99.99%-Re) PURATREM	347
H_2KO_4P	Potassium dihydrogen phosphate, 99+% (ACS)	341
H_2LiN	Lithium amide, 95%	116
H_2LiO_4P	Lithium dihydrogen phosphate, 97%	116
H_2MgO_2	Magnesium hydroxide, 95%	122
H_2NaPO_4	Sodium dihydrogen phosphate monohydrate (99.9%-Na)	417
H_2O_2Ni	Nickel(II) hydroxide	175
H_2O_2Sr	Strontium hydroxide octahydrate, tech. gr.	423
H_2O_3Se	Selenous acid (99.999%-Se) PURATREM	404
H_2O_3Si	Silica gel, large pore	409
	Silica gel, 6-16 mesh (indicating)	409
	Silica gel, 12-24 mesh (liquid drying)	409
	Silica gel, 70-200 mesh (TLC)	409
H_2O_4Se	Selenic acid, 40% solution	404
H_2O_4Te	Telluric acid (99.5%-Te)	430
H_2O_4W	Tungstic acid, 99%	444
H_2Sr	Strontium hydride (99.5%-Sr)	423
H_2Ti	Titanium(II) hydride, min. 95% (99+%-Ti)	442
H_3LaO_3	Lanthanum(III) hydroxide, anhydrous (99.9%-La) (REO)	112
$H_3Mo_{12}O_{40}P$	12-Molybdophosphoric acid hydrate (ACS)	138
H_3O_4P	Phosphoric acid (ACS), 85%	320
$H_3O_9P_3$	Polyphosphoric acid (83% P_2O_5)	320
$H_3O_{40}PW_{12}$	12-Tungstophosphoric acid hydrate, 99+%	444
H_4IN	Ammonium iodide (99.999%) PURATREM	6
$H_4Mo_{12}O_{40}Si$	12-Molybdosilicic acid hydrate	138
H_4NO_3V	Ammonium metavanadate (99.995%-V) PURATREM	6
	Ammonium metavanadate, 99%	6
H_4NO_4Re	Ammonium perrhenate (99.999%-Re) PURATREM	6
	Ammonium perrhenate, 99+%	6
$H_4N_2O_3$	Ammonium nitrate, 99.5%	6
$H_4O_7PtS_2$	Platinum sulfite acid solution (15.3% Pt)	338
H_5F_2N	Ammonium hydrogen fluoride, min. 96% (contains 3-4% NH_4F)	6
H_6NO_4P	Ammonium dihydrogen phosphate, 98+% (ACS)	5

