

Bidentate Ligands

Phosphorus Specialties

Product Application Bulletin

DPPE/DPPB/DPPP: BIDENTATE PHOSPHINE LIGANDS FOR METAL PROMOTED ORGANIC TRANSFORMATIONS

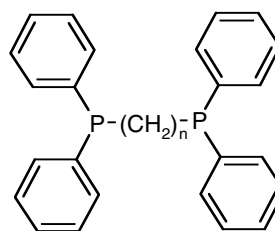
Chemical Name:

1,2-Bis(diphenylphosphino)ethane, DPPE
1,3-Bis(diphenylphosphino)propane, DPPP
1,4-Bis(diphenylphosphino)butane, DPPB

CAS Registry Number:

1663-45-2 (DPPE)
6737-42-4 (DPPP)
7688-25-7 (DPPB)

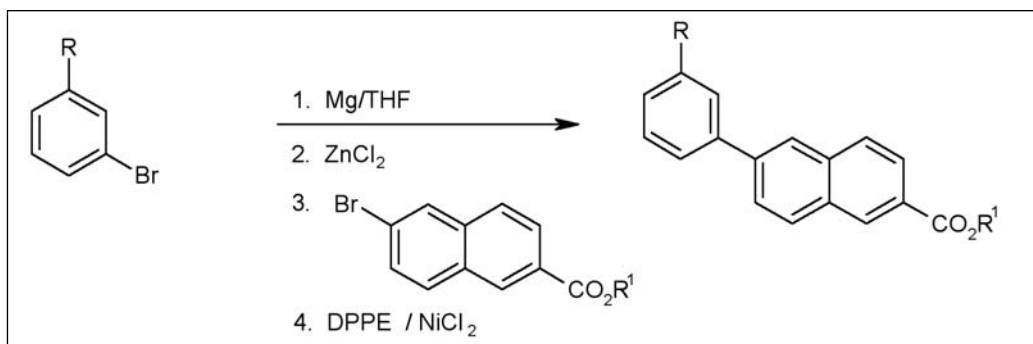
Structure:



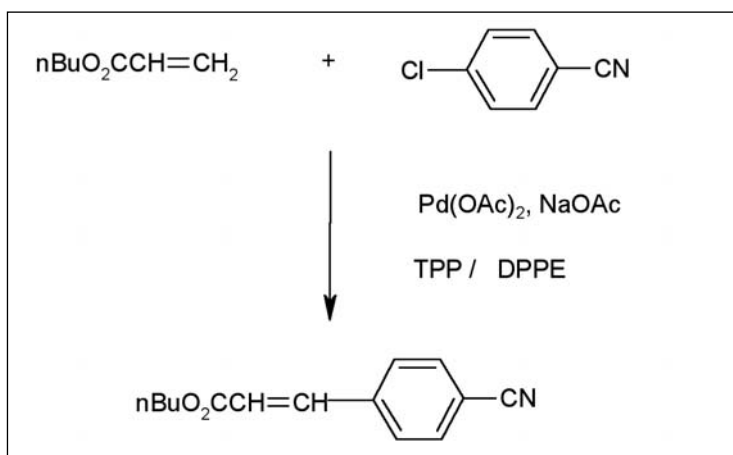
n=2,3,4
(DPPE, DPPP, DPPB)

Examples / Use:

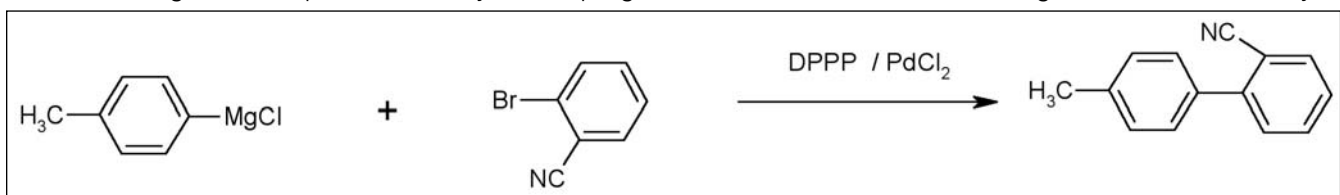
A. DPPE: NiCl₂ promoted coupling of aromatic halides with Grignard reagents to the corresponding biaryl.



