



# Heterogeneous Catalyst Application Table

	10% Pd/C				5% Pd/C										5% Pd(S)/C	5% Pd/Al <sub>2</sub> O <sub>3</sub>	5% Pd/CaCO <sub>3</sub>	5% Pd(Pb)/CaCO <sub>3</sub>	5% Pd/BaSO <sub>4</sub>	4% Pd, 1% Pt/C	2.5% Pd, 2.5% Pt/C	4.5% Pd, 0.5% Rh/C	1% Pt/C	3% Pt/C	5% Pt/C					10% Pt/C	5% Pt(S)/C	5% Pt/Al <sub>2</sub> O <sub>3</sub>	5% Rh/C	5% Rh/Al <sub>2</sub> O <sub>3</sub>	5% Ru/C	5% Ru/Al <sub>2</sub> O <sub>3</sub>	5% Ru, 0.25% Pd/C																	
	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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40														
	A402028-10	10R39	10R487	10T755	A405028-5	A405032-5	5R39	5R424	A503023-5	A503032-5	5T761	5R452	5R487	A102023-5	5R487 Powder	A103023-5	A302099-5	A303060-5	A305060-5	A308053-5	E101023-4/1	5R122	F101023-4.5/0.5	1R163	B103032-3	B103032-5	5R18	5R128M	B501032-5	B501018-5	10R128M	B106032-5	B312099-5	C101023-5	5R594	C301099-5	D101002-5	5R619	D302011-5	5R611														
Hydrogenation of Acetylenes to Olefins																■		■	■	■																																		
Hydrogenation of Vinyl Acetylenes to Dienes																■		■	■	■																																		
Hydrogenation of Acetylenes to Alkanes	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Olefins to Alkanes	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Diolefins to Monoolefins																																																						
Hydrogenation of Aromatics to Cycloalkanes		■	■	■					■	■	■																																											
Hydrogenation of Aromatics to Partially Hydrogenated Aromatics			■	■					■	■	■																																											
Hydrogenation of Phenols to Cyclohexanones		■	■	■				■	■	■	■	■	■	■																																								
Hydrogenation of Phenols to Cyclohexanols														■	■																																							
Hydrogenation of Benzoic Acids to Cyclohexane Carboxylic Acids			■	■										■	■																																							
Hydrogenation of Anilines to Cyclohexyl Amines																																																						
Hydrogenation of Pyridines to Piperidines		■	■	■				■	■	■	■	■	■	■																																								
Hydrogenation of Quinolines		■	■	■				■	■	■	■	■	■	■																																								
Hydrogenation of Pyrroles to Pyrrolidines									■	■	■																																											
Hydrogenation of Indoles														■	■																																							
Hydrogenation of Furans to Tetrahydrofurans		■	■	■				■	■	■	■	■	■	■																																								
Hydrogenation of Aromatic Aldehydes to Alcohols	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Haloaromatic Aldehydes to Haloaromatic Alcohols																																																						
Hydrogenation of Aromatic Aldehydes to Hydrocarbons	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Aliphatic Aldehydes to Alcohols																																																						
Hydrogenation of a-b-Unsaturated Aldehydes to Saturated Alcohols																																																						
Hydrogenation of a-b-Unsaturated Aldehydes to Unsaturated Alcohols																																																						
Hydrogenation of Aromatic Ketones to Alcohols	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Aromatic Ketones to Hydrocarbons	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Aliphatic Ketones to Alcohols																																																						
Hydrogenation of Lactones																																																						
Hydrogenation of Esters																																																						
Hydrogenation of Carboxylic Acids																																																						
Hydrogenation of Nitroaromatic Compounds to Amines	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Halonitroaromatic Compounds to Aromatic Haloamines																																																						
Hydrogenation of Nitroaromatic Compounds to Aromatic Hydroxylamines																																																						
Hydrogenation of Nitroaromatic Compounds to Aminophenols																																																						
Hydrogenation of Nitroaromatic Compounds to Azo Compounds	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Nitroaromatic Compounds to Benzidines	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Halonitroaromatic Compounds to Halobenzidines																																																						
Hydrogenation of Nitrosoaromatic Compounds to Amines			■	■				■	■	■	■	■	■	■																																								
Hydrogenation of Aliphatic Nitro Compounds to Amines	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																								
Hydrogenation of Aliphatic Nitroso Compounds to Amines			■	■				■	■	■	■	■	■	■																																								