Formula	Description	Page
	Ammonium dihydrogen phosphate (99.998%) PURATREM	5
$H_6N_4O_4Pd$	Diamminepalladium(II) nitrite solution (5% Pd)	236
$H_6N_4O_4Pt$	Diammineplatinum(II) nitrite, solution in ammonium hydroxide (5.0wt% as Pt)	337
$H_8MoN_2S_4$	Ammonium tetrathiomolybdate(VI), 99% (99.99%-Mo) PURATREM	7
$H_8Mo_2N_2O_7$	Ammonium dimolybdate, 99%	5
$H_8N_2O_4S$	Ammonium sulfate, 99+% (ACS)	6
H_8N_2S	Ammonium sulfide, 40-44% aqueous solution	6
	Ammonium sulfide, 20% aqueous solution	6
$H_8N_2S_4W$	Ammonium tetrathiotungstate(VI), 99% (99.9+%-W)	7
H_8O_6Pt	Dihydrogen hexahydroxyplatinate(IV), 99%	337
$H_9N_2O_4P$	Ammonium hydrogen phosphate, 98+% (ACS)	6
$H_{12}Mo_{12}N_3O_{40}P$	Ammonium phosphomolybdate hydrate, reagent	6
$H_{12}N_6O_6Pd$	Tetraamminepalladium(II) nitrate solution (5.0 wt% as Pd)	248
$H_{12}N_6O_6Pt$	Tetraammineplatinum(II) nitrate, 99%	339
$H_{14}N_4O_2Pt$	Tetraammineplatinum(II) hydroxide hydrate (59% Pt)	339
$H_{18}I_2N_6Ni$	Hexaamminenickel(II) iodide, 98%	174
$H_{24}Mo_7N_6O_{24}$	Ammonium molybdate tetrahydrate (99.98%-Mo)	6
	Ammonium molybdate tetrahydrate (99.999%-Mo) PURATREM	6
	Ammonium molybdate tetrahydrate (ACS)	6
$H_{26}N_6O_{40}W_{12}$	Ammonium metatungstate hydrate (99.9+%-W)	6
$H_{40}N_{10}O_{41}W_{12}$	Ammonium tungstate pentahydrate (99.996%-W) PURATREM	7
HfO_2	Hafnium(IV) oxide (99.995%-Hf, <0.15% Zr) PURATREM	77
	Hafnium(IV) oxide, 98%	77
HgI_2	Mercury(II) iodide, anhydrous (99.999%-Hg) PURATREM	127
	Mercury(II) iodide, 99+% (ACS)	127
$HgNO_3$	Mercury(I) nitrate hydrate, 98+%	127
HgN_2O_6	Mercury(II) nitrate monohydrate, 98+% (ACS)	127
HgO	Mercury(II) oxide, yellow, 99+% (ACS)	128
	Mercury(II) oxide, red, 99+% (ACS)	128
HgO_4S	Mercury(II) sulfate, min. 98%	128
HgSe	Mercury(II) selenide (99.99%-Hg) PURATREM	128
HoN_3O_9	Holmium(III) nitrate hydrate (99.9%-Ho) (REO)	79
Ho_2O_3	Holmium(III) oxide (99.9%-Ho) (REO)	79
IK	Potassium iodide, 99+% (ACS)	343
	Potassium iodide (99.99%-K) PURATREM	343
ILi	Lithium iodide trihydrate, 99+%	117
	Lithium iodide, anhydrous, min. 98%	117
INa	Sodium iodide, anhydrous, 99% (H_2O < 1%)	419
IRb	Rubidium iodide (99.8%-Rb)	362
	Rubidium iodide, 99%	362
ITl	Thallium(I) iodide (99.999%-Tl) PURATREM	432
I_2Mn	Manganese(II) iodide, anhydrous, 98+%	126
I_2Ni	Nickel(II) iodide, anhydrous (99.5%-Ni)	175
	Nickel(II) iodide hydrate	175
I_2O_5	Iodine(V) oxide, 99%	81
I_2Pb	Lead(II) iodide (99.999+%-Pb) PURATREM	114
	Lead(II) iodide, 98.5%	114
I_2Pd	Palladium(II) iodide, 99%	248
I_2Pt	Platinum(II) iodide, min. 98%	338
I_2Sm	Samarium(II) iodide, 0.1M in THF	402
I_2Sn	Tin(II) iodide, 99%	437
I_2Zn	Zinc iodide, 98+%	453
I_3In	Indium(III) iodide (99.999%-In) PURATREM	80
I_3La	Lanthanum(III) iodide, anhydrous (99.9%-La) (REO)	112
I_3Nd	Neodymium(III) iodide, anhydrous (99.9%-Nd)	170
I_3Rh	Rhodium(III) iodide (99.9+%-Rh)	359
I_3Ru	Ruthenium(III) iodide, anhydrous, 98+%	398
I_3Sb	Antimony(III) iodide (99.9%-Sb)	9
I_4Si	Silicon(IV) iodide (99.9%-Si)	410
I_4Sn	Tin(IV) iodide, 95%	437
I_4Te	Tellurium(IV) iodide (99.9%-Te)	430
I_4Ti	Titanium(IV) iodide (99.99%-Ti) PURATREM	442
I_4Zr	Zirconium(IV) iodide (99.5%-Zr)	458
InN_3O_9	Indium(III) nitrate hydrate (99.999%-In) PURATREM	80
InP	Indium(III) phosphide (99.999%-In) PURATREM	80
InSb	Indium(III) antimonide (99.99%-In) PURATREM	79
In_2O_3	Indium(III) oxide (99.998%-In) PURATREM	80
$In_2O_{12}S_3$	Indium(III) sulfate hydrate (99.999%-In) PURATREM	80
In_2S_3	Indium(III) sulfide (99.99%-In) PURATREM	80
$IrCl_3$	Iridium(III) chloride, hydrate (99.99+%-Ir) PURATREM [free of Ir(IV) by electrochemical analysis]	92
IrO_2	Iridium(IV) oxide, 99% (99.9+%-Ir)	92
KNO_3	Potassium nitrate, 99+% (ACS)	343
	Potassium nitrate (99.999%-K) PURATREM	343
$KNbO_3$	Potassium niobate (99.999%-Nb) PURATREM	343
KO_2	Potassium superoxide, min. 96%	344
KO_3P	Potassium metaphosphate, 98%	343
KO_4Re	Potassium perrhenate (99%-Re)	343
KO_4Ru	Potassium perruthenate, 98%	343
$K_2N_4O_8Pt$	Potassium tetranitroplatinate(II), min. 98%	344
K_2O_3Se	Potassium selenite	344
K_2O_3Te	Potassium tellurite(IV) hydrate, 97%	344
K_2O_4Os	Potassium osmate(VI) dihydrate, 99%	343
	Potassium osmate(VI) dihydrate, 99% (99.98+%-Os)	343
K_2O_4S	Potassium sulfate, 99+% (ACS)	344
	Potassium sulfate (99.999%-K) PURATREM	344
K_2O_4W	Potassium tungstate (99.5%-W)	345
K_2S	Potassium sulfide, anhydrous, min. 95%	344
$K_3H_3O_{18}S_4$	Potassium monoperoxysulfate OXONE®	343
$K_3N_6O_{12}Rh$	Potassium hexanitritorhodate(III), min. 97%	342
K_3O_4P	Potassium phosphate, anhydrous, min. 97%	344
$K_5O_{10}P_3$	Potassium triphosphate, 94+%	345
LaN_3O_9	Lanthanum(III) nitrate hexahydrate (99.999%-La) (REO) PURATREM	112
	Lanthanum(III) nitrate hexahydrate (99.9%-La) (REO)	112
	Lanthanum(III) nitrate hexahydrate (99.99%-La) (REO) PURATREM	112
LaO_4P	Lanthanum(III) phosphate hydrate	113
La_2O_3	Lanthanum(III) oxide (99.99%-La) (REO) PURATREM	112
	Lanthanum(III) oxide (99.9%-La) (REO)	112
	Lanthanum(III) oxide (99.999%-La) (REO) PURATREM	112
$La_2O_{12}S_3$	Lanthanum(III) sulfate hydrate (99.9%-La) (REO)	113
La_2S_3	Lanthanum(III) sulfide (99.9%-La) (REO)	113
La_3La	Lanthanum(III) bromide, anhydrous (99.99%-La) (REO) PURATREM	112
$LiNO_3$	Lithium nitrate, anhydrous, 99%	118
$LiNbO_3$	Lithium niobate (99.998%-Nb) PURATREM	118
LiO_3Ta	Lithium tantalate (99.998%-Ta) PURATREM	118
Li_2MoO_4	Lithium molybdate, 99%	117
Li_2O	Lithium oxide, min. 95% (99.5%-Li)	118
Li_2O_3Si	Lithium metasilicate, 99%	117
Li_2O_4W	Lithium tungstate, 98%	119
Li_2S	Lithium sulfide, 98% (99.9%-Li)	118
Li_3N	Lithium nitride (99.5%-Li)	118
Li_3O_4P	Lithium orthophosphate, 98%	118
LuN_3O_9	Lutetium(III) nitrate hydrate (99.9%-Lu) (REO)	119
Lu_2O_3	Lutetium(III) oxide (99.9%-Lu) (REO)	119
	Lutetium(III) oxide (99.999%-Lu) (REO) PURATREM	119
$Lu_2O_{12}S_3$	Lutetium(III) sulfate hydrate (99.9%-Lu) (REO)	119
$MgMoO_4$	Magnesium molybdate (99.9%-Mo)	122

