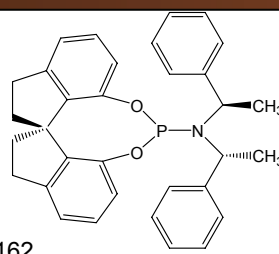
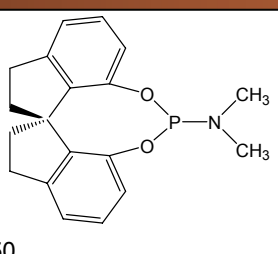
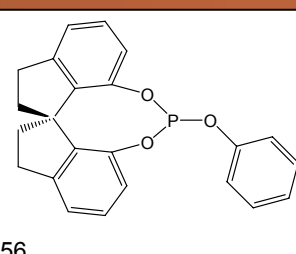
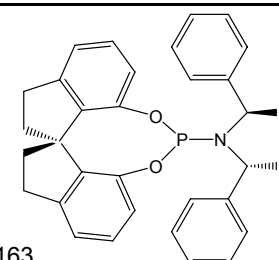
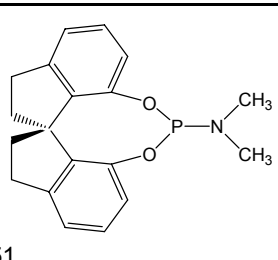
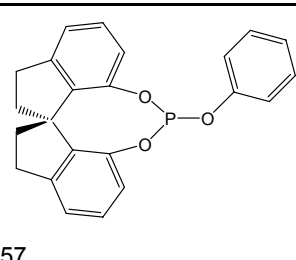


STREM Spiro Monophosphite and Monophosphoramidite Ligand Kit

metals · inorganics · organometallics · catalysts · ligands · custom synthesis · cGMP facilities · nanomaterials

 <p>15-5162</p>	 <p>15-5150</p>	 <p>15-5156</p>
 <p>15-5163</p>	 <p>15-5151</p>	 <p>15-5157</p>

96-0065 Spiro Monophosphite and Monophosphoramidite Ligand Kit – for asymmetric hydrogenations and other transformations
Contains a 100mg unit of each of the items listed below.
Components available for individual sale.

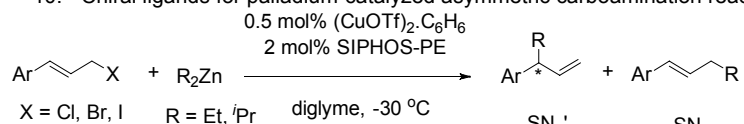
1 kit

15-5162 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[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
500mg

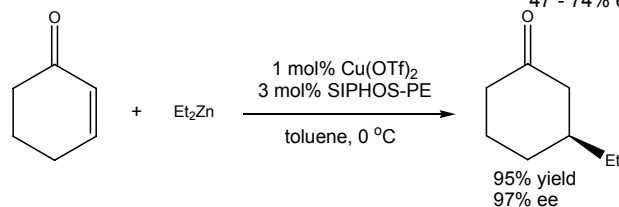
Technical Notes:

1. Chiral ligands for copper-catalyzed asymmetric allylic alkylation with dialkylzincs.
2. Chiral ligands for copper-catalyzed asymmetric conjugate addition of diethylzinc to enones.
3. Chiral ligands for palladium-catalyzed asymmetric hydrosilylation of styrenes
4. Chiral ligands for copper-catalyzed asymmetric ring-opening of oxabicyclic alkenes with Grignard reagents.
5. Chiral ligands for nickel-catalyzed asymmetric hydrovinylation of α -alkyl vinylarenes.
6. Chiral ligands for iridium-catalyzed asymmetric hydrogenation of cyclic enamines.
7. Chiral ligands for iridium-catalyzed asymmetric hydrogenation of cyclic imines.
8. Chiral ligands for gold-catalyzed asymmetric [2 + 2] cycloaddition reaction.
9. Chiral ligands for rhodium-catalyzed asymmetric hydroacylation of salicylaldehydes to homoallylic sulfides.
10. Chiral ligands for palladium-catalyzed asymmetric carboamination reactions.

