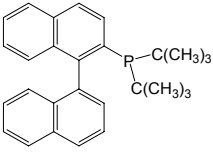
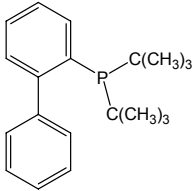
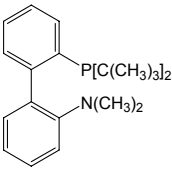
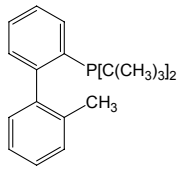
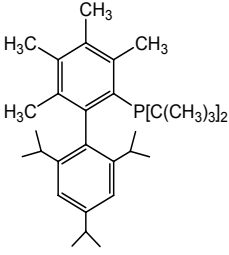
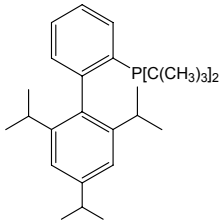
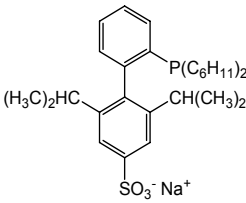
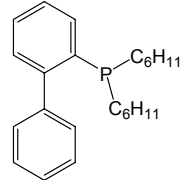
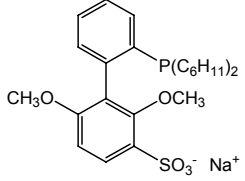
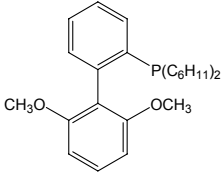
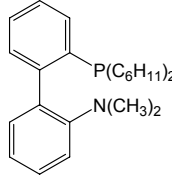
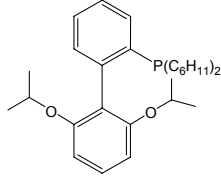
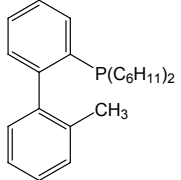
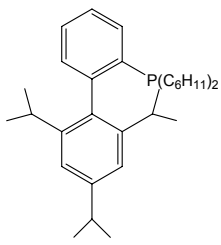
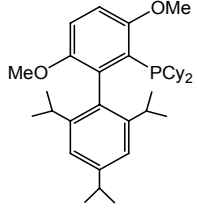
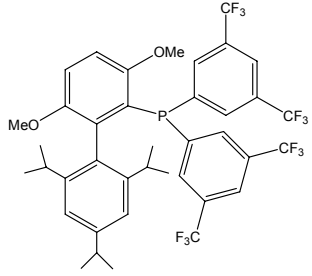
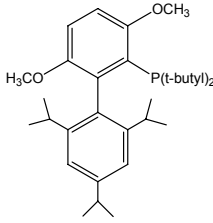
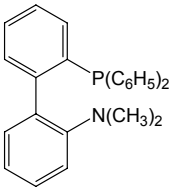




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 <p>15-1051</p>	 <p>t-butylXPhos</p>	 <p>15-1135</p>	 <p>15-1140</p>
 <p>15-1142</p>	 <p>SPhos</p>	 <p>DavePhos</p>	 <p>RuPhos</p>
 <p>MePhos</p>	 <p>XPhos</p>	 <p>BrettPhos</p>	 <p>JackiePhos</p>
 <p>t-butylBrettPhos</p>	 <p>15-1745</p>		

Review Article (general uses): *Adv. Synth. Catal.*, **2004**, *346*, 1599.

Patents: US 6,395,916, US 6,307,087.

96-5500

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15-1157

NEW→

2-Di[3,5-bis(trifluoromethyl)phenyl]phosphino]-3,6-dimethoxy-2'-4'-6'-tri-*i*-propyl-1,1'-biphenyl, min. 98%**JackiePhos** [1160861-60-8]C₃₉H₃₇F₁₂O₂P; FW: 796.66; white xtl.

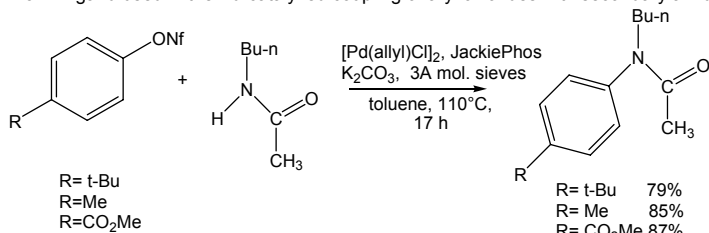
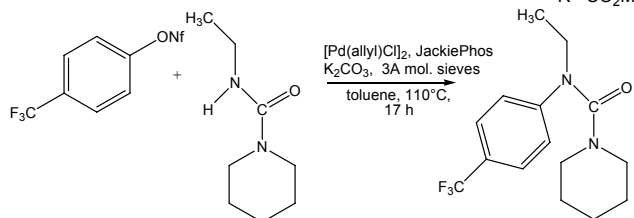
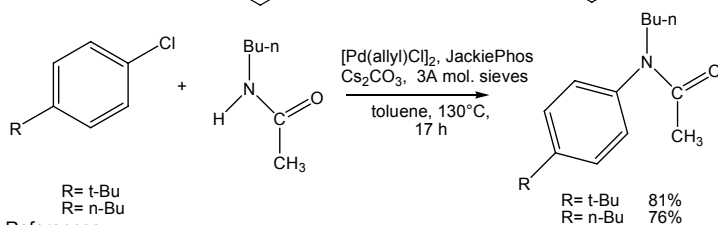
100mg

500mg

2g

Technical Notes:

1. Ligand used in the Pd-catalyzed coupling of aryl nonaflates and triflates with secondary amides.
2. Ligand used in the Pd-catalyzed coupling of aryl nonaflates and triflates with secondary ureas, carbamates, and sulfonamides.
3. Ligand used in the Pd-catalyzed coupling of aryl chlorides with secondary amides, carbamates, and sulfonamides.

Tech. Note (1)
Ref. (1)Tech. Note (2)
Ref. (1)Tech. Note (3)
Ref. (1)

References:

1. *J. Am. Chem. Soc.*, **2009**, *131*, 16720.
2. *Chem. Sci.*, **2011**, *2*, 27-50.