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MgN_2O_6	Magnesium nitrate hexahydrate (99.999%-Mg) PURATREM	122
	Magnesium nitrate hexahydrate, 99% (ACS)	122
MgO	Magnesium oxide (99.99+%-Mg) PURATREM	122
	Magnesium oxide, -325 mesh (99.95%-Mg)	122
	Magnesium oxide, -325 mesh (99.5%-Mg)	122
	Magnesium oxide, -325 mesh, 98%	122
	Magnesium oxide nanopowder	161
MgO_3Ti	Magnesium titanate, tech. gr., (~85%)	123
MgO_4S	Magnesium sulfate, anhydrous, 99+%	123
	Magnesium sulfate heptahydrate, 98+% (ACS)	123
MgO_4W	Magnesium tungstate (99.9%-W)	123
Mg_2Si	Magnesium silicide (99.5%-Mg) (C < 1%)	123
$MnCl_2$	Manganese(II) chloride anhydrous (99.995%-Mn) PURATREM	126
$MnMoO_4$	Manganese(II) molybdate (99.9%-Mo)	126
MnN_2O_6	Manganese(II) nitrate, 50-52% aqueous solution	126
MnO	Manganese(II) oxide, 99%	126
MnO_2	Manganese(IV) oxide, 99+%	126
	Manganese(IV) oxide, activated	126
	Manganese(IV) oxide (99.995%-Mn) PURATREM	126
MnS	Manganese(II) sulfide (99.9%-Mn)	127
MnSe	Manganese(II) selenide (99.9%-Mn)	127
Mn_2O_3	Manganese(III) oxide, 99%	126
Mn_3O_4	Manganese(II,III) oxide, 97%	126
$MoNa_2O_4$	Sodium molybdate dihydrate, 99.5% (ACS)	419
	Sodium molybdate, anhydrous, 98+%	419
	Sodium molybdate dihydrate, 99%	419
MoO_2	Molybdenum(IV) oxide, 99%	138
MoO_3	Molybdenum(VI) oxide (99.998%-Mo) PURATREM	138
	Molybdenum(VI) oxide (99.999%-Mo) PURATREM	138
	Molybdenum(VI) oxide, 99.5+%	138
MoO_4Zn	Zinc molybdate, 98+%	453
MoS_2	Molybdenum(IV) sulfide, 97+%	138
$MoSe_2$	Molybdenum(IV) selenide (99.9%-Mo)	138
$MoSi_2$	Molybdenum silicide (99+%-Mo)	138
	Molybdenum disilicide, 0.4-5.0 microns (99+%-Mo)	138
$NNaO_2$	Sodium nitrite, 97+% (ACS)	419
$NNaO_3$	Sodium nitrate, 99+% (ACS)	419
NO_3Rb	Rubidium nitrate (99%-Rb)	362
NO_3Tl	Thallium(I) nitrate (99.99%-Tl) PURATREM	432
	Thallium(I) nitrate (99.5%-Tl)	432
NTi	Titanium nitride (99+%-Ti)	442
NV	Vanadium nitride (99%-V)	445
NZr	Zirconium nitride, 98%	458
N_2NiO_6	Nickel(II) nitrate hexahydrate (99.9985%-Ni) PURATREM	175
	Nickel(II) nitrate hexahydrate (99.9+%-Ni)	175
N_2O_6Pb	Lead(II) nitrate, 99+% (ACS)	114
	Lead(II) nitrate (99.999%-Pb) PURATREM	114
N_2O_6Pd	Palladium(II) nitrate hydrate (Pd ~40%) (99.9%-Pd)	248
N_2O_6Sr	Strontium nitrate, 99+% (ACS)	423
	Strontium nitrate, 98+%	423
N_2O_6Zn	Zinc nitrate hexahydrate, min. 98%	453
N_2O_7Zr	Zirconium(IV) dinitrate oxide hydrate	457
N_2Sr_3	Strontium nitride (99.5%-Sr)	423
N_3Na	Sodium azide, 98%	416
N_3NdO_9	Neodymium(III) nitrate hexahydrate (99.9%-Nd) (REO)	170
	Neodymium(III) nitrate hexahydrate (99.999%-Nd) (REO) PURATREM	170
N_3O_9Pr	Praseodymium(III) nitrate hexahydrate (99.9%-Pr) (REO)	345
N_3O_9Rh	Rhodium(III) nitrate, solution in water (10% Rh)	359
N_3O_9Sc	Scandium(III) nitrate pentahydrate (99.9%-Sc) (REO)	403
N_3O_9Sm	Samarium(III) nitrate hexahydrate (99.9%-Sm) (REO)	402
N_3O_9Tb	Terbium(III) nitrate hexahydrate (99.9%-Tb) (REO)	431
N_3O_9Tm	Thulium(III) nitrate hexahydrate (99.9%-Tm) (REO)	433
N_3O_9Y	Yttrium(III) nitrate hexahydrate (99.999%-Y) (REO) PURATREM	449
	Yttrium(III) nitrate hexahydrate (99.9%-Y) (REO)	449
N_3O_9Yb	Ytterbium(III) nitrate pentahydrate (99.9%-Yb) (REO)	447
$N_4O_{10}Ru$	Ruthenium(III) nitrosyl nitrate, solution (1.5% Ru)	398
$N_4O_{12}Th$	Thorium(IV) nitrate hydrate (99.8%-Th)	433
N_4Si_3	Silicon(IV) nitride, < 5 micron (99%-Si)	410
$NaNbO_3$	Sodium niobate (99.9%-Nb)	419
NaO_3V	Sodium metavanadate, min. 96%	419
NaO_4Re	Sodium perrhenate (99.9%-Re)	420
$NaPF_6$	Sodium hexafluorophosphate 99% (99.99%-Na) PURATREM	418
	Sodium hexafluorophosphate 99% (99.99%-Na) PURATREM	418
Na_2O	Sodium oxide/sodium on alumina, Olefin Isomerization Catalyst (Na_2O 11.5-13.5%, Na 1.8-3.0%)	420
Na_2O_2	Sodium peroxide, min. 93% (ACS)	420
Na_2O_3S	Sodium sulfite, anhydrous, 98+% (ACS)	421
Na_2O_3Se	Sodium selenite, 99%	420
Na_2O_3Si	Sodium metasilicate, anhydrous, min. 95%	419
	Sodium metasilicate pentahydrate, 99%	419
Na_2O_3Sn	Sodium stannate trihydrate, min. 95%	420
Na_2O_4S	Sodium sulfate, anhydrous, 99+% (ACS)	420
	Sodium sulfate, anhydrous (99.999%-Na) PURATREM	420
Na_2O_4Te	Sodium tellurate(VI) dihydrate, 99.5%	421
Na_2O_4W	Sodium tungstate dihydrate, 99+% (ACS)	421
$Na_2O_7Ti_3$	Sodium titanate, 95%	421
Na_2S	Sodium sulfide, anhydrous, min. 95%	420
	Sodium sulfide nonahydrate, 98+% (ACS)	421
Na_3O_4P	Sodium phosphate dodecahydrate, 98+% (ACS)	420
Na_4O_4Si	Sodium orthosilicate	419
$Na_5O_{10}P_3$	Sodium tripolyphosphate, tech. gr., min. 85%	421
NbO_2	Niobium(IV) oxide, 99+%	177
Nb_2O_5	Niobium(V) oxide (99.995%-Nb) (50-100ppm Ta) PURATREM	177
	Niobium(V) oxide (99.9%-Nb)	177
	Niobium(V) oxide (99.5%-Nb)	177
Nd_2O_3	Neodymium(III) oxide (99.99+%-Nd) (REO) PURATREM	170
	Neodymium(III) oxide (99.9%-Nd) (REO)	170
NiO	Nickel(II) oxide (99.998%-Ni) PURATREM	176
	Nickel(II) oxide, green, 99%	176
	Nickel(II) oxide (99.99%-Ni) PURATREM	176
	Nickel(II) oxide, black (99.9+%)	176
NiO_4S	Nickel(II) sulfate hexahydrate, 98+% (ACS)	176
	Nickel(II) sulfate hexahydrate (99.99%-Ni) PURATREM	176
NiS	Nickel(II) sulfide (99.9%-Ni)	176
OPb	Lead(II) oxide (Litharge), 99+%	114
	Lead(II) oxide (99.999+%-Pb) PURATREM	114
OPd	Palladium(II) oxide (99.9%-Pd)	248
OSi	Silicon(II) oxide, granular +10 mesh (99.9%-Si)	410
	Silicon(II) oxide, -325 mesh (99.9%-Si)	410
OSn	Tin(II) oxide, 98% (99+%-Sn)	437
OSr	Strontium oxide (99.9%-Sr)	423
OTi	Titanium(II) oxide, optical grade, pellets (99.9+%-Ti)	442
OZn	Zinc oxide, catalyst (85-95% ZnO, 3-7% Al_2O_3, 0.5-3% CaO)	453
	Zinc oxide, 99.7%	453
	Zinc oxide (99.999%-Zn) PURATREM	453
	Zinc oxide, sintered tablets (99.9%-Zn)	453
O_2Pb	Lead(IV) oxide, 97+% (ACS)	114
O_2Pt	Platinum(IV) oxide hydrate (~80-82% Pt) (99.95+%-Pt) ADAMS' CATALYST [BASF C7018]	338

