

Thermodynamic Data for Possible Etch Reactions

from Pearton et al., Mat. Res. Soc. Symp. Proc. Vol. 614, 2000

Fe(s) + 2 Cl(g)	↔	FeCl ₂ (s)	$\Delta G^\circ_r = -512.9$ (kJ/mol)
Fe(s) + Cl ₂ (g)	↔	FeCl ₂ (s)	$\Delta G^\circ_r = -302.3$ (kJ/mol)
Fe(s) + 5 CO(g)	↔	Fe(CO) ₅ (l)	$\Delta G^\circ_r = -11.2$ (kJ/mol)
	↔	Fe(CO) ₅ (g)	$\Delta G^\circ_r = -3.4$ (kJ/mol)
Fe(s) + 5 CO ₂ (g)	↔	Fe(CO) ₅ (l) + 2.5 O ₂ (g)	$\Delta G^\circ_r = -1274.9$ (kJ/mol)
	↔	Fe(CO) ₅ (g) + 2.5 O ₂ (g)	$\Delta G^\circ_r = -1282.7$ (kJ/mol)

Ni(s) + 2 Cl(g)	↔	NiCl ₂ (s)	$\Delta G^\circ_r = -359.4$ (kJ/mol)
Ni(s) + Cl ₂ (g)	↔	NiCl ₂ (s)	$\Delta G^\circ_r = -258.8$ (kJ/mol)
Ni(s) + 4 CO(g)	↔	Ni(CO) ₄ (l)	$\Delta G^\circ_r = -40.3$ (kJ/mol)
	↔	Ni(CO) ₄ (g)	$\Delta G^\circ_r = -38.7$ (kJ/mol)
Ni(s) + 4 CO ₂ (g)	↔	Ni(CO) ₄ (l) + 2.5 O ₂ (g)	$\Delta G^\circ_r = -988.6$ (kJ/mol)
	↔	Ni(CO) ₄ (g) + 2.5 O ₂ (g)	$\Delta G^\circ_r = -990.2$ (kJ/mol)

Co(s) + 2 Cl(g)	↔	CoCl ₂ (s)	$\Delta G^\circ_r = -380.3$ (kJ/mol)
Co(s) + Cl ₂ (g)	↔	CoCl ₂ (s)	$\Delta G^\circ_r = -269.6$ (kJ/mol)
Co(s) + 4 CO(g)	↔	Co(CO) ₄ (g)	$\Delta G^\circ_r = -13.6$ (kJ/mol)
Co(s) + 4 CO ₂ (g)	↔	Co(CO) ₄ (l) + 2 O ₂ (g)	$\Delta G^\circ_r = -1042.5$ (kJ/mol)