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	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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40									
	A402028-10	10R39	10R487	10T755	A405028-5	A405032-5	5R39	5R424	A503023-5	A503032-5	5T761	5R452	5R487	A102023-5	5R487 Powder	A103023-5	A302099-5	A303060-5	A305060-5	A308053-5	E101023-4/1	5R122	F101023-4,5/0,5	1R163	B103032-3	B103032-5	5R18	5R128M	B501032-5	B501018-5	10R128M	B106032-5	B312099-5	C101023-5	5R594	C301099-5	D101002-5	5R619	D302011-5	5R611									
Hydrogenation of Aliphatic Nitriles to Primary Amines		■	■	■			■	■	■	■	■	■	■	■								■	■		■	■	■	■	■	■				■	■														
Hydrogenation of Aliphatic Nitriles to Secondary Amines		■	■	■			■	■	■	■	■	■	■	■									■	■			■	■	■	■	■																		
Hydrogenation of Aliphatic Nitriles to Tertiary Amines									■	■	■	■	■	■									■	■		■	■	■	■	■	■																		
Hydrogenation of Aromatic Nitriles to Primary Amines		■	■	■			■	■	■	■	■	■	■	■									■	■		■	■	■	■	■	■																		
Hydrogenation of Aromatic Nitriles to Secondary Amines									■	■	■	■	■	■												■	■	■	■	■	■																		
Hydrogenation of Aromatic Nitriles to Aldehydes		■	■	■			■	■	■	■	■	■	■	■																																			
Reductive Alkylation of Anilines		■	■	■			■	■	■	■	■	■	■	■									■			■	■	■	■	■	■																		
Reductive Alkylation of Haloanilines																■									■	■	■	■	■	■	■																		
Reductive Alkylation of Halonitroaromatics																■									■	■	■	■	■	■	■																		
Reductive Amination of Aliphatic Alcohols	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Reductive Amination of Aliphatic Ketones	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Reductive Amination of Phenols	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Reductive Amination of Aromatic Aldehydes and Ketones	■		■	■	■	■			■	■	■	■	■	■																																			
Hydrogenation of Imines to Amines		■	■	■			■	■	■	■	■	■	■	■								■	■		■	■	■	■	■	■	■																		
Hydrogenation of Oximes to Primary Amines		■	■	■			■	■	■	■	■	■	■	■									■	■		■	■	■	■	■	■																		
Hydrogenation of Oximes to Secondary Amines		■	■	■					■	■	■	■	■	■										■	■		■	■	■	■	■																		
Hydrogenation of Oximes to Hydroxylamines																																																	
Hydrodehalogenation of Aliphatic and Aromatic Halocompounds	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■		■																													
Hydrogenation of Acid Chlorides to Aldehydes (Rosenmund Reduction)			■	■											■	■				■																													
Hydrogenolysis of N-Benzyl Groups (N-Debenzylation)	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Hydrogenolysis of O-Benzyl Groups (O-Debenzylation)	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Hydrogenolysis of Carbobenzyloxy Groups	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Hydrogenolysis of Cyclopropanes	■	■	■	■	■	■	■	■	■	■	■	■	■	■									■			■	■	■	■	■	■																		
Hydrogenolysis of Oxiranes	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■		■									■	■																			
Hydrogenolysis of Furans	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Manufacture of Hydrogen Peroxide																																																	
Manufacture of Hydroxylamine									■	■	■		■	■								■	■																										
Manufacture of Triazoles																										■	■	■	■	■	■	■																	
Hydrogenation of Fatty Acids		■	■	■			■	■	■	■	■	■	■	■																																			
Disproportionation of Rosins	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
Isomerization of Olefins	■	■	■	■	■	■	■	■	■	■	■	■	■	■																																			
C - C Coupling Reactions (Heck and Suzuki Reactions)	■				■	■			■	■	■																																						
Dehydrogenation Alkanes to Olefins			■	■					■	■	■	■	■	■	■											■	■	■	■	■																			
Dehydrogenation of Cycloalkanes to Aromatics			■	■					■	■	■	■	■	■	■											■	■	■	■	■																			
Dehydrogenation of Cyclohexanols to Cyclohexanones			■	■					■	■	■	■	■	■	■											■	■																						
Selective Oxidation of Aliphatic Alcohols to Aldehydes																																																	
Selective Oxidation of Aliphatic Alcohols to Ketones																																																	
Selective Oxidation of Aliphatic Alcohols to Acids																																																	
Selective Oxidation of Aromatic Alcohols to Aldehydes			■	■																																													
Selective Oxidation of Aromatic Alcohols to Ketones			■	■																																													
Selective Oxidation of Aromatic Alcohols to Acids			■	■																																													