Formula	Description	Page
	Platinum(IV) oxide hydrate (~80-81% Pt) ADAMS' CATALYST	338
O_2Re	Rhenium(IV) oxide dihydrate (99.9%-Re)	347
O_2Ru	Ruthenium(IV) oxide, anhydrous (99.9+%-Ru)	398
	Ruthenium(IV) oxide hydrate	398
O_2Se	Selenium(IV) oxide (99.999%-Se) PURATREM	404
	Selenium(IV) oxide, 99.8%	404
O_2Si	Silicon(IV) oxide, 99+%, 0.012 micron (fumed colloidal silica)	410
	Silicon(IV) oxide, -100 mesh, 99.7%	410
	Silicon(IV) oxide, 98%	410
	Silicon(IV) oxide, elec. gr. (99.999%-Si) PURATREM	410
O_2Sn	Tin(IV) oxide (99.998%-Sn) PURATREM	437
	Tin(IV) oxide (99.9%-Sn)	437
	Tin(IV) oxide, nanoparticle (30-60 nm), (99.7%-Sn)	166
O_2Te	Tellurium(IV) oxide, 99+%	430
	Tellurium(IV) oxide (99.999%-Te) PURATREM	430
O_2Ti	Titanium(IV) oxide, 99+%	442
	Titanium(IV) oxide (99.99+%-Ti) PURATREM	442
	Titanium(IV) oxide, sintered lumps, 99.5%	442
	Titanium(IV) oxide nanopowder Anatase	167
O_2V	Vanadium(IV) oxide, 99+%	445
O_2W	Tungsten(IV) oxide (99.9%-W)	444
O_2Zr	Zirconium(IV) oxide-yttria stabilized, 99%	458
	Zirconium(IV) oxide-yttria stabilized, 99%	458
	Zirconium(IV) oxide-yttria stabilized (99.95%-Zr)	458
	Zirconium(IV) oxide, 99+%	458
O_3PbTi	Lead(II) titanate, 99.5%	115
O_3PbZr	Lead(II) zirconate, 99%	115
O_3Re	Rhenium(VI) oxide (99.9%-Re)	347
O_3Rh_2	Rhodium(III) oxide, anhydrous (99.9%-Rh)	359
	Rhodium(III) oxide pentahydrate, 99%	359
O_3Sb_2	Antimony(III) oxide, 99+%	9
	Antimony(III) oxide, elec. gr. (99.999%-Sb) PURATREM	9
O_3Sc_2	Scandium(III) oxide (99.9%-Sc) (REO)	403
	Scandium(III) oxide, sintered lumps (99.9%-Sc) (REO)	403
	Scandium(III) oxide (99.99%-Sc) (REO) PURATREM	403
O_3Sm_2	Samarium(III) oxide (99.9%-Sm) (REO)	402
	Samarium(III) oxide (99.99+%-Sm) (REO) PURATREM	402
O_3SrTi	Strontium titanate, 99+%	423
O_3SrZr	Strontium zirconate, 95%	423
O_3Tb_2	Terbium(III,IV) oxide (99.9%-Tb) (REO)	431
O_3Tl_2	Thallium(III) oxide (99.99%-Tl) PURATREM	432
	Thallium(III) oxide (99.5%-Tl)	432
O_3Tm_2	Thulium(III) oxide (99.9%-Tm) (REO)	433
O_3V_2	Vanadium(III) oxide, 95%	445
O_3W	Tungsten(VI) oxide (99.995%-W) PURATREM	444
	Tungsten(VI) oxide, sintered lumps (99.99%-W) PURATREM	444
	Tungsten(VI) oxide (min. 99.8%-W)	444
O_3Y_2	Yttrium(III) oxide (99.99%-Y) (REO) PURATREM	449
	Yttrium(III) oxide (99.9%-Y) (REO)	449
	Yttrium(III) oxide (99.999%-Y) (REO) PURATREM	449
O_3Yb_2	Ytterbium(III) oxide (99.9%-Yb) (REO)	447
O_4Os	Osmium(VIII) oxide (99.95+%-Os)	213
	Osmium(VIII) oxide, 4% in water	213
	Osmium(VIII) oxide, Microencapsulated in a Styrene Polymer (~10%OsO_4)	213
	Osmium(VIII) oxide (99.99+%-Os) PURATREM	213
	Osmium(VIII) oxide (99.99+%-Os), 4% in water PURATREM	213
O_4PPr	Praseodymium(III) phosphate	346
O_4PY	Yttrium(III) phosphate hydrate (99.99%-Y) (REO) PURATREM	449
O_4PbS	Lead(II) sulfate, 99%	115
O_4PdS	Palladium(II) sulfate dihydrate	248
O_4Rb_2S	Rubidium sulfate (99.8%-Rb)	362
O_4Ru	Ruthenium(VIII) oxide (0.5% stabilized aqueous solution)	398
O_4SSn	Tin(II) sulfate, 95+%	437
O_4STl_2	Thallium(I) sulfate (99.999%-Tl) PURATREM	432
	Thallium(I) sulfate (99.5%-Tl)	432
O_4SZn	Zinc sulfate monohydrate, 99%	454
O_4Sb_2	Antimony(IV) oxide (99.99%-Sb) PURATREM	9
O_4SiZr	Zirconium silicate, 98%	458
O_5P_2	Phosphorus(V) oxide, 98+% (ACS)	320
	Phosphorus(V) oxide (99.99%-P) PURATREM	320
O_5SV	Vanadium(IV) sulfate oxide hydrate	446
O_5SZr	Zirconium(IV) sulfate oxide hydrate	458
O_5Sb_2	Antimony(V) oxide (99.9%-Sb)	9
	Antimony(V) oxide, elec. gr. (99.998%-Sb) PURATREM	9
O_5Ta_2	Tantalum(V) oxide, 99.8% (99.95+%-Ta)	429
	Tantalum(V) oxide, 99.8% (99.99+%-Ta) PURATREM	430
O_5V_2	Vanadium(V) oxide, 98%	445
	Vanadium(V) oxide, 99.5%	445
	Vanadium(V) oxide (99.99%-V) PURATREM	445
O_7Re_2	Rhenium(VII) oxide (99.99%-Re) PURATREM	347
$O_8P_2Zn_3$	Zinc phosphate hydrate	453
O_8S_2Zr	Zirconium(IV) sulfate tetrahydrate (99.99+%-Zr) PURATREM	458
$O_{11}Pr_6$	Praseodymium(III,IV) oxide (99.99%-Pr) (REO) PURATREM	346
	Praseodymium(III,IV) oxide (99.9%-Pr) (REO)	345
$O_{12}Pr_2S_3$	Praseodymium(III) sulfate hydrate (99.9%-Pr) (REO)	346
$O_{12}S_3Sm_2$	Samarium(III) sulfate octahydrate (99.9%-Sm) (REO)	402
$O_{12}S_3Y_2$	Yttrium(III) sulfate octahydrate (99.9%-Y) (REO)	450
$O_{12}S_3Yb_2$	Ytterbium(III) sulfate octahydrate (99.9%-Yb) (REO)	448
PbS	Lead(II) sulfide (99.999%-Pb) PURATREM	115
	Lead sulfide CANdot® quantum dot (PbS core - ~3nm), 10 mg/mL in toluene, 1000nm peak emission	161
	Lead sulfide CANdot® quantum dot (PbS core - ~4.5nm), 10 mg/mL in toluene, 1200nm peak emission	161
	Lead sulfide CANdot® quantum dot (PbS core - ~6nm), 10 mg/mL in toluene, 1400nm peak emission	161
	Lead sulfide CANdot® quantum dot (PbS core - ~8nm), 10 mg/mL in toluene, 1600nm peak emission	161
PbSb	Lead antimonide, 99+%	114
PbSe	Lead(II) selenide (99.99%-Pb) PURATREM	115
SSr	Strontium sulfide (99.9%-Sr)	423
SZn	Zinc sulfide (99.99%-Zn) (fused granules) PURATREM	454
	Zinc sulfide (99.9%-Zn)	454
S_2Se	Selenium(IV) sulfide, min. 94%	404
S_2Ti	Titanium(IV) sulfide (99.8%-Ti)	442
S_2W	Tungsten(IV) sulfide (99.5%-W)	444
S_2Zr	Zirconium(IV) sulfide, 99%	458
S_3Sb_2	Antimony(III) sulfide (99.999%-Sb) PURATREM	9
S_5Sb_2	Antimony(V) sulfide, min. 98%	9
Sb_2Te_3	Antimony(III) telluride (99.96%-Sb)	9
SeZn	Zinc selenide (99.999%-Zn) PURATREM	453
	Zinc selenide (99.99%-Zn) PURATREM	453
$SiBr_4$	Silicon(IV) bromide, (99.99% Si) PURATREM	409
SiC	Silicon carbide (>90% beta phase), 0.1-1.2 microns (99%-Si)	409