15-1043

racemic-2-Di-*t*-butylphosphino-1,1'-binaphthyl, 98% TrixiePhos [255836-67-0]C₂₈H₃₁P; FW: 398.53; white xtl.; m.p. 147-149°

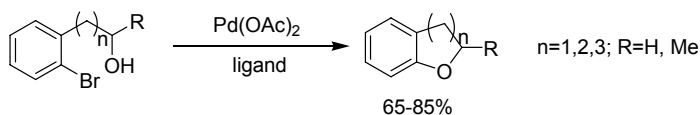
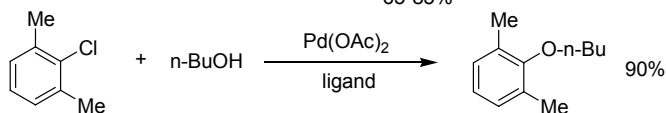
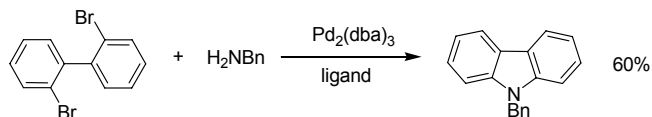
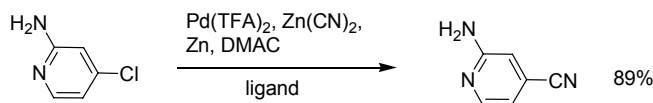
250mg

1g

5g

Technical Notes:

1. Ligand for the Pd-catalyzed formation of oxygen heterocycles.
2. Ligand for the intermolecular Pd-catalyzed synthesis of aryl ethers.
3. Ligand for the intramolecular Pd-catalyzed synthesis of aryl ethers.
4. Ligand for the synthesis of carbazoles by Pd-catalyzed double N-arylation reaction.
5. Ligand for the Pd-catalyzed cyanation of (hetero)arylchlorides.

Tech. Note (1)
Ref. (1)Tech. Note (2,3)
Ref. (2,3)Tech. Note (4)
Ref. (4)Tech. Note (5)
Ref. (5)Visit www.strem.com for new product information and searchable catalog.

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 Email: enquiries@strem.co.uk

15-1043 racemic-2-Di-t-butylphosphino-1,1'-binaphthyl, 98% TrixiePhos [255836-67-0]
(cont.)

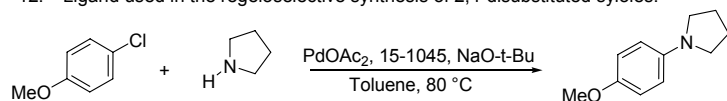
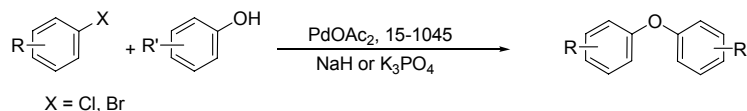
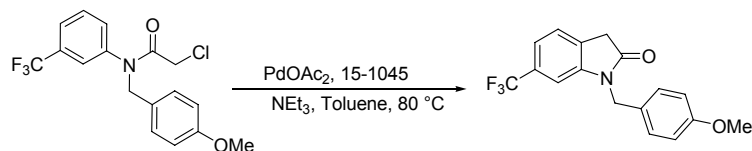
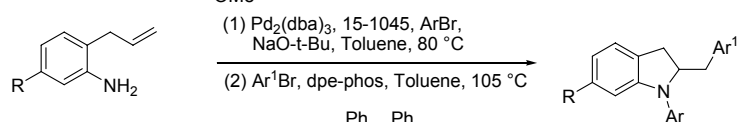
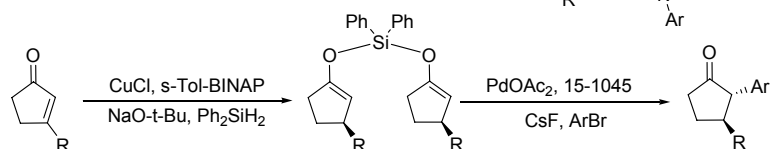
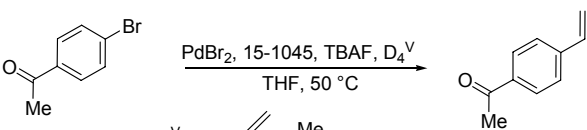
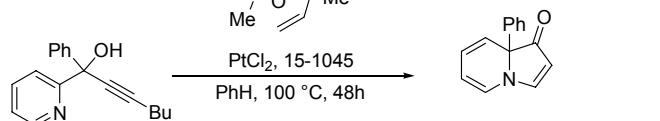
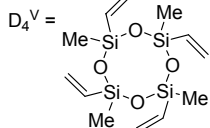
References:

1. *J. Am. Chem. Soc.*, **2000**, 122, 12907.
2. *J. Am. Chem. Soc.*, **2001**, 123, 10770.
3. *J. Am. Chem. Soc.*, **2001**, 123, 12202.
4. *Tetrahedron*, **2006**, 62, 6792.
5. *Org. Lett.*, **2007**, 9, 1711.
6. *Chem. Sci.*, **2011**, 2, 27-50.

15-1045 2-(Di-t-butylphosphino)biphenyl, 99% JohnPhos [224311-51-7]
 C₂₀H₂₇P; FW: 298.41; colorless xtl.; m.p. 85°
500mg
2g10g
50g

Technical Notes:

1. Ligand used in the palladium-catalyzed synthesis of aromatic amines from aryl chlorides, bromides and triflates.
2. Ligand employed in a very active and general catalyst for Suzuki coupling reactions using aryl chlorides, bromides and triflates.
3. Ligand for the palladium-catalyzed formation of diarylethers from aryl chlorides and bromides.
4. Ligand used in palladium-catalyzed synthesis of oxindoles from α -chloroacetanilides.
5. Effective ligand used in palladium-catalyzed arylation of thiazoles.
6. Used in the formation of 2-benzylindolines via sequential palladium-catalyzed N-arylation/cyclization/C-arylation.
7. Selective in the palladium-catalyzed arylation of silyl enol ethers formed from copper-catalyzed reduction of enones.
8. Ligand used in the palladium-catalyzed vinylation of aryl bromides.
9. Ligand used in the platinum-catalyzed synthesis of indolizines.
10. Ligand used in the palladium-catalyzed diarylation of thiophenes.
11. Ligand used in the amination of vinyl halides by carbazates.
12. Ligand used in the regioselective synthesis of 2,4-disubstituted silyloles.

