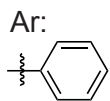
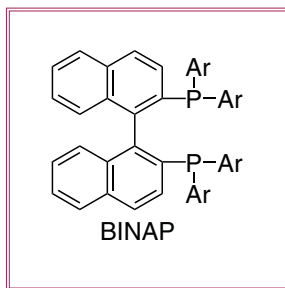


BINAP Catalyst & Ligand Kits for asymmetric hydrogenation & other catalytic applications

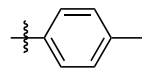
BINAP is a chiral ligand that has been used in a variety of asymmetric reactions since 1980. Especially BINAP-Ru complex affords high enantioselectives in asymmetric hydrogenations of a wide range of olefins and functionalized ketones.

ToIBINAP has high solubility in organic solvents. This

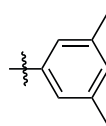
property solves the problems caused by low solubility intrinsic to BINAP and its complexes. **XyIBINAP** is usually used in the Noyori's Ru-Diphosphine-Diamine complexes for hydrogenation of simple ketones. In many cases this ligand gives higher ee values than those with BINAP or ToIBINAP. **H₈-BINAP**-Ru complexes hydrogenate unsaturated carboxylic acids in higher enantioselectives than BINAP-Ru complexes do.



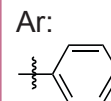
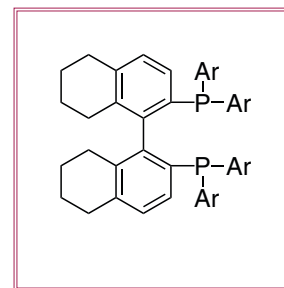
BINAP



ToIBINAP



XyIBINAP



H₈-BINAP

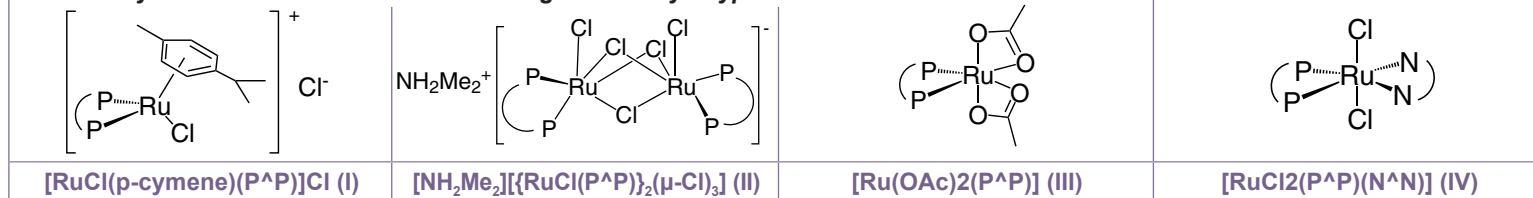
These kits contain 250mg of each of the items listed below it. All items are available for individual sale in 250mg, 1g & 5g unit sizes

96-6950 Takasago BINAP Ligand Kit

| Item# | Acronym | CAS# | Item# | Acronym | CAS# |
|---------|------------------|-------------|---------|------------------|-------------|
| 15-0150 | (R)-(+)-BINAP | 76189-55-4 | 15-0151 | (S)-(-)-BINAP | 76189-56-5 |
| 15-0152 | (R)-(+)-ToIBINAP | 99646-28-3 | 15-0153 | (S)-(-)-ToIBINAP | 100165-88-6 |
| 15-0476 | (R)-(+)-XyIBINAP | 137219-86-4 | 15-0477 | (S)-(-)-XyIBINAP | 135139-00-3 |

96-6953 Takasago BINAP Ru Acetate Catalyst Kit

Metal catalysts in this kit are from the following four catalyst types:



| Item# | Acronym (Ligand P^*P) | CAS# | Item# | Acronym (Ligand P^*P) | CAS# |
|------------------------------------|-----------------------|-------------|---------|-----------------------|-------------|
| [Ru(OAc) ₂ (P^*P)](III) | | | | | |
| 44-0152 | (R)-BINAP | 325146-81-4 | 44-0153 | (S)-BINAP | 261948-85-0 |
| 44-0162 | (R)-ToIBINAP | 116128-29-1 | 44-0163 | (S)-ToIBINAP | 106681-15-6 |
| 44-0164 | (R)-XyIBINAP | 374067-50-2 | 44-0165 | (S)-XyIBINAP | 374067-49-9 |