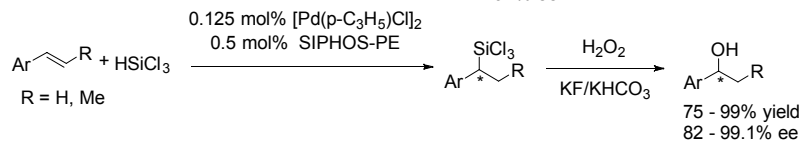


Tech. Note (1)
Ref. (1)

11 - 82% yield of SN₂' + SN₂
SN₂'/SN₂ = 42:58 - 91:9
47 - 74% ee for SN₂'



Tech. Note (2)
Ref. (2)



Tech. Note (3)
Ref. (3)

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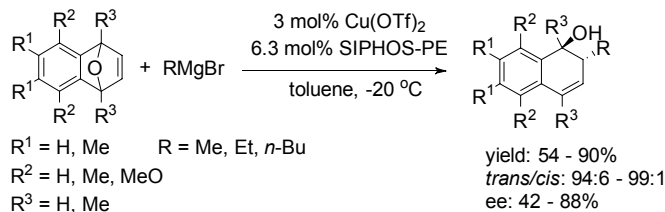
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U.S.A.
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Email: info@strem.com

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15, rue de l'Atome
Zone Industrielle
67800 BISCHHEIM France
Tel.: (33) 03 88 62 52 60
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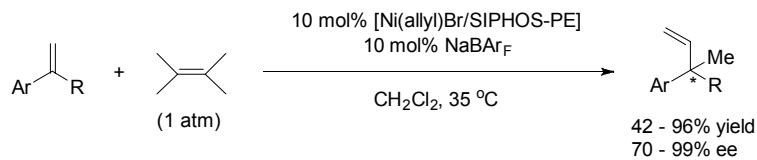
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Germany
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Tel.: 0845 643 7263
Fax: 0845 643 7362
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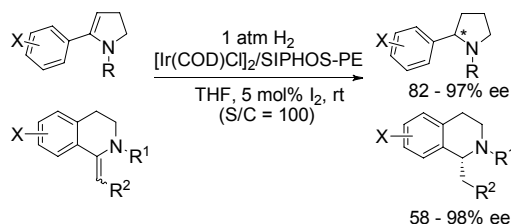
15-5162 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% (cont.) (R)-SIPHOS-PE [500997-69-3]



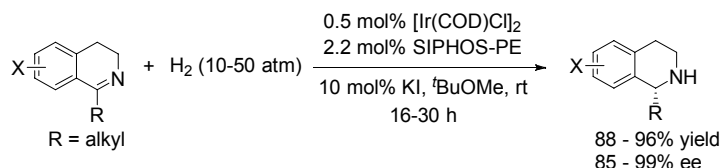
Tech. Note (4)
Ref. (4)



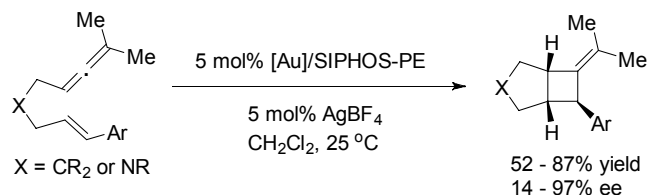
Tech. Note (5)
Ref. (5,6)



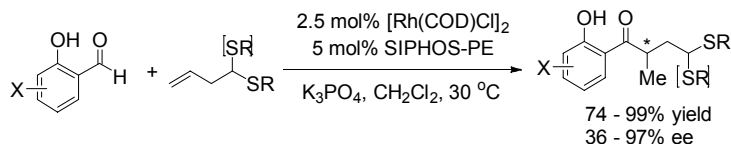
Tech. Note (6)
Ref. (7,8)



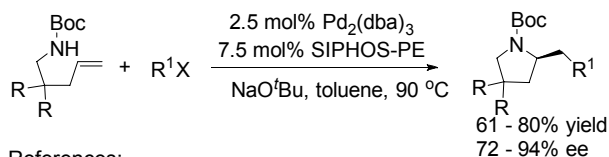
Tech. Note (7)
Ref. (9)