Tech. Note (1)
Ref. (2)Tech. Note (3)
Ref. (4)Tech. Note (4)
Ref. (5)Tech. Note (6)
Ref. (7)Tech. Note (7)
Ref. (8)Tech. Note (8)
Ref. (9)Tech. Note (9)
Ref. (10)

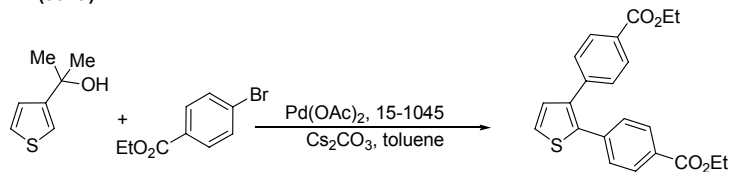
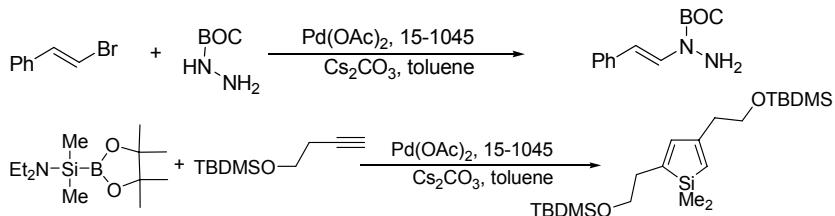
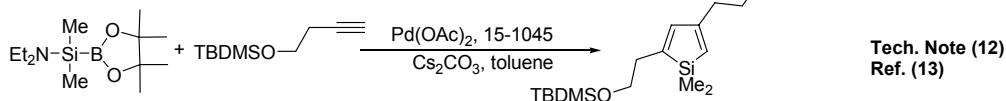
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15-1045 **2-(Di-t-butylphosphino)biphenyl, 99% JohnPhos** [224311-51-7]
(cont.)

Tech. Note (10)
Ref. (11)

Tech. Note (11)
Ref. (12)

Tech. Note (12)
Ref. (13)

References:

1. *Angew. Chem. Int. Ed.*, **1999**, 38, 2413.
2. *J. Org. Chem.*, **2000**, 65, 1158.
3. *J. Am. Chem. Soc.*, **1999**, 121, 9550.
4. *J. Am. Chem. Soc.*, **1999**, 121, 4369.
5. *J. Am. Chem. Soc.*, **2003**, 125, 12084.
6. *Tetrahedron*, **2003**, 59, 5685.
7. *J. Am. Chem. Soc.*, **2004**, 126, 13906.
8. *Org. Lett.*, **2004**, 6, 4809.
9. *Org. Lett.*, **2006**, 7, 63.
10. *Org. Lett.*, **2007**, 9, 1169.
11. *J. Org. Chem.*, **2006**, 71, 8309.
12. *Org. Lett.*, **2007**, 9, 275.
13. *J. Am. Chem. Soc.*, **2008**, 130, 1526.
14. *Chem. Sci.*, **2011**, 2, 27-50.

15-1164 **2-(Di-t-butylphosphino)-3,6-dimethoxy-2'-4'-6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-butylBrettPhos**

NEW→

[1160861-53-9]

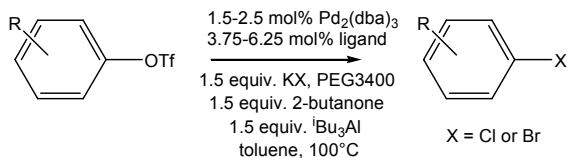
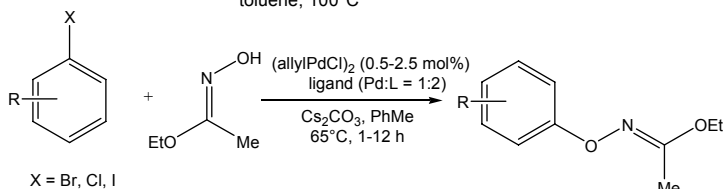
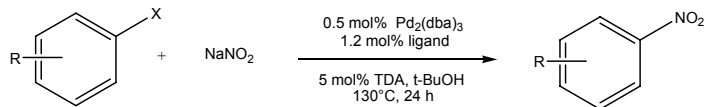
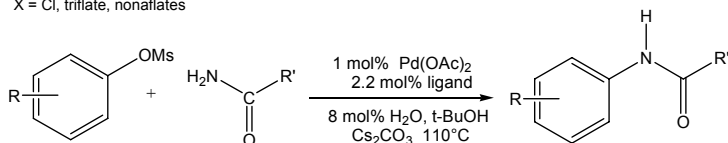
C₃₁H₅₀O₂P; FW: 485.35; white xtl.

Note: Patents: US 6,395,916, US 6,307,087

100mg
500mg

Technical Notes:

1. Ligand used in the Pd-catalyzed conversion of aryl and vinyl triflates to bromides and chlorides.
2. Ligand used in the Pd-catalyzed O-arylation of ethyl acetohydroximates.
3. Ligand used in the Pd-catalyzed conversion of aryl chlorides, triflates, and nonaflates to nitroaromatics.
4. Ligand used in the Pd-catalyzed cross-coupling of amides and aryl mesylates.


Tech. Note (1)
Ref. (1)

Tech. Note (2)
Ref. (2)

Tech. Note (3)
Ref. (3)

Tech. Note (4)
Ref. (4)

References:

1. *J. Am. Chem. Soc.*, **2010**, 132, 14076.
2. *J. Am. Chem. Soc.*, **2010**, 132, 9990.
3. *J. Am. Chem. Soc.*, **2009**, 131, 12898.
4. *Org. Lett.*, **2010**, 12(10), 2350.
5. *Chem. Sci.*, **2011**, 2, 27-50.

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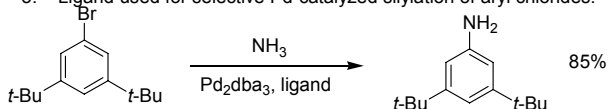
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15-1048 **2-Di-*t*-butylphosphino-2'-(*N,N*-dimethylamino)biphenyl, 98%** [224311-49-3]
(CH₃)₂NC₆H₄C₆H₄P(C₄H₉)₂; FW: 341.47; white xtl.

500mg
2g
10g

Technical Notes:

- Useful ligand for Pd-catalyzed carbon-oxygen bond forming reactions.
- Ligand used selective Pd-catalyzed arylation of ammonia.
- Ligand used for selective Pd-catalyzed silylation of aryl chlorides.