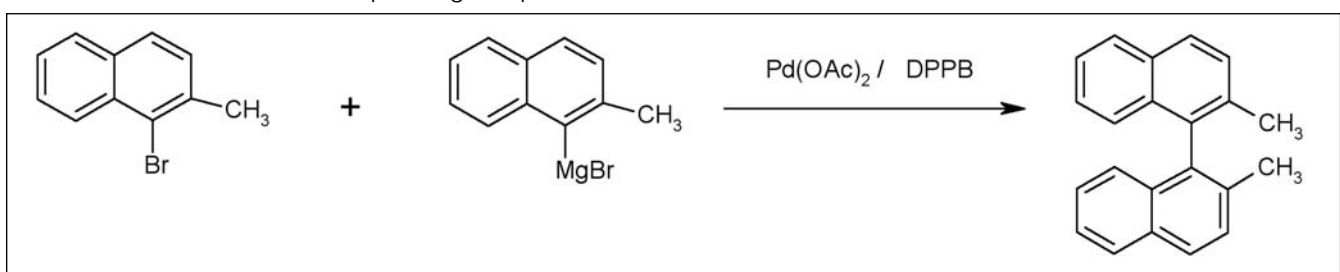
B. DPPE: Ligand for the Palladium catalyzed vinylation of aromatic halo compounds.



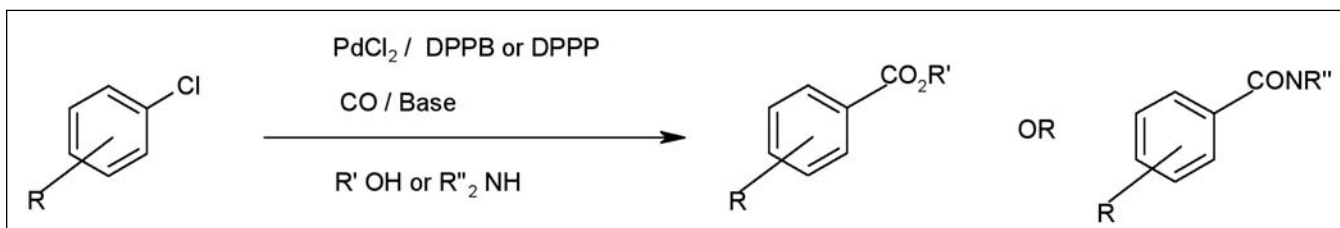
C1. DPPP: Ligand in the palladium catalyzed coupling of haloaromatics with aromatic magnesium halides to biaryls.



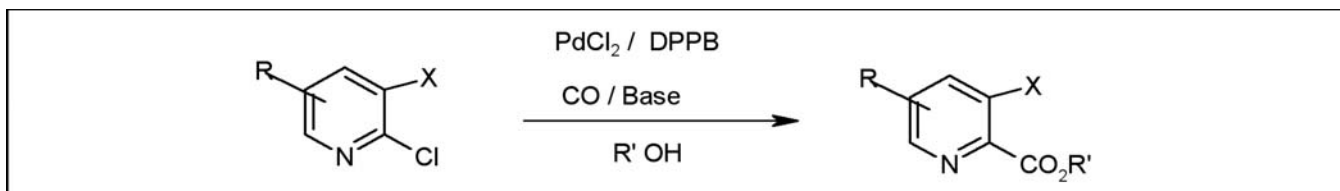
C2. DPPB: Ligand in the palladium promoted coupling of a halogenated naphthalene with a naphthyl magnesium halide to the corresponding binaphthalene.



