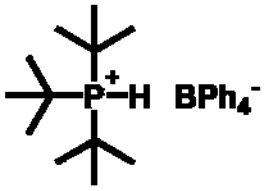
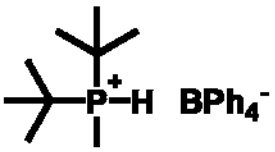
Phosphonium Borate Derivatives

Kanto Reagents

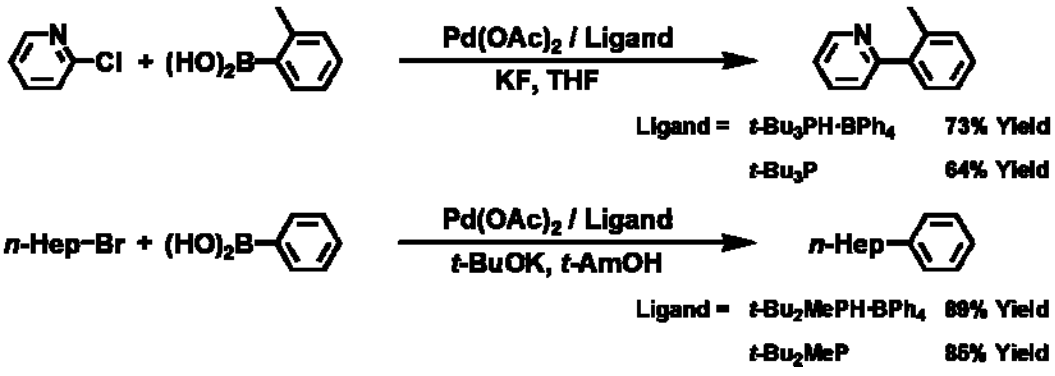
Reactions such as Suzuki Coupling, Sonogashira Coupling, Heck Reaction or Hartwig -Buchwald Coupling using Palladium complex, having trialkylphosphine as ligand, as catalyst is very useful reaction in the organic synthesis field. However, trialkylphosphine is very susceptible to oxidation in the air, and it is difficult to handle.

We Kanto Chemical launched phosphonium borate product which has the same properties as trialkylphosphine and is stable in the air.

Product list

Product name	Product code	Size
Tri-*tert*-butylphosphonium tetraphenylborate $C_{36}H_{48}BP$ FW522.55 [131322-08-2] Appearance: White to pale yellow powder Stability: Stable in air (RT) Composition: 37-40% (as P(*t*-Bu)$_3$) 	41128-45	10g
Di-*tert*-butylmethylphosphonium tetraphenylborate $C_{33}H_{42}BP$ FW480.47 Appearance: White to pale yellow powder Stability: Stable in air (RT) Composition: 32-34% (as P(*t*-Bu)$_2$Me) 	41129-45	10g

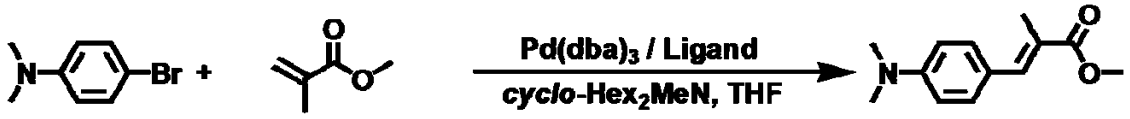
Reaction example



○ *Sonogashira Coupling*[3)]

Ligand = *t*-Bu_3PH-BPh_4 99% Yield
t-Bu_3P 98% Yield

○ *Heck Reaction*[4)]

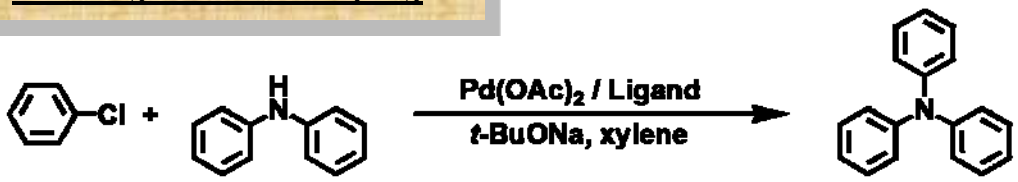


Ligand = *t*-Bu_3PH-BPh_4 87% Yield
t-Bu_3P 86% Yield

○ *Cross Coupling*

Ligand = *t*-Bu_3PH-BPh_4 86% Yield
t-Bu_3P 88% Yield

○ *Hartwig-Buchwald Coupling*[5)]



Ligand = *t*-Bu_3PH-BPh_4 92% Yield
t-Bu_3P 83% Yield

＜*Reference*＞

(1) A. F. Littke, C. Dai, G. C. Fu, *J. Am. Chem. Soc.*, **122**, 4020(2000).
(2) J. H. Kirchhoff, M. R. Netherton, I. D. Hills, G. C. Fu, *J. Am. Chem. Soc.*, **124**, 13662(2002).
(3) T. Hundertmark, A. F. Little, S. L. Buchwald, G. C. Fu, *Org. Lett.*, **2**, 1729(2000).
(4) A. F. Littke, G. C. Fu, *J. Am. Chem. Soc.*, **123**, 6989(2001).
(5) T. Yamamoto, M. Nishiyama, Y. Koie, *Tetrahedron Lett.*, **39**, 2367(1998).

∗The yield of each reaction is the experimental value carried out according to each method described in the above references.

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