Tech. Note (2)
Ref. (2)



Tech. Note (3)
Ref. (3)

References:

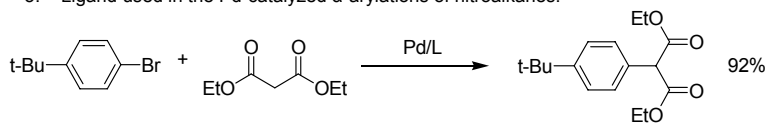
- J. Am. Chem. Soc.*, **2001**, 123, 12202.
- J. Am. Chem. Soc.*, **2007**, 129, 10354.
- Org. Lett.*, **2007**, 9, 3785.
- Chem. Sci.*, **2011**, 2, 27-50.

15-1049 **2-Di-*t*-butylphosphino-2'-methylbiphenyl, 99%** [255837-19-5]
C₂₁H₂₉P; FW: 312.43; white xtl.

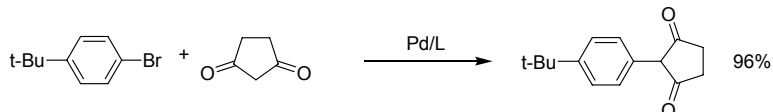
500mg
2g
50g

Technical Notes:

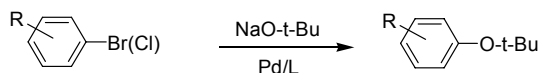
- Ligand used in the Pd-catalyzed arylations of malonate esters and 1,3-diketones.
- Ligand used in the Pd-catalyzed formation of *t*-butyl ethers from unactivated aryl halides.
- Ligand used in the Pd-catalyzed α -arylations of nitroalkanes.



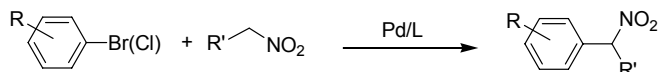
Tech. Note (1)
Ref. (1)



Tech. Note (1)
Ref. (1)



Tech. Note (2)
Ref. (2)



Tech. Note (3)
Ref. (3)

References:

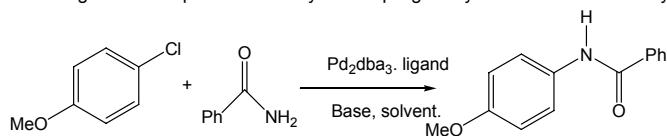
- J. Am. Chem. Soc.*, **2000**, 122, 1360.
- J. Org. Chem.*, **2001**, 66, 2498.
- J. Org. Chem.*, **2002**, 67, 106.
- Chem. Sci.*, **2011**, 2, 27-50.

15-1051 **2-Di-*t*-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-*i*-propylbiphenyl, min. 98%** [857356-94-6]
C₃₃H₅₃P; FW: 480.75; white microxtl.; m.p. 166-168°

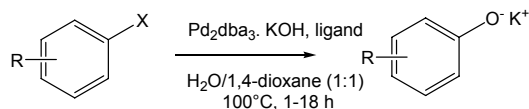
250mg
1g
5g

Technical Notes:

- Ligand for the palladium-catalyzed amidation of aryl chlorides.
- Ligand for the palladium-catalyzed synthesis of phenols from aryl halides.
- Ligand for the palladium-catalyzed coupling of aryl halides and secondary alcohols.



Tech Note (1)
Ref. (1)



Tech Note (2)
Ref. (2)

X = Br, Cl

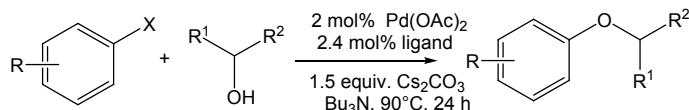
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15-1051 **2-Di-t-butylphosphino-3,4,5,6-tetramethyl-2',4',6'-tri-i-propylbiphenyl, min. 98%** [857356-94-6]
 (cont.)

 Tech Note (2)
 Ref. (3)

References:

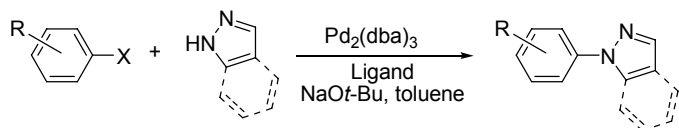
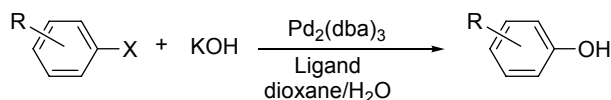
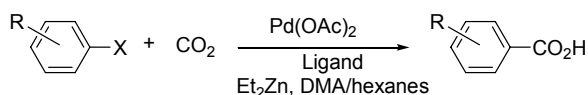
1. *J. Am. Chem. Soc.*, **2007**, *129*, 13001.
2. *J. Am. Chem. Soc.*, **2006**, *128*, 10894.
3. *J. Am. Chem. Soc.*, **2005**, *127*, 8146.
4. *Chem. Sci.*, **2011**, *2*, 27-50.

15-1052 **2-Di-t-butylphosphino-2',4',6'-tri-i-propyl-1,1'-biphenyl, min. 98% t-butylXPhos** [564483-19-8]
 C₂₉H₄₅P; FW: 424.64; white xtl.; m.p. 147-149°

 500mg
 2g
 10g

Technical Notes:

1. Effective ligand for the Pd-catalyzed arylation of pyrazoles, indazoles and amino heterocycles.
2. Ligand used in the Pd-catalyzed synthesis of phenols from aryl halides and KOH.
3. Ligand used in the Pd-catalyzed of benzoic acids from aryl halides and CO₂.


 Tech. Note (1)
 Ref. (1)

 Tech. Note (2)
 Ref. (2)

 Tech. Note (3)
 Ref. (3)

References:

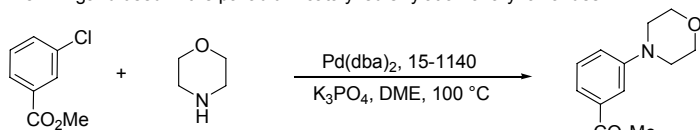
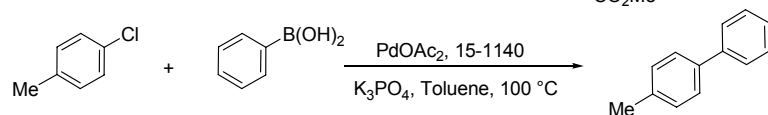
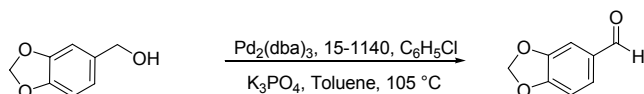
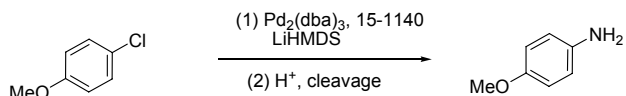
1. *Angew. Chem., Int. Ed.*, **2006**, *45*, 6523.
2. *J. Am. Chem. Soc.*, **2006**, *128*, 10694.
3. *J. Am. Chem. Soc.*, **2009**, *131*, 15974.
4. *Chem. Sci.*, **2011**, *2*, 27-50.