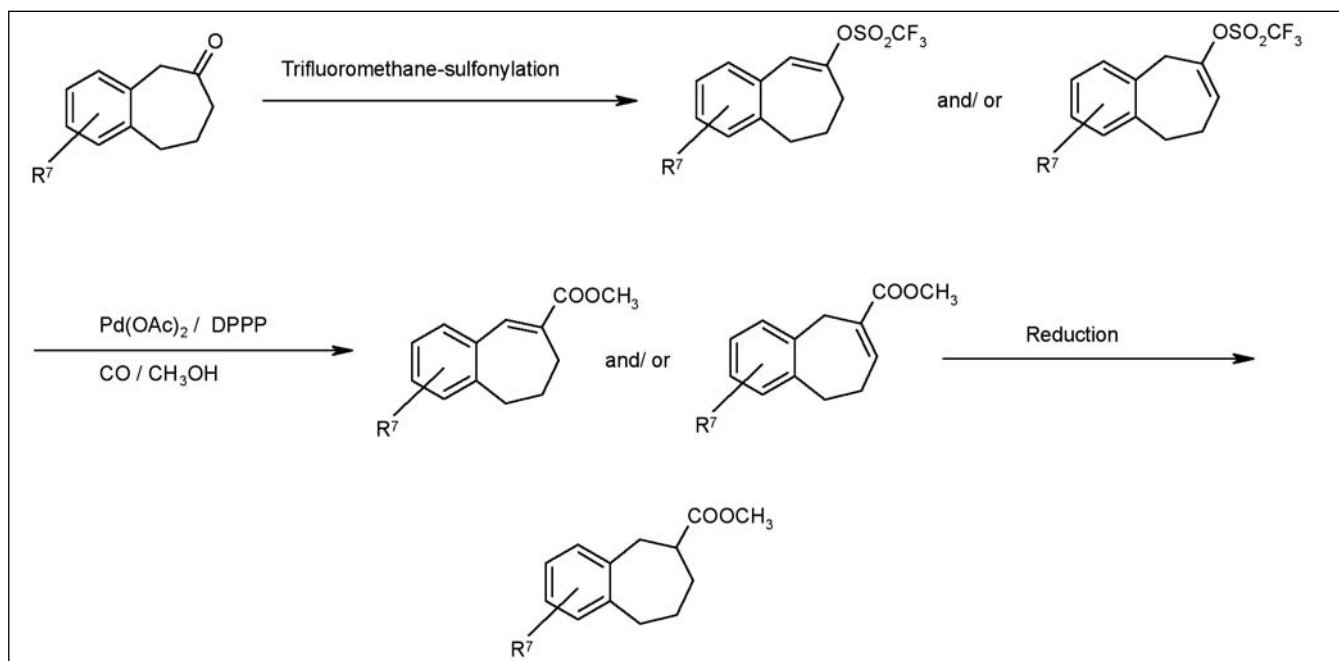
D1. DPPB/DPPP: Ligands in the palladium catalyzed Heck Carbonylation of halo substituted aromatics to carboxylic esters and amides.



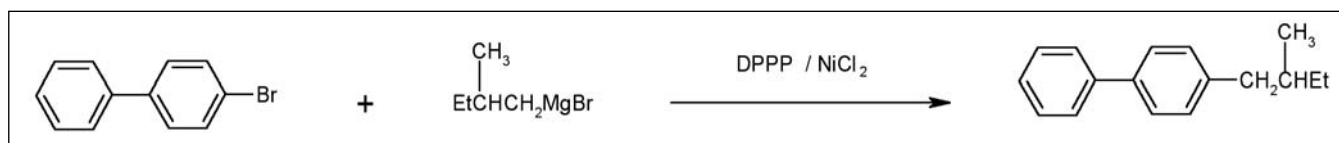
D2. DPPB: Palladium catalyzed Heck Carbonylation of halo substituted pyridines and pyrimidines to the corresponding carboxylic ester.



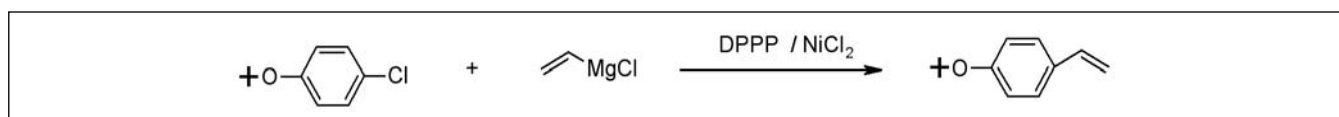
E. DPPP: Ligand for the palladium catalyzed methoxycarbonylation reaction.



F1. DPPP: Ligand for the DPPP NiCl₂ Promoted coupling of aromatic halides and alkyl magnesium halides to the alkyl substituted aromatic.



F2. DPPP: Ligand useful in the DPPP NiCl₂ promoted coupling of aromatic halides with vinyl magnesium halides to the corresponding vinyl substituted aromatic.



Summary:

THERAPEUTIC AREA:

Use not associated with any specific therapeutic area.

FUNCTIONALITY:

Catalyst ligand

References:

- A. US 4,717,720 (1988)
US 4,940,696 (1990)
US 5,098,895 (1992)
US 5,183,889 (1993)
US 5,212,303 (1993)
- B. EP 587050 A1 (1994)
- C1. WO 98/09941 (1998)
WO 98/12174 (1998)
- C2. US 5,510,554 (1996)
- D1. US 5,142,057 (1992)
US 5,296,601 (1994)
US 6,268,527 (2001)
- D2. US 6,169,183 (2001)
US 5,869,667 (1999)
- E. US 6,384,072 (2002)
- F1. PL 136088 B1 (1986)
- F2. JP 01106835 A2 (1989)

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