96-6951 Takasago BINAP Ru Cymene Catalyst Kit

| Item# | Acronym (Ligand P^*P) | CAS# | Item# | Acronym (Ligand P^*P) | CAS# |
|------------------------------|-----------------------|-------------|---------|-----------------------|-------------|
| [RuCl[(p-cymene)(P^*P)]Cl(I) | | | | | |
| 44-0084 | (R)-BINAP | 145926-28-9 | 44-0086 | (S)-BINAP | 130004-33-0 |
| 44-0088 | (R)-ToIBINAP | 131614-43-2 | 44-0089 | (S)-ToIBINAP | 228120-95-4 |
| 44-0092 | (R)-XyIBINAP | 944451-24-5 | 44-0093 | (S)-XyIBINAP | 944451-25-6 |

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 Email: enquiries@strem.co.uk

96-6954 Takasago BINAP Ru Diamine Catalyst Kit

| Item# | Acronym (Ligand P^P) | CAS# | Item# | Acronym (Ligand P^P) | CAS# |
|---|--|--------------|---------|--|--------------|
| <i>[RuCl₂(P^P)(N^N)](IV)</i> | | | | | |
| 44-0212 | RuCl ₂ [(R)-XylBINAP][(R)-daipen] | 220114-32-9 | 44-0213 | RuCl ₂ [(S)-XylBINAP][(S)-daipen] | 220114-01-2 |
| 44-0217 | (R)-RUCY®XylBINAP | 1384974-38-2 | 44-0218 | (S)-RUCY®XylBINAP | 1312713-89-5 |
| 44-0226 | RuCl ₂ [(S)-XylBINAP][(S,S)-dpen] | 220114-38-5 | 44-0224 | RuCl ₂ [(S)-XylBINAP][(S,S)-dpen] | 220114-03-4 |

96-6952 Takasago BINAP Ru Dimer Catalyst Kit

| Item# | Acronym (Ligand P^P) | CAS# | Item# | Acronym (Ligand P^P) | CAS# |
|---|----------------------|-------------|---------|----------------------|-------------|
| <i>[NH₂Me₂][{RuCl(P^P)}₂(μ-Cl)₃]Cl (II)</i> | | | | | |
| 44-0510 | (R)-BINAP | 199684-47-4 | 44-0511 | (S)-BINAP | 199541-17-8 |
| 44-0512 | (R)-TolBINAP | 749935-02-2 | 44-0513 | (S)-TolBINAP | 309735-86-2 |
| 44-0514 | (R)-XylBINAP | 944451-08-5 | 44-0515 | (S)-XylBINAP | 944451-10-9 |

H₈-BINAP - Also Available (not included in the above kits) - Unit Sizes: 50mg, 250mg

| | | | | | |
|---------|---|-------------|---------|---|-------------|
| 15-2972 | (R)-(+)-H ₈ -BINAP | 139139-86-9 | 15-2973 | (S)-(-)-H ₈ -BINAP | 139139-93-8 |
| 44-0094 | [RuCl(p-cymene)((R)-H ₈ -BINAP)]Cl | 944451-26-7 | 44-0095 | [RuCl(p-cymene)((S)-H ₈ -BINAP)]Cl | 944451-27-8 |
| 44-0516 | [NH ₂ Me ₂][{RuCl((R)-H ₈ -BINAP)} ₂ (μ-Cl) ₃] | 204933-84-6 | 44-0517 | [NH ₂ Me ₂][{RuCl((S)-H ₈ -BINAP)} ₂ (μ-Cl) ₃] | 944451-12-1 |
| 44-0166 | Ru(OAc) ₂ [(R)-H ₈ -BINAP] | 374067-51-3 | 44-0167 | Ru(OAc) ₂ [(S)-H ₈ -BINAP] | 142962-95-6 |

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