15-1140 **2-(Dicyclohexylphosphino)biphenyl, 98%** [247940-06-3]
 C₁₂H₉[P(C₆H₁₁)₂]; FW: 350.49; white xtl.; m.p. 103°

 500mg
 2g
 10g
 50g

Technical Notes:

1. See 15-1045.
2. Ligand used in the palladium-catalyzed synthesis of aromatic amines from aryl chlorides, bromides and triflates.
3. Ligand employed in Suzuki coupling reactions involving aryl chlorides, bromides and triflates.
4. Useful ligand for the Pd-catalyzed oxidation of alcohols in the presence of chlorobenzenes.
5. Useful ligand for the Pd-catalyzed amination with ammonia equivalents.
6. Ligand for the gold(I)-catalyzed intramolecular [4+2] cycloadditions involving 1,3-enynes and arylalkynes with alkenes.
7. Ligand used in the palladium-catalyzed borylation of aryl bromides.
8. Ligand used in the palladium-catalyzed silylation of aryl chlorides.


 Tech. Note (2)
 Ref. (2)

 Tech. Note (3)
 Ref. (3)

 Tech. Note (4)
 Ref. (4)

 Tech. Note (5)
 Ref. (5)

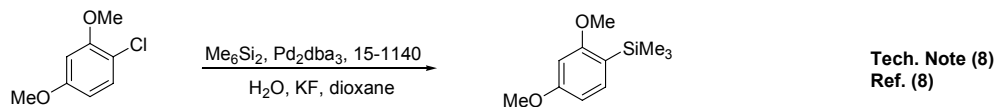
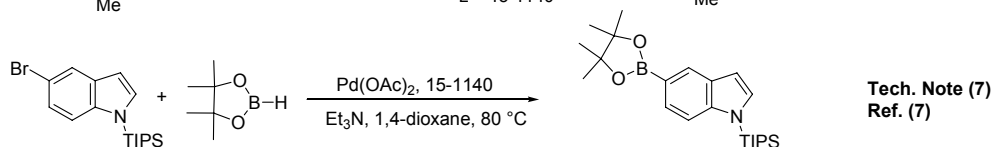
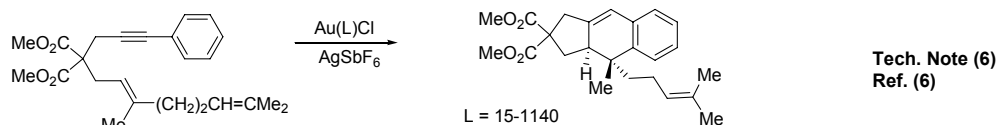
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15-1140 **2-(Dicyclohexylphosphino)biphenyl, 98%** [247940-06-3]
 (cont.)


References:

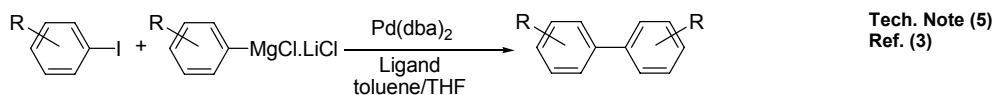
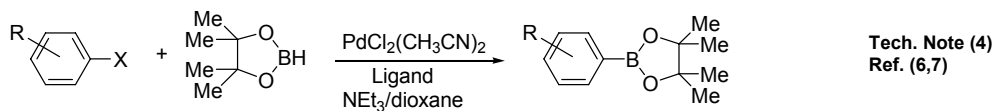
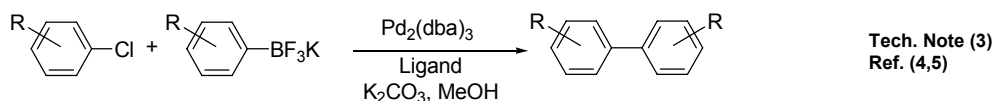
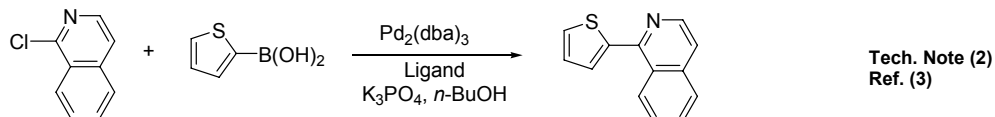
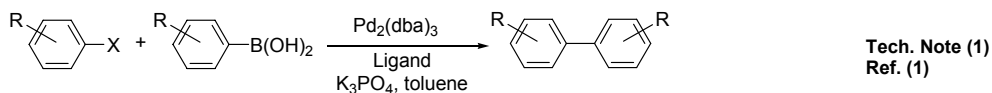
1. *Angew. Chem. Int. Ed.*, **1999**, 38, 2413.
2. *J. Org. Chem.*, **2000**, 65, 1158.
3. *J. Am. Chem. Soc.*, **1999**, 121, 9550.
4. *Org. Lett.*, **2003**, 5, 2485.
5. *Org. Lett.*, **2001**, 3, 3417.
6. *J. Am. Chem. Soc.*, **2005**, 127, 6178.
7. *Helv. Chim. Acta.*, **2006**, 89, 936.
8. *Org. Lett.*, **2007**, 9, 3785.
9. *Chem. Sci.*, **2011**, 2, 27-50.

15-1143 **2-Dicyclohexylphosphino-2',6'-dimethoxy-1,1'-biphenyl, min. 98% SPhos** [657408-07-6]
 C₂₆H₃₅O₂P; FW: 410.53; white xtl.; m.p. 164-166°

 500mg 10g
 2g 50g

Technical Notes:

1. Generates highly active catalyst for Suzuki-Miyaura cross-coupling.
2. Ligand used in the Suzuki cross-coupling of heteroaryl substrates.
3. Ligand used in the Suzuki cross-coupling of aryl potassium trifluoroborates.
4. Effective ligand for the Pd-catalyzed borylation of aryl chlorides.
5. Ligand used in the Pd-catalyzed Kumada-Corriu reaction of functionalized aryl Grignard reagents at low temperature.



