

STANDARD REDUCTION POTENTIALS OF HALF-CELLS

Ionic concentrations are at 1M in water at 25°C

Oxidizing Agents	Reducing Agents	E° (Volts)
$F_{2(g)} + 2e^- \rightleftharpoons 2F^-$		+2.87
$S_2O_8^{2-} + 2e^- \rightleftharpoons 2SO_4^{2-}$		+2.01
$H_2O_2 + 2H^+ + 2e^- \rightleftharpoons 2H_2O$		+1.78
$MnO_4^- + 8H^+ + 5e^- \rightleftharpoons Mn^{2+} + 4H_2O$		+1.15
$Au^{3+} + 3e^- \rightleftharpoons Au_{(s)}$		+1.50
$BrO_3^- + 6H^+ + 5e^- \rightleftharpoons 1/2 Br_{2(l)} + 3H_2O$		+1.48
$ClO_4^- + 8H^+ + 8e^- \rightleftharpoons Cl^- + 4H_2O$		+1.39
$Cl_2 + 2e^- \rightleftharpoons 2Cl^-$		+1.36
$Cr_2O_7^{2-} + 14H^+ + 6e^- \rightleftharpoons 2Cr^{3+} + 7H_2O$		+1.23
$1/2 O_{2(g)} + 2H^+ + 2e^- \rightleftharpoons H_2O$		+1.23
$MnO_{2(s)} + 4H^+ + 2e^- \rightleftharpoons Mn^{2+} + 2H_2O$		+1.22
$IO_3^- + 6H^+ + 5e^- \rightleftharpoons 1/2 I_{2(s)} + 3H_2O$		+1.20
$Br_{2(l)} + 2e^- \rightleftharpoons 2Br^-$		+1.09
$AuCl_4^- + 3e^- \rightleftharpoons Au_{(s)} + 4Cl^-$		+1.00
$NO_3^- + 4H^+ + 3e^- \rightleftharpoons NO_{(g)} + 2H_2O$		+0.96
$Hg^{2+} + 2e^- \rightleftharpoons Hg_{(l)}$		+0.85
$1/2 O_{2(g)} + 2H^+(10^{-7} M) + 2e^- \rightleftharpoons H_2O$		+0.82
$2NO_3^- + 4H^+ + 2e^- \rightleftharpoons N_2O_4 + 2H_2O$		+0.80
$Ag^+ + e^- \rightleftharpoons Ag_{(s)}$		+0.80
$1/2 Hg_2^{2+} + e^- \rightleftharpoons Hg_{(l)}$		+0.80
$Fe^{3+} + e^- \rightleftharpoons Fe^{2+}$		+0.77
$O_{2(g)} + 2H^+ + 2e^- \rightleftharpoons H_2O_2$		+0.70
$MnO_4^- + 2H_2O + 3e^- \rightleftharpoons MnO_{2(s)} + 4OH^-$		+0.60
$I_{2(s)} + 2e^- \rightleftharpoons 2I^-$		+0.54
$Cu^+ + e^- \rightleftharpoons Cu_{(s)}$		+0.52
$H_2SO_3 + 4H^+ + 4e^- \rightleftharpoons S_{(s)} + 3H_2O$		+0.45
$Cu^{2+} + 2e^- \rightleftharpoons Cu_{(s)}$		+0.34
$SO_4^{2-} + 4H^+ + 2e^- \rightleftharpoons H_2SO_3 + H_2O$		+0.17
$Cu^{2+} + e^- \rightleftharpoons Cu^+$		+0.15
$Sn^{4+} + 2e^- \rightleftharpoons Sn^{2+}$		+0.15
$S_{(s)} + 2H^+ + 2e^- \rightleftharpoons H_2S_{(g)}$		+0.14
$2H^+ + 2e^- \rightleftharpoons H_{2(g)}$		+0.00
$Pb^{2+} + 2e^- \rightleftharpoons Pb_{(s)}$		-0.13
$Sn^{2+} + 2e^- \rightleftharpoons Sn_{(s)}$		-0.14
$Ni^{2+} + 2e^- \rightleftharpoons Ni_{(s)}$		-0.26
$H_3PO_4 + 2H^+ + 2e^- \rightleftharpoons H_3PO_3 + H_2O$		-0.28
$Co^{2+} + 2e^- \rightleftharpoons Co_{(s)}$		-0.28
$Se_{(s)} + 2H^+ + 2e^- \rightleftharpoons H_2Se$		-0.40
$Cr^{3+} + e^- \rightleftharpoons Cr^{2+}$		-0.41
$2H_2O + 2e^- \rightleftharpoons H_2 + 2OH^-(10^{-7} M)$		-0.41
$Fe^{2+} + 2e^- \rightleftharpoons Fe_{(s)}$		-0.45
$Ag_2S_{(s)} + 2e^- \rightleftharpoons 2Ag_{(s)} + S^{2-}$		-0.69
$Cr^{3+} + 3e^- \rightleftharpoons Cr_{(s)}$		-0.74
$Zn^{2+} + 2e^- \rightleftharpoons Zn_{(s)}$		-0.76
$Te_{(s)} + 2H^+ + 2e^- \rightleftharpoons H_2Te$		-0.79
$2H_2O + 2e^- \rightleftharpoons H_{2(g)} + 2OH^-$		-0.83
$Mn^{2+} + 2e^- \rightleftharpoons Mn_{(s)}$		-1.19
$Al^{3+} + 3e^- \rightleftharpoons Al_{(s)}$		-1.66
$Mg^{2+} + 2e^- \rightleftharpoons Mg_{(s)}$		-2.37
$Na^+ + e^- \rightleftharpoons Na_{(s)}$		-2.71
$Ca^{2+} + 2e^- \rightleftharpoons Ca_{(s)}$		-2.87
$Sr^{2+} + 2e^- \rightleftharpoons Sr_{(s)}$		-2.89
$Ba^{2+} + 2e^- \rightleftharpoons Ba_{(s)}$		-2.91
$K^+ + e^- \rightleftharpoons K_{(s)}$		-2.93
$Rb^+ + e^- \rightleftharpoons Rb_{(s)}$		-2.98
$Cs^+ + e^- \rightleftharpoons Cs_{(s)}$		-3.03
$Li^+ + e^- \rightleftharpoons Li_{(s)}$		-3.04

Overpotential
EffectOverpotential
Effect