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	Silicon carbide (>90% beta phase), 0.2-5.0 microns (99+%-Si)	409
	Silicon carbide (alpha phase), 0.2-1.2 microns (99%-Si)	409
Si_2Ta	Tantalum silicide (99.5%-Ta)	430
Si_2Ti	Titanium silicide (99+%-Ti)	442
Si_3N_4	Silicon nitride (>90% alpha phase), 0.2-4.0 microns (99%-Si)	410
	Silicon nitride, 0.2-2.5 microns (99.99%-Si) PURATREM	410
TeZn	Zinc telluride (99.99%-Zn) PURATREM	454
TiB_2	Titanium boride, hexagonal crystalline solid, 0.7-10.0 microns, 99%	441
TiN	Titanium nitride, 1.3-1.9 microns (99+%-Ti)	442
Y_2O_3	Yttrium(III) oxide, 0.5-2.0 microns (99.95%- Y)	449
ZnO	Zinc oxide nanopowder	167

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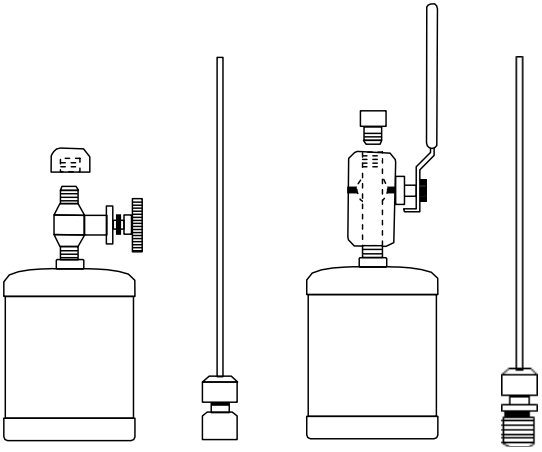
Equipment: Cylinders and Adapters

Caution!

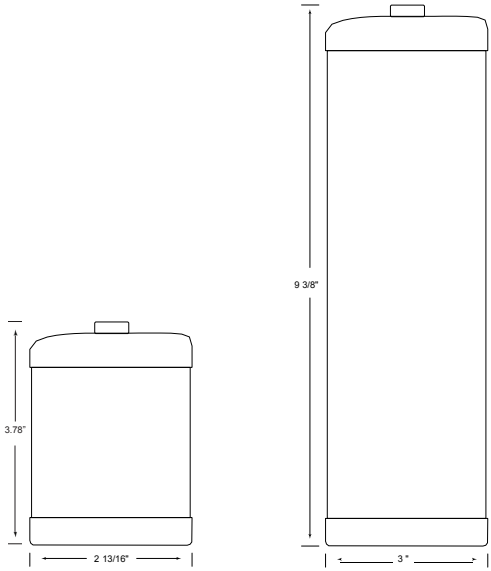
Due to the hazardous nature of many of the materials packaged in metal cylinders, we strongly recommend that all users read the technical note associated with the catalog numbers below posted at strem.com carefully before using the product. The cylinders and valves are used primarily for the safe transport and storage of pyrophoric materials. As with any air-sensitive compound, the cylinder should be taken into an inert atmosphere bag or box to remove the product. If you are unsure of the handling procedures and need assistance, please contact the Operations & Logisitics Manager at (978) 499-1600 (All countries) or (800) 647-8736 (USA & Canada only).



TYPE I SYSTEM | **TYPE I ADAPTER 96-8500** | **TYPE II SYSTEM** | **TYPE II ADAPTER 96-8501**

Cat #	Description
96-8500	Swagelok® Type I Adapter
96-8501	Swagelok® Type II Adapter
96-8105	Brass needle valve (Type I)
96-8100	Brass ball valve (Type II)
96-8000	Cylinder, carbon steel, 275 ml
96-8005	Cylinder, carbon steel, 900 ml

For instruction details on Type I or Type II systems please visit strem.com



96-8000 | **96-8005**

96-8000	
Contents:	275 ml
Design Pressure:	240 psig
Outlet Fitting:	1/4 NPTF pipe thread size
Weight:	0.7 lbs
Dimensions:	2 13/16” dia x 3 7/8”
D.O.T. Specs:	DOT-4 B240

96-8005	
Contents:	900 ml
Design Pressure:	240 psig
Outlet Fitting:	1/4 NPTF pipe thread size
Weight:	1.5 lbs
Dimensions:	3” dia x 9 3/8”
D.O.T. Specs:	DOT-4 B240ET

ALD CYLINDERS

Standard Assembly

96-1070 **Swagelok® Cylinder Assembly, 50ml with ¼" VCR Male Ball Valve and Female Nut for CVD/ALD**