References:

1. *Angew. Chem., Int. Ed.*, **2004**, 43, 1871.
2. *J. Am. Chem. Soc.*, **2005**, 127, 4685.
3. *J. Am. Chem. Soc.*, **2007**, 129, 3358.
4. *Org. Lett.*, **2004**, 6, 2649.
5. *J. Org. Chem.*, **2009**, 74, 5446.
6. *Angew. Chem., Int. Ed.*, **2007**, 46, 5359.
7. *J. Org. Chem.*, **2008**, 73, 5589.
8. *J. Am. Chem. Soc.*, **2008**, 129, 3844.
9. *Chem. Sci.*, **2011**, 2, 27-50.

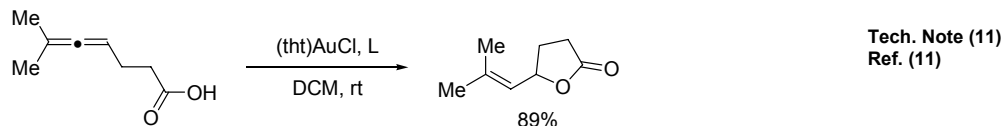
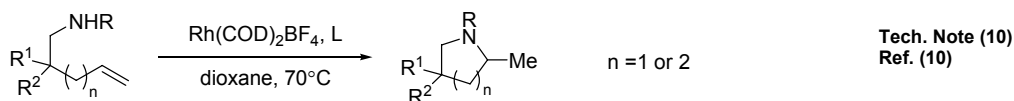
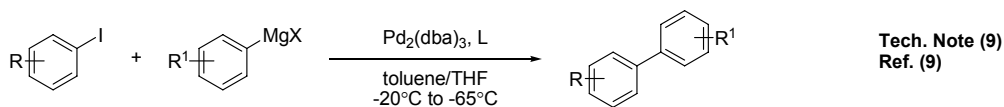
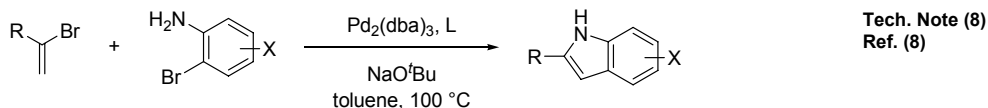
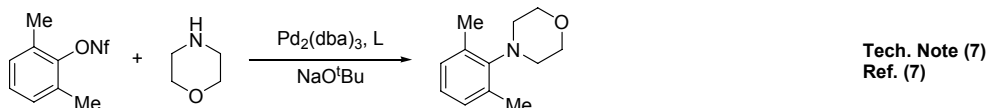
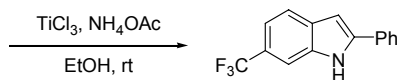
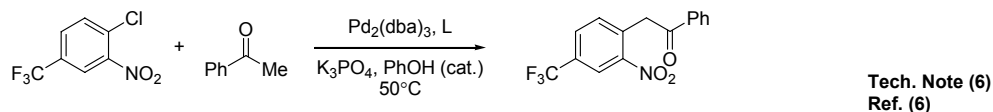
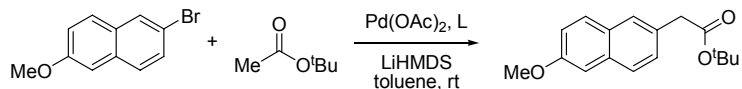
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15-1145 2-(Dicyclohexylphosphino)-2'-(N,N-dimethylamino)biphenyl, 98% DavePhos [213697-53-1]
 (cont.)


References:

1. *J. Am. Chem. Soc.*, **1998**, *120*, 9722.
2. *J. Am. Chem. Soc.*, **1999**, *121*, 6090.
3. *Org. Lett.*, **2000**, *2*, 1403.
4. *J. Org. Chem.*, **2001**, *66*, 2498.
5. *J. Am. Chem. Soc.*, **2001**, *123*, 7996.
6. *J. Am. Chem. Soc.*, **2002**, *124*, 15168.
7. *J. Org. Chem.*, **2003**, *68*, 9563.
8. *Chem. Eur. J.*, **2005**, *11*, 2276.
9. *J. Am. Chem. Soc.*, **2007**, *129*, 3844.
10. *J. Am. Chem. Soc.*, **2008**, *130*, 1570.
11. *Adv. Synth. Catal.*, **2009**, *351*, 576.
12. *Chem. Sci.*, **2011**, *2*, 27-50.

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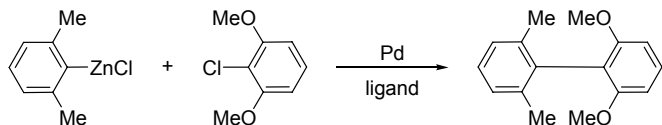
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15-1146 **2-Dicyclohexylphosphino-2',6'-di-i-propoxy-1,1'-biphenyl, min. 98% RuPhos** [787618-22-8]
 $C_{30}H_{43}O_2P$; FW: 466.64; white powdr.; m.p. 123-124°

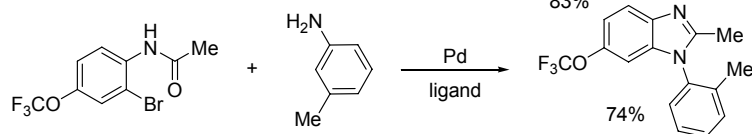
500mg
2g
10g

Technical Notes:

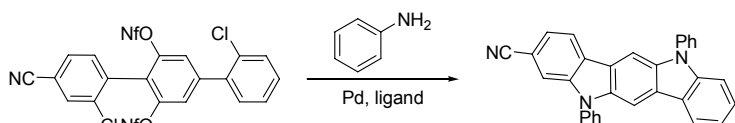
1. Ligand used for the Pd-catalyzed Negishi cross-coupling reaction of (hetero)arylchlorides.
2. Ligand used for the Pd-catalyzed synthesis of N-aryl benzimidazoles.
3. Ligand used for the Pd-catalyzed synthesis of heteroacenes.
4. Ligand used for the Pd-catalyzed C-N coupling reaction at low temperature with the Pd precatalyst.
5. Ligand used for the Pd-catalyzed Suzuki-Miyaura coupling of aryl chloride and NHC-boranes.