Tech. Note (8)
Ref. (10)



Tech. Note (9)
Ref. (11)



Tech. Note (10)
Ref. (12,13)

References:

1. *Tetrahedron: Asymmetry* **2003**, *14*, 3867.
2. *J. Org. Chem.* **2003**, *68*, 1582.
3. *Tetrahedron: Asymmetry* **2004**, *15*, 2231
4. *J. Org. Chem.* **2005**, *70*, 3734.
5. *J. Am. Chem. Soc.* **2006**, *128*, 2780.
6. *Sci. China Chem.* **2010**, *53*, 1899.
7. *J. Am. Chem. Soc.* **2009**, *131*, 1366.
8. *Adv. Synth. Catal.* **2010**, *351*, 3243.
9. *ACS Catal.* **2012**, *2*, 561.
10. *J. Am. Chem. Soc.* **2011**, *133*, 5500.
11. *J. Am. Chem. Soc.* **2010**, *132*, 16330.
12. *J. Am. Chem. Soc.* **2010**, *132*, 12157.
13. *Org. Lett.* **2011**, *13*, 2932.

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 Newburyport, MA 01950-4098
 U.S.A.
 Tel.: (978) 499-1600
 Fax: (978) 465-3104
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Strem Chemicals, Inc.
 15, rue de l'Atome
 Zone Industrielle
 67800 BISCHHEIM France
 Tel.: (33) 03 88 62 52 60
 Fax: (33) 03 88 62 26 81
 Email: info.europe@strem.com

Strem Chemicals, Inc.
 Postfach 1215
 77672 KEHL
 Germany
 Telefon: 0 78 51/ 7 58 79
 Email: info.europe@strem.com

Strem Chemicals UK Ltd.
 41 Hills Road
 Cambridge
 England CB2 1NT
 Tel.: 0845 643 7263
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15-5163 (11aS)-(-)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-bis[(R)-1-phenylethyl]amine, min. 98% 100mg
(S)-SIPHOS-PE [500997-70-6] 500mg

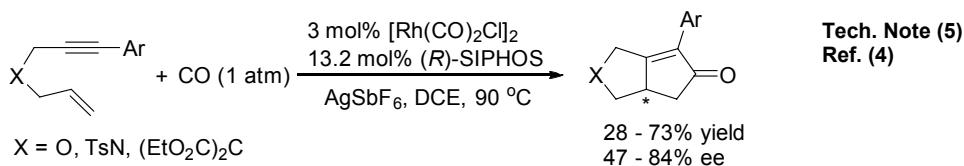
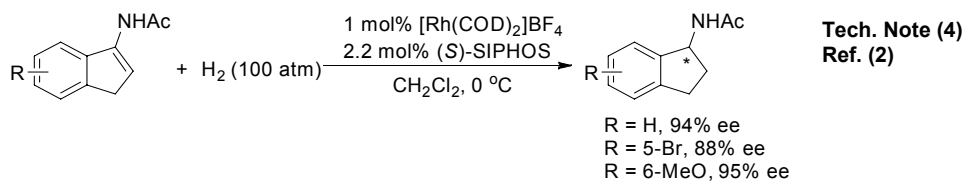
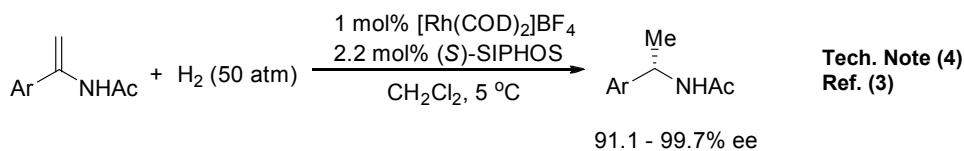
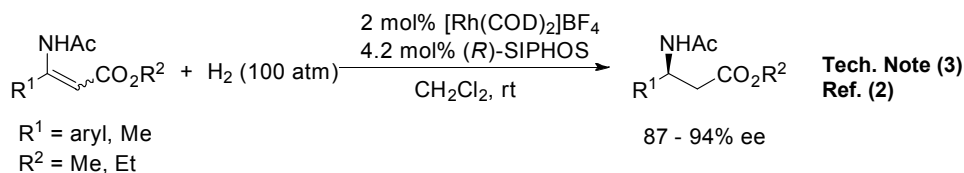
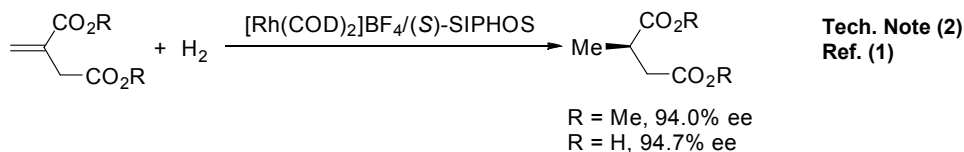
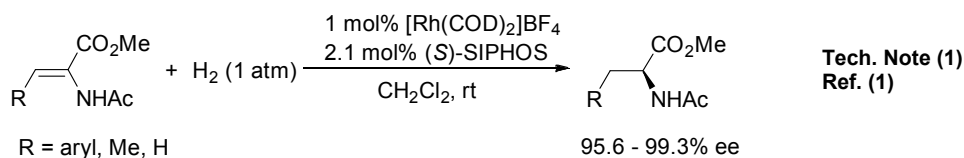
Technical Note:

1. See 15-5162.

15-5150 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% 100mg
(R)-SIPHOS [443965-14-8] 500mg

Technical Notes:

1. Chiral ligands for the rhodium-catalyzed asymmetric hydrogenation of α -dehydroamino esters.
2. Chiral ligands for the rhodium-catalyzed asymmetric hydrogenation of itaconic acid derivatives.
3. Chiral ligands for rhodium-catalyzed asymmetric hydrogenation of β -dehydroaminoesters.
4. Chiral ligands for rhodium-catalyzed asymmetric hydrogenation of enamides.
5. Chiral ligands for rhodium-catalyzed asymmetric Pauson-Khand reaction.
6. Chiral ligands for palladium-catalyzed asymmetric umpolung allylation of aldehydes.



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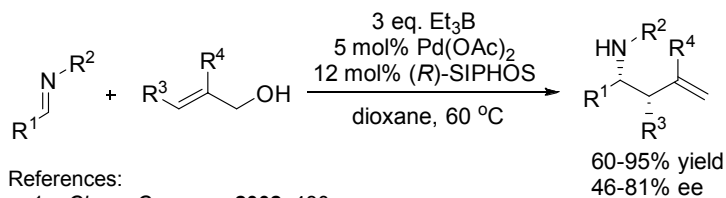
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U.S.A.
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Strem Chemicals, Inc.
15, rue de l'Atome
Zone Industrielle
67800 BISCHHEIM France
Tel.: (33) 03 88 62 52 60
Fax: (33) 03 88 62 26 81
Email: info.europe@strem.com

Strem Chemicals, Inc.
Postfach 1215
77672 KEHL
Germany
Telefon: 0 78 51/ 7 58 79
Email: info.europe@strem.com

Strem Chemicals UK Ltd.
41 Hills Road
Cambridge
England CB2 1NT
Tel.: 0845 643 7263
Fax: 0845 643 7362
Email: enquiries@strem.co.uk

15-5150 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98%
(cont.) (R)-SIPHOS [443965-14-8]



Tech. Note (6)
Ref. (5)

References:

1. *Chem. Commun.* **2002**, 480.
2. *J. Org. Chem.* **2004**, 69, 4648.
3. *Angew. Chem., Int. Ed.* **2002**, 41, 2348.
4. *Adv. Synth. Catal.* **2005**, 347, 759.
5. *Tetrahedron: Asymm.* **2010**, 21, 1216.

