

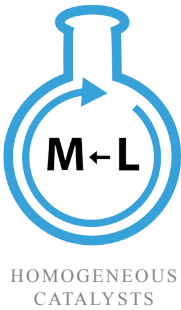
Coupling Applications Table

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Reaction Type		SPhos	XPhos	Pd-62	Pd-100	Pd-101	Pd-106	Pd-118	Pd-132	Pd-136	Pd-150	Pd-152	Pd-162	Pd-158	Pd-113	Pd-116	BPC-301	BPC-302	Pd-134	Pd-126	Pd-133	BPC-304	BPC-306	Pd-146	Pd-117	Pd-149
Heck	Ar-I				■	■	■																			
	Ar-Br				■		■									■										
	Ar-Cl							■			■					■										
Suzuki-Miyaura	Ar-I				■	■	■																			
	Ar-Br, Ar-Cl									■			■													
	Heteroaryl-halide								■					■			■									
Sonogashira	Ar-I					■			■								■									
	Ar-Br, Ar-Cl					■																				
	Cu-free								■																	■
Hiyama	Ar-I	■ ¹	■ ²		■	■										■										
	Ar-Br, Ar-Cl	■ ¹	■ ²			■		■																		
Kumada	Ar-I				■		■																			
	Ar-Br, Ar-Cl	■ ²	■ ²	■			■																			
Negishi	Ar-I				■	■																		■		
	Ar-Br, Ar-Cl, Ar-OTf		■ ²						■							■										■
	Heteroaryl-halide		■ ³														■									
Stille	Ar-I				■																					
	Ar-Br, Ar-Cl		■ ²		■																					
Buchwald - Hartwig	Ar-I				■	■	■																			
	Ar-Br, Ar-Cl											■	■													
	Secondary amines											■	■		■								■			
	Primary amines											■										■				
Carboiodination	Ar-I										■	■														
	Ar-Br										■	■														
a-Arylation	Esters									■					■			■								
	Ketones							■					■	■			■									
	Aldehydes						■										■		■							
	Mono-arylation of methyl ketones/esters																■	■								
	Di-functionalised substrates							■					■													
	Amides									■					■											
	Nitriles														■	■				■						
Carbonylation	Ar-I, Ar-OTf					■	■														■					
	Ar-Br					■	■														■	■				
	Ar-Cl, Ar-OMs																					■				

Catalyst No.	Catalyst Name
1	S-Phos
2	X-Phos
3	Bis(acetonitrile) dichloro palladium(II)
4	Trans dichloro bis(triphenylphosphine)palladium(II)
5	Tetrakis(triphenylphosphine)palladium(0)
6	Dichloro [1,1'-bis(diphenylphosphino)ferrocene] palladium(II) dichloromethane adduct
7	Dichloro [1,1'-bis(di-tert-butylphosphino)]ferrocene palladium(II)
8	Dichlorobis(p-dimethylamino phenylditbutylphosphine)palladium(II)
9	(QPhos)Pd(allyl)Cl
10	Pd(Q-Phos) ₂
11	Pd(crotyl)QPhosCl
12	Crotyl(tri-t-butylphosphine) Palladium (II) chloride
13	Chloro[(1,2,3-h)propenyl](di-t-butyl(4-dimethylaminophenyl)phosphine) Palladium (II)
14	Di-μ-bromobis(tri-t-butylphosphine)dipalladium(I)
15	Bis(tri-tert-butylphosphine)palladium(0)
16	(2-Dicyclohexylphosphino-2',4',6'-triisopropyl-1,1'-biphenyl)[2-(2'-amino-1,1'-biphenyl)]palladium(II) methanesulfonate
17	[(2-Di-tert-butylphosphino-2',4',6'-triisopropyl-1,1'-biphenyl)-2-(2'-amino-1,1'-biphenyl)] palladium(II) methanesulfonate
18	Dichloro (9,9-Dimethyl-4,5-bis(di-phenylphosphino)xanthene) palladium(II)
19	Dichloro[(1,3-bis(diphenylphosphino)propane]palladium(II)
20	Dichloro bis(dicyclohexylphosphino)propane] palladium(II)
21	[(2-Di-cyclohexylphosphino-3,6-dimethoxy-2',4',6'- triisopropyl-1,1'-biphenyl)-2-(2'-amino-1,1'-biphenyl)]palladium(II) methanesulfonate
22	(2-Dicyclohexylphosphino-2',6'-diisopropoxy-1,1'-biphenyl)[2-(2'-amino-1,1'-biphenyl)]palladium(II) methanesulfonate
23	Dichloro [1,1'-bis(diphenylphosphino)ferrocene]palladium(II)
24	Dichlorobis(diphenylphosphinophenyl)ether palladium (II)
25	Bis[di-tert-butyl-(4-dimethyl-aminophenyl)phosphine)]palladium(0)

Notes

- ¹ Use in conjunction with Pd-110
² Use in conjunction with Pd-111
³ Use in conjunction with Pd-94



Johnson Matthey Catalysis and Chiral Technologies provides an extensive range of coupling catalysts for a wide range of reactions as featured in this table.

This application table is supplied as a general reference and includes only a portion of the homogeneous catalysts supplied by Johnson Matthey. Please visit jmcct.com for our full range of products. Our technical staff are available to offer additional advice on recommended catalyst types and reaction conditions. Please email jmcct@matthey.com

Cross Coupling Applications Table Version 1.2014