¼" VCR Male Ball Valve rated to 300°F or 148°C

High-Temp Valve Assembly

96-1071 **Swagelok® Cylinder Assembly, 50ml with ¼" VCR Male Bellows-Sealed Valve (High Temp) and Female Nut for CVD/ALD**

¼" VCR Male Bellows-Sealed Valve (High Temp/EP) rated to 600°F or 315°C

Electropolished (EP) Assembly with Ball Valve or High-Temp Valve (Optional)

96-1075 **Swagelok® Cylinder Assembly, 50ml with ¼" VCR Male Ball Valve (SC-11 cleaned) and Female Nut, electropolished for CVD/ALD**

¼" VCR Male Ball Valve (EP) rated to 300°F or 148°C

96-1076 **Swagelok® Cylinder Assembly, 50ml with ¼" VCR Male Bellows-Sealed Valve (High Temp) and Female Nut, electropolished for CVD/ALD**

¼" VCR Male Bellows-Sealed Valve (High Temp/EP) rated to 600°F or 315°C

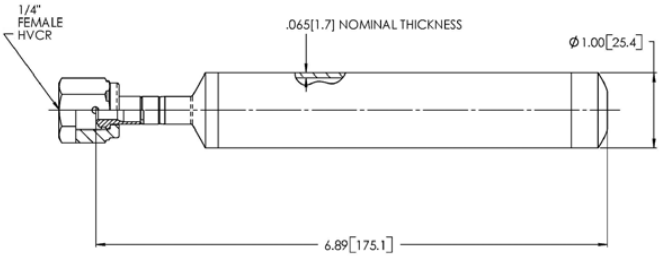
DP Valve Assembly

96-1077 **Swagelok® Cylinder Assembly, 50ml with ¼" VCR Male DP Valve (Ultra High Purity) and Female Nut, electropolished for CVD/ALD**

¼" VCR Male DP high pressure diaphragm Valve (Ultra High Purity/EP) rated to 50-320°F or 10-148°C

96-1078 **Swagelok® Cylinder Assembly, 50ml with ¼" VCR Male DP High Pressure Valve (High Purity), PCTFE seat, VCR Metal Gasket Seal Fitting, Round Handle**

¼" VCR Male DP high pressure diaphragm Valve (High Purity/EP) rated to 250°F or 121°C



- Drawing is not to scale
- Dimensions are in inches [millimeters in brackets]
- Drawing subject to change without notice

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New Cylinders for ALD

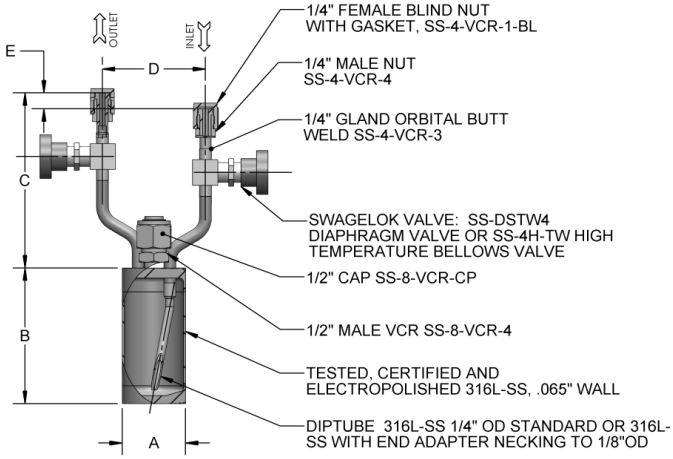
95-4154 **Stainless steel cylinder, 200ml, single vertical stem, electropolished with fill-port, PCTFE valve stem tip, DOT 4B, UN stamped**

PCTFE valve stem tip, ½" MVCR fill-port, SS-DSTW4 outlet valve, D.O.T specification: 4B-300

95-0281 **Stainless steel cylinder, 125ml, horizontal in line, with angled Bellows valve (150°C), DOT 4B, UN stamped**

Angled bellows valve, Fujikin, FUB-81-6.35-PI inlet valve, rated to -10 to 150°C, D.O.T. specification: 4B-260

STAINLESS STEEL BUBBLERS:
Vertical, Electropolished with fill-port, DOT4B, UN Stamped



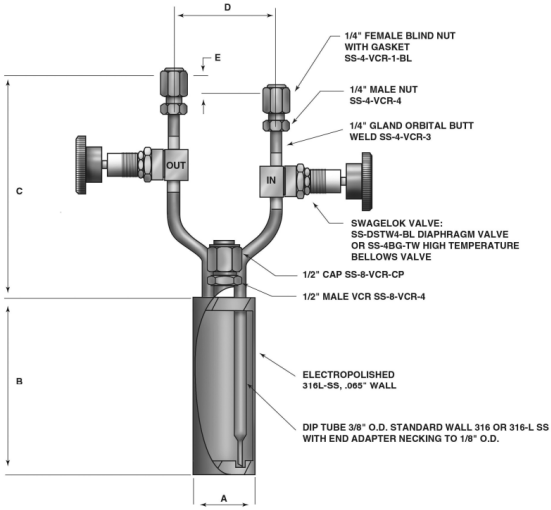
Stainless Steel Bubblers, vertical, electropolished with fill-port, PCTFE valve stem tip (121°C), DOT 4B, UN stamped

Catalog #	Vol. (mL)	A mm	B mm	C mm	D mm	E mm	Temp. Valve	Special Configuration
95-4151	150	51	108	143	83	13	Standard	
95-4290	300	51	187	143	83	13	Standard	
95-4598	600	76	164	143	83	13	Standard	
95-4998	1000	76	254	143	83	13	Standard	
95-5002	1200	102	184	143	83	13	Standard	
95-5003	1500	102	223	143	83	13	Standard	
95-5001	2000	102	292	143	83	13	Standard	
95-5011	3000	152	213	140	83	13	Standard	
95-3000	150	51	108	140	83	13	Standard	replaceable-seat valves with rotated handles
95-4153	150	51	108	143	83	13	Standard	with rotated handles

Stainless Steel Bubblers, vertical, electropolished with fill-port, high temperature valves (315°C), DOT 4B, UN stamped

Catalog #	Vol. (mL)	A mm	B mm	C mm	D mm	E mm	Temp. Valve	Special Configuration
95-0271	150	51	108	140	83	13	High	
95-0270	300	51	187	140	83	13	High	
95-4599	600	76	164	140	83	13	High	
95-4155	150	51	108	140	83	13	High	with rotated handles
95-0276	150	51	108	140	83	13	High	with short dip tube, cut to 1 inch from top of bubbler
95-4157	200	51	150	140	83	13	High	with rotated handles
95-0280	300	51	187	140	83	13	High	with rotated handles
95-4295	300	51	187	140	83	13	High	with rotated handles, **no dip tube**
95-4610	600	76	164	127	83	13	High	with rotated handles, **no dip tube,** stems same height