15-5151 (11aS)-(-)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-dimethylamine, min. 98% (S)-SIPHOS 100mg
[443965-10-4] 500mg

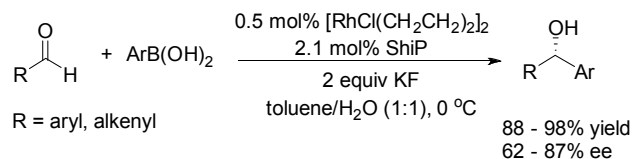
Technical Note:

1. See 15-5150.

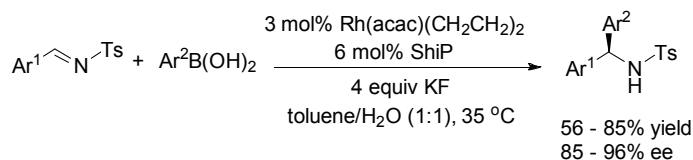
15-5156 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (R)-ShiP [656233-53-3] 100mg
500mg

Technical Notes:

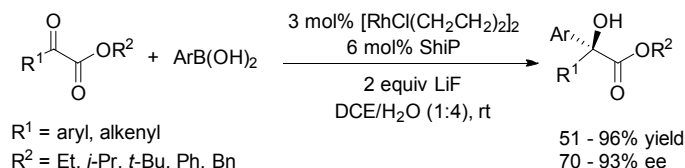
1. Chiral ligands for rhodium-catalyzed arylation of aldehydes with arylboronic acids.
2. Chiral ligands for rhodium-catalyzed arylation of imines with arylboronic acids.
3. Chiral ligands for rhodium-catalyzed arylation of α -ketoesters with arylboronic acids.
4. Chiral ligands for palladium-catalyzed asymmetric umpolung allylation of aldehydes.
5. Chiral ligands for rhodium-catalyzed asymmetric hydrogenation of (Z)- β -arylenamides.



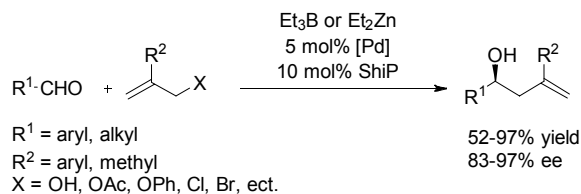
Tech. Note (1)
Ref. (1)



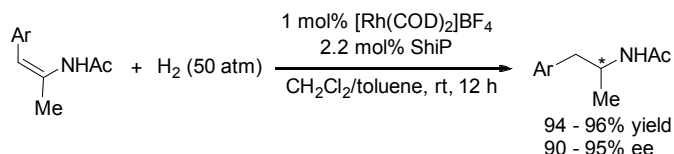
Tech. Note (2)
Ref. (2)



Tech. Note (3)
Ref. (3)



Tech. Note (4)
Ref. (4)



Tech. Note (5)
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Strem Chemicals, Inc.
15, rue de l'Atome
Zone Industrielle
67800 BISCHHEIM France
Tel.: (33) 03 88 62 52 60
Fax: (33) 03 88 62 26 81
Email: info.europe@strem.com

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Postfach 1215
77672 KEHL
Germany
Telefon: 0 78 51/ 7 58 79
Email: info.europe@strem.com

Strem Chemicals UK Ltd.
41 Hills Road
Cambridge
England CB2 1NT
Tel.: 0845 643 7263
Fax: 0845 643 7362
Email: enquiries@strem.co.uk

15-5156 (11aR)-(+)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98%
(cont.) (R)-ShiP [656233-53-3]

References:

1. *Org. Lett.* **2006**, *8*, 1479.
2. *Org. Lett.* **2006**, *8*, 2567.
3. *Angew. Chem. Int. Ed.* **2008**, *47*, 4351.
4. *Chem. Sci.* **2011**, *2*, 1135.
5. *Tetrahedron* **2012**, *68*, 7685.

15-5157 (11aS)-(-)-10,11,12,13-Tetrahydroindeno[7,1-de:1',7'-fg][1,3,2]dioxaphosphocin-5-phenoxy, min. 98% (S)-ShiP 100mg
[885701-71-3] 500mg

Technical Note:

1. See 15-5156.
-

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Fax: (978) 465-3104
Email: info@strem.com

Strem Chemicals, Inc.
15, rue de l'Atome
Zone Industrielle
67800 BISCHHEIM France
Tel.: (33) 03 88 62 52 60
Fax: (33) 03 88 62 26 81
Email: info.europe@strem.com

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Cambridge
England CB2 1NT
Tel.: 0845 643 7263
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