

Table 15.2. A comparison of turnover frequencies for the homogeneous hydrogenation of different alkenes catalyzed by rhodium, ruthenium, and iridium catalysts.

Catalyst precursor	Temperature (°C)	Solvent	Turnover frequency (h ⁻¹)		
			1-Hexene	Cyclohexene	Tetramethylethylene
[Ir(COD)(PCy ₃)(Py)] ⁺	0	CH ₂ Cl ₂	6,400	4,500	4,000
[Ir(COD)(PMePh ₂) ₂] ⁺	0	CH ₂ Cl ₂	5,100	3,800	50
[Ir(COD)(PMePh ₂) ₂] ⁺	0	CH ₂ C(O)CH ₃	10	0	0
[Rh(COD)(PPh ₃) ₂] ⁺	25	CH ₂ Cl ₂	4,000	10	0
[Ru(H)Cl(PPh ₃) ₃]	25	C ₆ H ₆	9,000	7	0
[RhCl(PPh ₃) ₃]	25	C ₆ H ₆ /EtOH	650	700	0
[RhCl(PPh ₃) ₃]	0	C ₆ H ₆ /EtOH	60	70	0