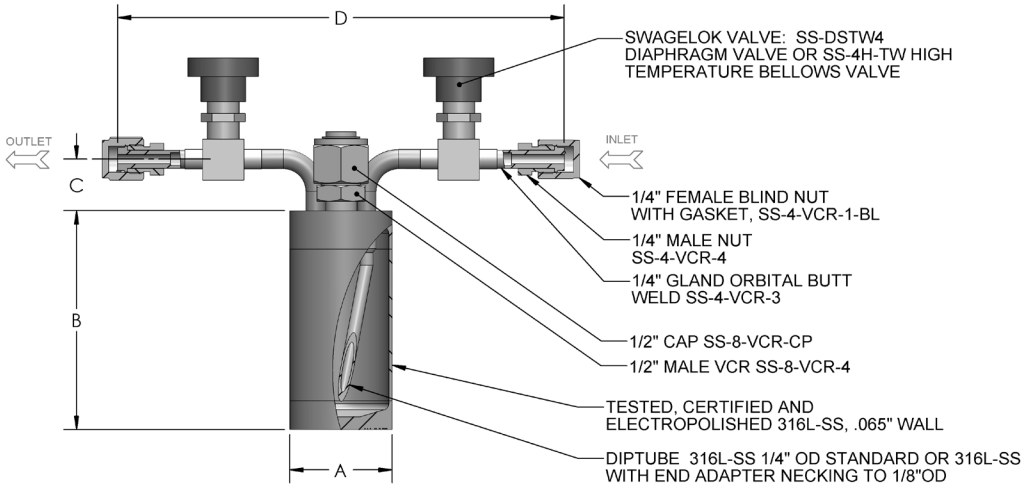
STAINLESS STEEL BUBBLERS:
Vertical, Electropolished with fill-port



Stainless Steel Bubblers, vertical, electropolished with fill-port, PCTFE valve stem tip (121°C)								
Catalog #	**Vol. (mL)**	**A mm**	**B mm**	**C mm**	**D mm**	**E mm**	**Temp. Valve**	**Special Configuration**
96-4151	150	51	108	140	83	13	Standard	
96-4290	300	51	187	140	83	13	Standard	
96-4598	600	76	163	140	83	13	Standard	
96-4998	1000	76	254	140	83	13	Standard	
96-5002	1000	102	165	140	83	13	Standard	
96-5003	1400	102	203	140	83	13	Standard	
96-5001	1800	102	254	140	83	13	Standard	
96-5011	2750	152	188	140	83	13	Standard	
96-4149	150	51	108	140	83	13	Standard	with short dip tube, cut 5cm from top of bubbler
96-4153	150	51	108	140	83	13	Standard	with rotated handles

Stainless Steel Bubblers, vertical, electropolished with fill-port, high temperature valves (315°C)								
Catalog #	**Vol. (mL)**	**A mm**	**B mm**	**C mm**	**D mm**	**E mm**	**Temp. Valve**	**Special Configuration**
98-0271	150	51	108	140	83	13	High	
98-0270	300	51	187	140	83	13	High	
96-4599	600	76	163	140	83	13	High	
96-4996	1000	76	254	140	83	13	High	
98-0276	150	51	108	140	83	13	High	with short dip tube, cut to 1 inch from top of bubbler
98-0280	300	51	187	140	83	13	High	with rotated handles
96-4295	300	51	187	140	83	13	High	with rotated handles, **no dip tube**
96-4610	600	76	163	140	83	13	High	with rotated handles, **no dip tube,** stems same height

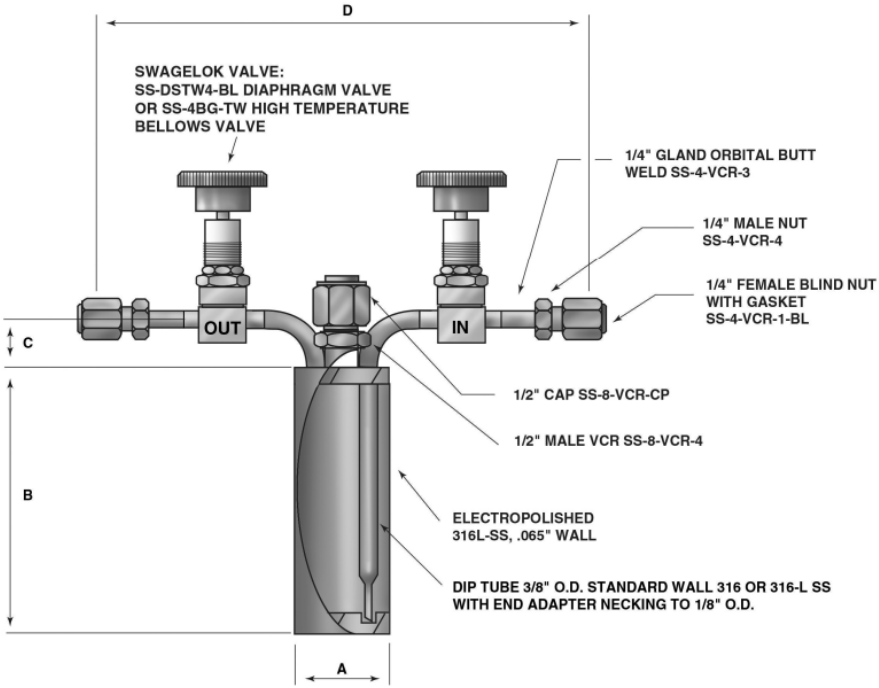
STAINLESS STEEL BUBBLERS:
Horizontal, Electropolished with fill-port, DOT4B, UN Stamped



Stainless Steel Bubblers, horizontal, electropolished with fill-port, PCTFE valve stem tip (121°C) DOT 4B, UN stamped							
Catalog #	**Vol. (mL)**	**A mm**	**B mm**	**C mm**	**D mm**	**Temp. Valve**	**Special Configuration**
95-5151	150	51	108	24	222	Standard	
95-5298	300	51	187	24	222	Standard	
95-5599	600	76	164	24	222	Standard	
95-5998	1000	76	254	24	222	Standard	
95-5004	2000	152	152	24	222	Standard	
95-0273	150	51	108	24	222	Standard	with reversed handles

Stainless Steel Bubblers, horizonal, electropolished with fill-port, high temperature valves (315°C) DOT 4B, UN stamped							
Catalog #	**Vol. (mL)**	**A mm**	**B mm**	**C mm**	**D mm**	**Temp. Valve**	**Special Configuration**
95-0272	150	51	108	24	222	High	
95-5006	300	51	187	24	222	High	
95-5007	600	76	164	24	222	High	
95-5008	1000	76	254	24	222	High	

STAINLESS STEEL BUBBLERS:
Horizontal, Electropolished with fill-port



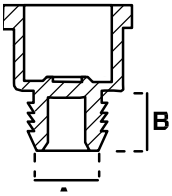
Stainless Steel Bubblers, horizontal, electropolished with fill-port, PCTFE valve stem tip (121°C)							
Catalog #	**Vol. (mL)**	**A mm**	**B mm**	**C mm**	**D mm**	**Temp. Valve**	**Special Configuration**
96-5151	150	51	108	24	222	Standard	
96-5298	300	51	187	24	222	Standard	
96-5599	600	76	163	24	222	Standard	
96-5998	1000	76	254	24	222	Standard	
96-5004	1800	102	254	24	222	Standard	
98-0273	150	51	108	24	222	Standard	with reversed handles
98-0275	150	51	108	24	222	Standard	with rotated handles

