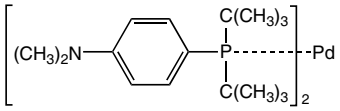
Palladium Coupling Catalysts

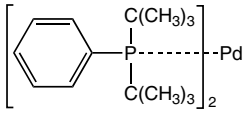
Alfa Aesar continues to attract widespread interest as a supplier of precious metal catalysts. Synthetic procedures for the manufacture of complex drug molecules have changed continually over the years as methodology has improved. Much of this advancement has only been possible due to the developments in coupling chemistry that have occurred over the last thirty years, many of them related to the use of palladium catalysis.

Alfa Aesar regularly adds new products to its already extensive range of highly useful and versatile catalysts and among the more recent introductions are a number of Pd(0) Phosphine complexes. These complexes can be used in Negishi,[1] Heck,[2] Suzuki-Miyaura,[3] and Stille[4] coupling reactions, many have already been extensively cited in the scientific literature, here are just a few examples of their use.

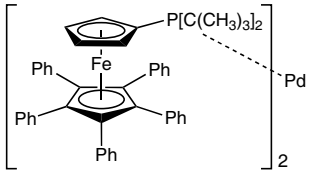
Researchers from MIT have shown that the catalyst 45792 will undergo Suzuki cross-coupling with a diverse array of aryl and vinyl triflates.[5] The complex generated from 45814 and the sterically hindered alkylbisphosphine ligand CyPF-*t*-Bu, is a highly active and selective catalyst for the arylation of ammonia.[6] The stable $(R_3P)_2Pd(0)$ catalyst 46000 is commercially available and is an effective catalyst for the Sonogashira coupling of aryl chlorides.[7] Finally, 45913 is an effective catalyst in intramoleular carboiodination of alkenes.[8]



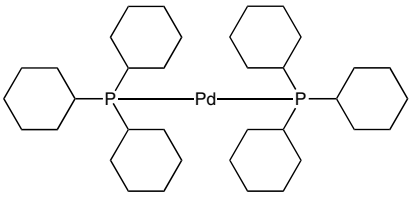
46000
Bis[di-tert-butyl(4-dimethylaminophenyl) phosphine]palladium(0), Pd 16.7%



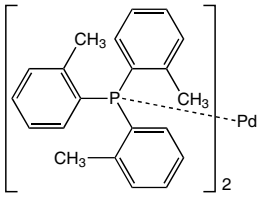
45853
Bis(di-tert-butyl-phenylphosphine) palladium(0), Pd 19.3%
CAS 52359-17-8



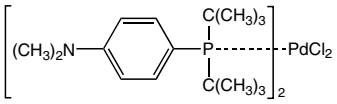
45913
Bis[1,2,3,4,5-pentaphenyl-1'-(di-tert-butylphosphino)ferrocene]palladium(0), Pd 7.0%



45792
Bis(tricyclohexylphosphine)palladium(0), Pd 15.9%
CAS 33309-88-5



45814
Bis(tri-o-tolylphosphine)palladium(0), Pd 14.9%
CAS 69861-71-8



45511
Dichlorobis[di-tert-butyl(4-dimethylamin-ophenyl)phosphino]palladium(II)
CAS 887919-35-9

[1](a) E. Negishi, A. O. King & N. Okukado, *J. Org. Chem.*, 1977, **42**, 1821; (b) A. O. King, E. Negishi, F. J. Villani & A. Silveira, *J. Org. Chem.*, 1978, **43**, 358.
[2]R. F. Heck & J. P. Nolley, *J. Org. Chem.*, 1972, **37**, 2320.
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[4] J. K. Stille, Angew. *Chem. Int. Ed.*, 1986, **25**, 508.
[5] A. F. Littke, C. D. Dai, & G. C. Fu, *J. Am. Chem. Soc.*, 2000, **122**, 4020.
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[8] (a) S. G. Newman, M. Lautens, *J. Am. Chem. Soc.*, 2011, **133**, 1778; (b) S. G. Newman, J. K. Howell, N. Nicolaus, & M. Lautens, *J. Am. Chem. Soc.*, 2011, **133**, 14916.