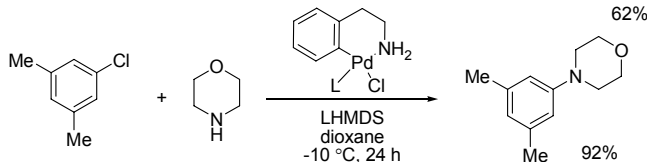
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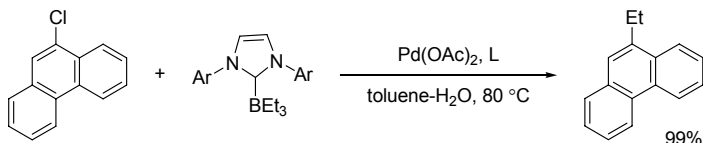
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Tech. Note (3)
Ref. (3)



Tech. Note (4)
Ref. (4)



Tech. Note (5)
Ref. (5)

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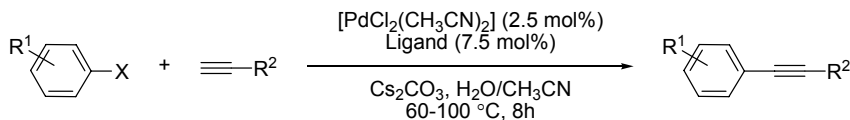
1. *J. Am. Chem. Soc.*, **2004**, *126*, 13028.
2. *Angew. Chem. Int. Ed.*, **2007**, *46*, 7509.
3. *J. Org. Chem.*, **2007**, *72*, 5119.
4. *J. Am. Chem. Soc.*, **2008**, *130*, 6686.
5. *Org. Lett.*, **2009**, *11*, 4914.
6. *Chem. Sci.*, **2011**, *2*, 27-50.

15-1135 **2'-Dicyclohexylphosphino-2,6-di-i-propyl-4-sulfonato-1,1'-biphenyl hydrate sodium salt** [870245-84-4]
 $C_{30}H_{42}NaO_3PS \cdot XH_2O$; FW: 536.68; white solid

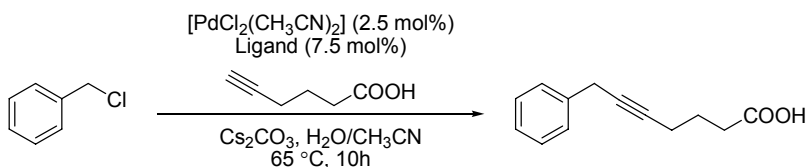
500mg
2g

Technical Notes:

1. Water soluble catalyst for Sonogashira coupling reactions
2. Water soluble catalyst for coupling of benzyl chloride and terminal alkynes.



Tech. Note (1)
Ref. (1)



Tech. Note (2)
Ref. (2)

References:

1. *Angew. Chem. Int. Ed.*, **2005**, *44*, 6173.
2. *Synlett.*, **2006**, 2941.
3. *Chem. Sci.*, **2011**, *2*, 27-50.

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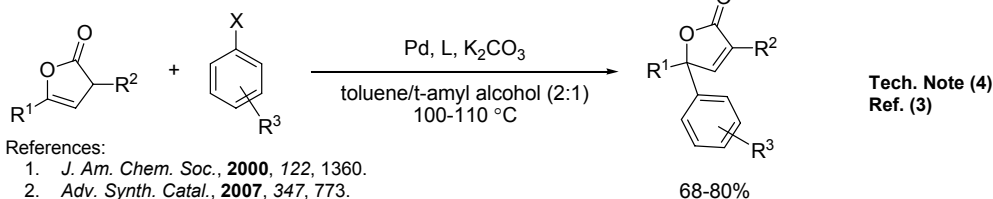
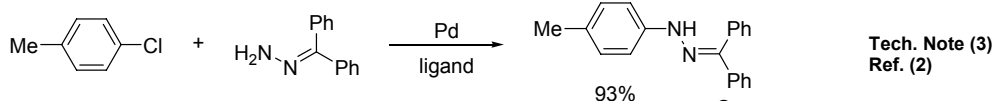
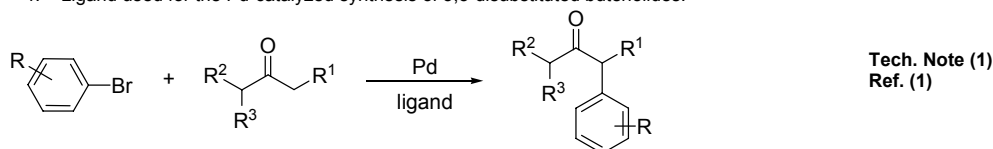
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15-1148 2-Dicyclohexylphosphino-2'-methylbiphenyl, min. 98% MePhos [251320-86-2]
 C₂₅H₃₃P; FW: 364.51; white xtl.; m.p. 107-110°
500mg
2g
10g

Technical Notes:

1. Ligand used for the Pd-catalyzed formation of α -arylketones.
2. Ligand used for the Pd-catalyzed amination reaction (see 15-1045).
3. Ligand used for the Pd-catalyzed hydrazone arylation.
4. Ligand used for the Pd-catalyzed synthesis of 5,5-disubstituted butenolides.



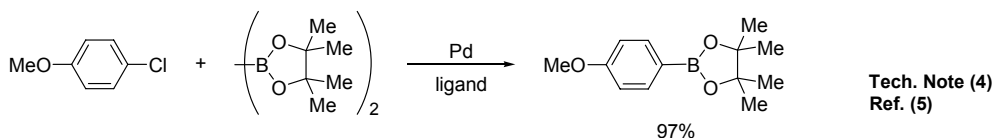
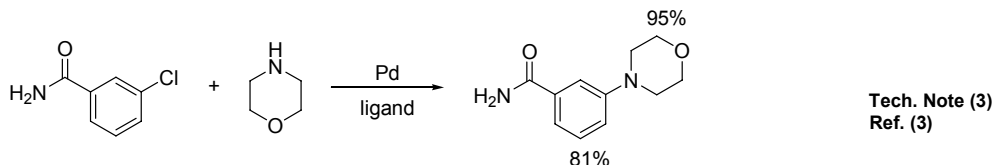
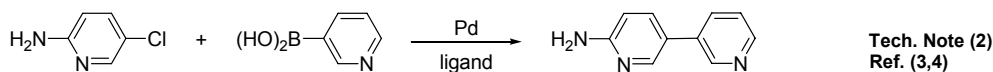
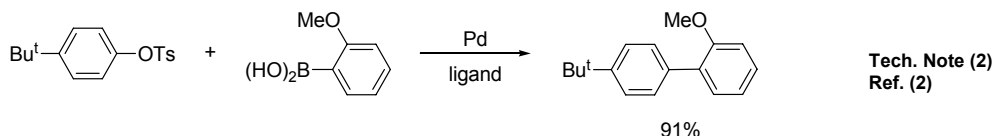
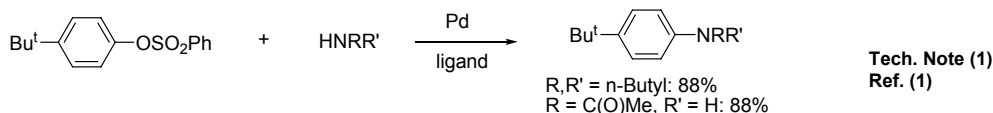
References:

1. *J. Am. Chem. Soc.*, **2000**, *122*, 1360.
2. *Adv. Synth. Catal.*, **2007**, *347*, 773.
3. *Org. Lett.*, **2009**, *11*, 2663.
4. *Chem. Sci.*, **2011**, *2*, 27-50.

15-1149 2-(Dicyclohexylphosphino)-2',4',6'-tri-*i*-propyl-1,1'-biphenyl, min. 98% XPhos [564483-18-7]
 C₃₃H₄₉P; FW: 476.72; white powdr.; m.p. 185°
500mg
2g
50g

Technical Notes:

1. Exceptional ligands for Pd-catalyzed amination and amidation of aryl sulfonates.
2. Ligand used for the Pd-catalyzed Suzuki-Miyaura coupling reaction and carbonyl enolate coupling.
3. Ligand used for the chemoselective amination of aryl chlorides.
4. Ligand used for the Pd-catalyzed borylation of aryl chlorides.
5. Ligand used for the Pd-catalyzed amination of vinyl halides and triflates.
6. Ligand used for the Pd-catalyzed three-component synthesis of indoles.
7. Ligand used for the Pt-catalyzed regioselective hydrosilylation of functionalized terminal arylalkynes.
8. Ligand used for the Pd-catalyzed synthesis of carbazoles.
9. Ligand used for the Pd-catalyzed Suzuki-Miyaura coupling of aryl chloride and NHC-boranes.



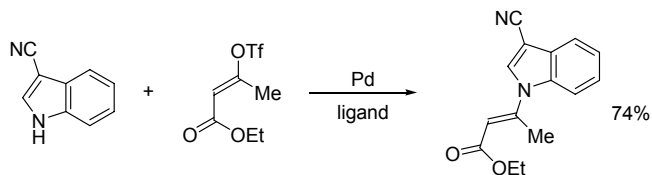
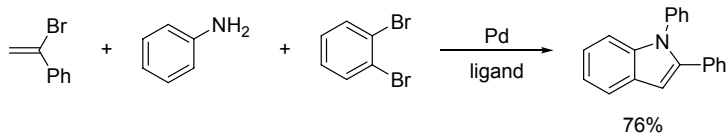
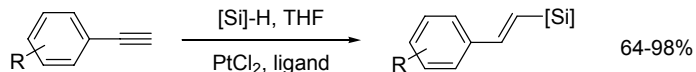
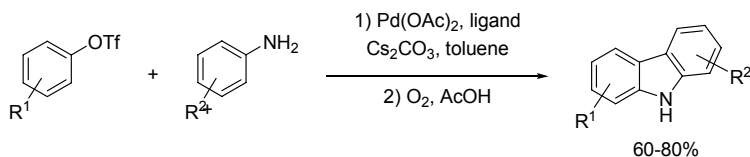
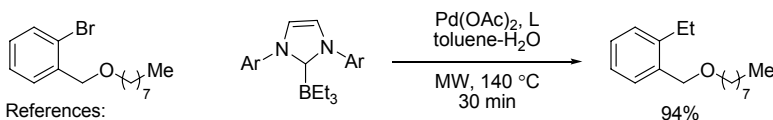
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15-1149 (cont.) **2-(Dicyclohexylphosphino)-2',4',6'-tri-*i*-propyl-1,1'-biphenyl, min. 98% XPhos** [564483-18-7]

 Tech. Note (5)
 Ref. (6)

 Tech. Note (6)
 Ref. (7)

 Tech. Note (7)
 Ref. (8)

 Tech. Note (8)
 Ref. (9)

 Tech. Note (9)
 Ref. (10)

References:

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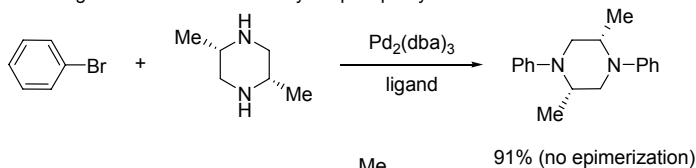
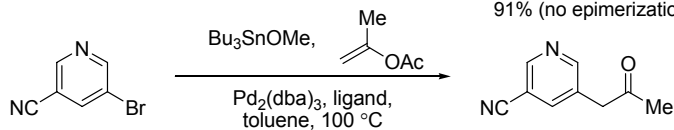
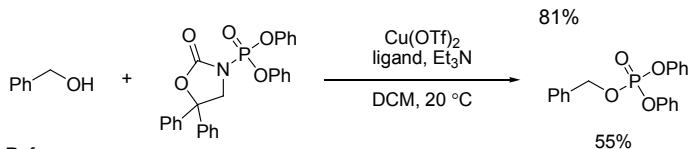
15-1745 **2-Diphenylphosphino-2'-(*N,N*-dimethylamino)biphenyl, 98%** [240417-00-9]

 C₂₆H₂₄NP; FW: 381.46; white powdr.

 500mg
 2g
 10g

Technical Notes:

1. Useful ligand for sterically hindered substrates in the Pd-catalyzed amination reactions of aryl bromides.
2. Ligand employed in the coupling of enantiomerically pure *cis*-dimethylpiperazine with bromobenzene. Epimerization was not observed.
3. Ligand employed for the Pd-catalyzed heteroarylation of acetone.
4. Ligand used for the Cu-catalyzed phosphorylation of alcohols.


 Tech. Note (2)
 Ref. (1)

 Tech. Note (3)
 Ref. (2)

 Tech. Note (4)
 Ref. (3)

References:

1. *Angew. Chem. Int. Ed.*, **2005**, *44*, 6173.
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