Stainless Steel Bubblers, horizonal, electropolished with fill-port, high temperature valves (315°C)							
Catalog #	**Vol. (mL)**	**A mm**	**B mm**	**C mm**	**D mm**	**Temp. Valve**	**Special Configuration**
98-0272	150	51	108	24	222	High	
96-5006	300	51	187	24	222	High	
96-5007	600	76	163	24	222	High	
96-5008	1000	76	254	24	222	High	

Suba-Seal®

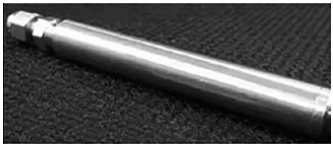
Turn-over type vaccine closures for working with air-sensitive materials. These have a turnover flange molded to grip the outside of the container neck, thus promoting a double seal in conjunction with the annular serrations on the hollow plug. The annular serrations depress themselves against the inside wall of the bottle or flask neck making each serration a suction sealing point. The advantages of Suba-Seal® over ordinary septa are:

- Larger fitting surface
- Serrated area holds pressure better
- More solvent resistant
- The membrane on top is thick and self-sealing, permitting a large number of syringe piercings



Catalog #	Description	Fits neck i.d. (mm)	Dimensions A	Dimensions B	# of Pieces
96-1000	Suba Seal #17	11.0	11.16	8.2	50
96-1500	Suba Seal #21	12.5	13.3	9.6	50
96-1900	Suba Seal #25[a]	14.0	14.1	12.5	50
96-2000	Suba Seal #29	16	16.7	14.6	50
96-3000	Suba Seal #33[b]	17.5	18.0	12.7	50
96-3500	Suba Seal #37[c]	19.0	20.4	15.7	50
96-3800	Suba Seal #45[d]	22.0	23.0	20.4	50
96-4000	Suba Seal #49	24.0	25.2	20.7	50
96-4500	Suba Seal #57[e]	27.0	28.3	20.5	50

a - fits female 14/20 joint; **b** - fits Sure/Seal™ bottles; **c** - fits female 19/22 joint; **d** - fits female 24/40 joint; **e** - fits female 29-42 joint



Enzymatic Flow Reactor

Cat #	Description
96-0900	Enzymatic Flow Reactor (2.5 inch tube x 0.25 inch I.D.)

The EFR is a 2.5 inch long, 0.25 inch i.d. tube that is packed with stainless steel mesh coated with a total of approximately 50mg of silica nanosprings.
The surfaces of these nanosprings are functionalized with free sulfhydryl groups at the end of a three carbon chain that can react with an appropriately activated enzyme.

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Electropolished stainless steel bubblers

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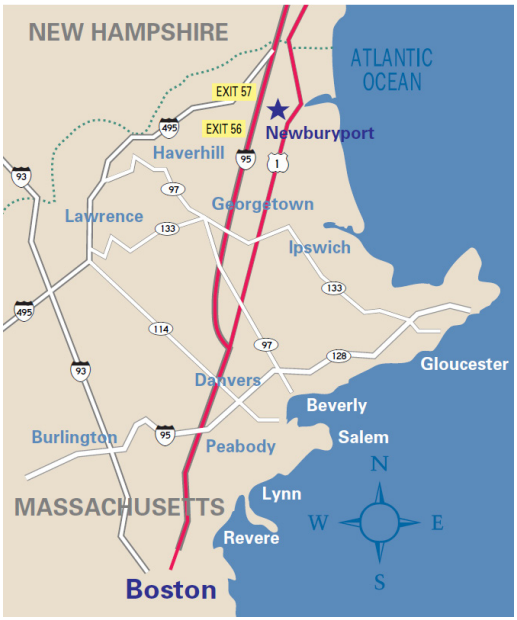

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We are happy to meet with our customers from all over the world. We are located less than a one hour drive north from Boston's Logan International Airport.

Directions

From Logan Airport take Rte 1A North to American Legion Highway (Rte 60). Rte 60 to Rte 1 North. At Danvers take Rte 95 North to exit 56 (Scotland Road). Right on Scotland Road for about 3 miles. At first traffic light take left onto Mulliken Way. Strem is the second building on the left.

Enlarged maps are available on our website.

About Our Cover

Cover art by Lisa Bohnwagner *- selected pieces from her solo show "Elemental" - the periodic table of the elements created from 71 six inch square paintings.*

Lisa explains, "After back surgery my world and what I could do became extremely limited. It caused me to think about what is truly elemental to life. Part of that, for me, is art. The elements and their various combinations are the bulding blocks of life and enable us not only to live, but to live a creative life."

Lisa's paintings are collected world-wide. To purchase element paintings (individually or as a group) please visit her web site: www.lisabohnwagner.com or contact her directly: lisa@lisabohnwagner.com

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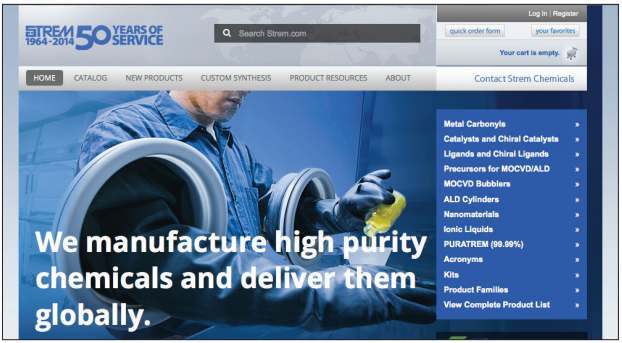

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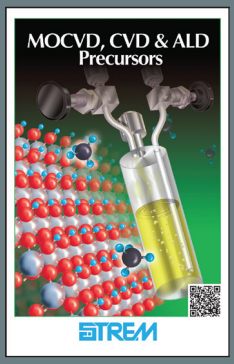
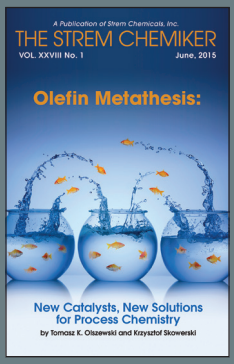
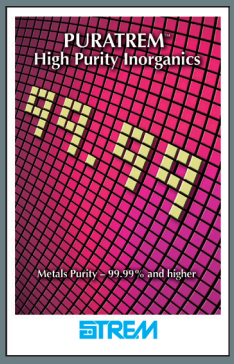
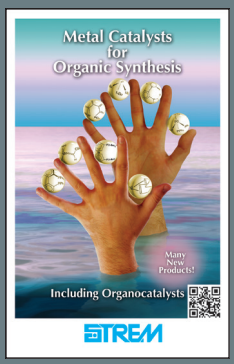
2017-2019









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