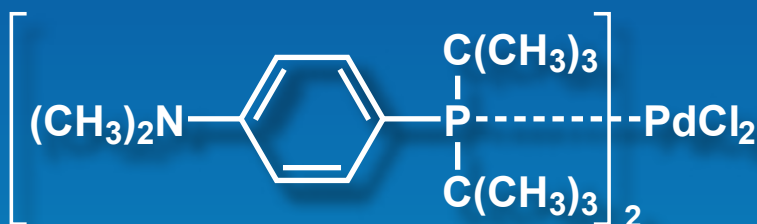


# Palladium Complex Catalyzing the Suzuki-Miyaura Coupling Reactions of Heteroaryl Chlorides



Bis[di-tert-butyl(4-dimethylaminophenyl)-phosphine]dichloropalladium(II)  
(= Pd(Amphos)<sub>2</sub>Cl<sub>2</sub>)

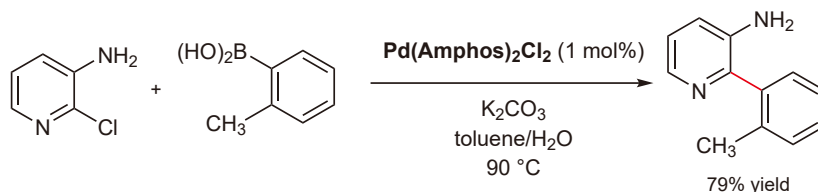
1g  
[B6255]

## Advantages

- Air-stable powder
- Highly active for the cross-coupling of heteroaryl chlorides as reaction substrates

The Pd(Amphos)<sub>2</sub>Cl<sub>2</sub> is an air-stable divalent palladium(II) complex that efficiently catalyzes Suzuki-Miyaura coupling reaction. The reaction is applicable to substrates with heteroatom-containing groups (such as heteroaryl chlorides, thiol, amino, alkoxy amino and alkoxy groups) which can be catalyst poisons. In addition, the complex exhibits higher turnover numbers (TONs).<sup>1,2)</sup>

## Application



### TCI Practical Example:

To a reaction vessel, 3-amino-2-chloropyridine (0.8 g, 6.2 mmol), 2-methylphenylboronic acid (1.0 g, 7.4 mmol, 1.2 eq), Pd(Amphos)<sub>2</sub>Cl<sub>2</sub> (0.044 g, 0.062 mmol, 1 mol%), potassium carbonate (1.3 g, 9.4 mmol, 1.5 eq), toluene (20 mL), and ion-exchange water (2 mL) were sequentially added. Under N<sub>2</sub> atmosphere, the reaction mixture was refluxed at 90 °C for 5 hours. The reaction was monitored by TLC and after the reaction mixture was cooled at room temperature, water (20 mL) was added and extracted with ethyl acetate. The organic layer was washed with 1 mol/L NaOH aq. and brine, dried over anhydrous sodium sulfate and filtered. The filtrate was concentrated under reduce pressure and the given crude product was purified by silica gel column chromatography (hexane:ethyl acetate = 1:1) to obtain 2-(*o*-tolyl)-3-pyridinamine (0.90 g, 79% yield) as a milky white powder.

**References** 1) A. S. Guram, M. J. Martinelli, *et al.*, *J. Org. Chem.* **2007**, 72, 5104. <https://doi.org/10.1021/jo070341w>  
2) A. S. Guram, *Org. Process Res. Dev.* **2016**, 20, 1754. <https://doi.org/10.1021/acs.oprd.6b00233>

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