

Periodic table of elements, celebrating 150 years in 2019

KEY

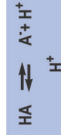
- Atomic Number
- Atomic Weight (2)
- Oxidation States (Bold most stable)
- Symbol
- Electron Configuration
- Name
- Density at 300 K (3) (g/cm³)
- Melting Point, K
- Boiling Point, K

30 65.39
1180 692.73
7.13 Zn
[Ar]3d¹⁰4s²
Zinc

Black symbol — solid.
Red symbol — gas.
Blue symbol — liquid.
Outline symbol — synthetically prepared.
Based upon carbon-12. () indicates most stable or best known isotope.
Entries marked with daggers refer to the gaseous state at 273 K and 1 atm and are given in units of g/l.

1 1.00794 20.28 13.81 0.0899 1s ¹ Hydrogen	2 4.00260 4.216 0.95 0.1785 1s ² Helium	3 6.941 1615 453.7 0.53 1s ² 2s ¹ Lithium	4 9.01218 3243 1560 1.85 1s ² 2s ² Beryllium	5 10.811 4275 2365 2.34 1s ² 2s ² p ¹ Boron	6 12.011 5100* 3825* 2.26 1s ² 2s ² p ² Carbon	7 14.0067 77.344 63.15 1.251 1s ² 2s ² p ³ Nitrogen	8 15.9994 90.188 54.8 1.429 1s ² 2s ² p ⁴ Oxygen	9 18.99840 85.0 53.5 1.696 1s ² 2s ² p ⁵ Fluorine	10 20.1797 27.10 24.55 0.900 1s ² 2s ² p ⁶ Neon	11 22.98977 1156 371.0 0.97 [Ne]3s ¹ Sodium	12 24.305 1380 922 1.74 [Ne]3s ² Magnesium	13 26.98154 2740 933.5 2.70 [Ne]3s ² p ¹ Aluminum	14 28.0855 2630 1683 2.33 [Ne]3s ² p ² Silicon	15 30.97376 553 317.3 1.82 [Ne]3s ² p ³ Phosphorus	16 32.066 717.82 392.2 2.07 [Ne]3s ² p ⁴ Sulfur	17 35.4527 239.18 172.17 3.214 [Ne]3s ² p ⁵ Chlorine	18 39.948 87.45 83.95 1.784 [Ne]3s ² p ⁶ Argon	19 39.0983 1033 336.8 0.86 [Ar]4s ¹ Potassium	20 40.078 1757 1112 1.55 [Ar]4s ² Calcium	21 44.9559 3109 1814 2.99 [Ar]3d ¹ 4s ² Scandium	22 47.87 3560 1935 4.54 [Ar]3d ² 4s ² Titanium	23 50.9415 3650 2163 6.11 [Ar]3d ³ 4s ² Vanadium	24 51.996 2945 2130 7.19 [Ar]3d ⁴ 4s ¹ Chromium	25 54.9380 2235 1518 7.44 [Ar]3d ⁵ 4s ¹ Manganese	26 55.845 3023 1808 7.874 [Ar]3d ⁶ 4s ² Iron	27 58.9332 3143 1768 8.90 [Ar]3d ⁷ 4s ² Cobalt	28 58.9334 3005 1726 8.90 [Ar]3d ⁸ 4s ² Nickel	29 63.546 2840 1356.6 8.96 [Ar]3d ⁹ 4s ¹ Copper	30 65.39 1180 692.73 7.13 [Ar]3d ¹⁰ 4s ² Zinc	31 69.723 2478 302.92 5.91 [Ar]3d ¹⁰ 4s ² p ¹ Gallium	32 72.61 3107 1211.5 5.32 [Ar]3d ¹⁰ 4s ² p ² Germanium	33 74.9216 876 1090 5.78 [Ar]3d ¹⁰ 4s ² p ³ Arsenic	34 78.96 958 494 4.79 [Ar]3d ¹⁰ 4s ² p ⁴ Selenium	35 79.904 331.85 265.95 3.12 [Ar]3d ¹⁰ 4s ² p ⁵ Bromine	36 83.80 120.85 116 3.75 [Ar]3d ¹⁰ 4s ² p ⁶ Krypton	37 85.4678 961 312.63 1.532 [Kr]5s ¹ Rubidium	38 87.62 1655 1042 2.54 [Kr]5s ² Strontium	39 88.9059 3611 1795 4.47 [Kr]4d ¹ 5s ² Yttrium	40 91.224 4682 2128 6.51 [Kr]4d ² 5s ² Zirconium	41 92.9064 5015 2742 8.57 [Kr]4d ³ 5s ¹ Niobium	42 95.94 4875 2504 16.65 [Kr]4d ⁴ 5s ¹ Molybdenum	43 98 4425 2610 11.5 [Kr]4d ⁵ 5s ¹ Technetium	44 101.07 2236 1825 12.01 [Kr]4d ⁶ 5s ¹ Ruthenium	45 102.9055 3970 2236 12.41 [Kr]4d ⁷ 5s ¹ Rhodium	46 106.42 3240 1235.08 12.0 [Kr]4d ⁸ 5s ¹ Palladium	47 107.868 2436 1040 8.65 [Kr]4d ⁹ 5s ¹ Silver	48 112.41 1040 594.26 7.31 [Kr]4d ¹⁰ 5s ² Cadmium	49 114.82 2350 429.78 7.31 [Kr]4d ¹⁰ 5s ² p ¹ Indium	50 118.710 2876 505.12 7.31 [Kr]4d ¹⁰ 5s ² p ² Tin	51 121.760 1860 903.91 6.69 [Kr]4d ¹⁰ 5s ² p ³ Antimony	52 127.60 1261 722.72 6.24 [Kr]4d ¹⁰ 5s ² p ⁴ Tellurium	53 126.9045 457.5 386.7 4.93 [Kr]4d ¹⁰ 5s ² p ⁵ Iodine	54 131.29 165.1 161.39 5.90 [Kr]4d ¹⁰ 5s ² p ⁶ Xenon	55 132.9054 944 301.54 1.87 [Xe]6s ¹ Cesium	56 137.33 2078 1002 3.59 [Xe]6s ² Barium	57 178.49 4875 2504 16.65 [Xe]4f ¹ 5d ¹ 6s ² Lanthanum	58 140.12 3715 1071 6.77 [Xe]4f ² 5d ¹ 6s ² Cerium	59 140.9077 3785 1204 6.77 [Xe]4f ³ 5d ¹ 6s ² Praseodymium	60 144.24 3347 1294 7.01 [Xe]4f ⁴ 5d ¹ 6s ² Neodymium	61 145 3273 1315 7.22 [Xe]4f ⁵ 5d ¹ 6s ² Promethium	62 150.36 2067 1347 7.52 [Xe]4f ⁶ 5d ¹ 6s ² Samarium	63 151.964 1800 1095 5.24 [Xe]4f ⁷ 5d ¹ 6s ² Europium	64 157.25 3545 1585 7.90 [Xe]4f ⁷ 5d ¹ 6s ² Gadolinium	65 158.9253 3500 1629 8.23 [Xe]4f ⁷ 5d ¹ 6s ² Terbium	66 162.50 2840 1685 8.55 [Xe]4f ⁹ 5d ¹ 6s ² Dysprosium	67 164.9303 2968 1747 8.80 [Xe]4f ¹⁰ 5d ¹ 6s ² Holmium	68 167.26 3140 1802 9.07 [Xe]4f ¹¹ 5d ¹ 6s ² Erbium	69 168.9342 2223 1818 9.32 [Xe]4f ¹² 5d ¹ 6s ² Thulium	70 173.04 1469 1092 6.97 [Xe]4f ¹³ 5d ¹ 6s ² Ytterbium	71 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	72 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	73 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	74 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	75 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	76 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	77 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	78 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	79 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	80 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	81 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	82 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	83 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	84 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	85 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	86 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	87 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	88 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	89 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	90 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	91 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	92 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	93 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	94 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	95 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	96 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	97 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	98 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	99 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	100 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	101 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	102 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	103 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	104 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	105 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	106 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	107 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	108 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	109 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	110 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	111 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	112 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	113 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	114 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	115 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	116 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	117 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	118 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	119 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	120 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	121 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	122 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	123 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	124 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	125 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	126 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	127 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	128 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	129 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	130 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	131 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	132 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	133 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	134 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	135 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	136 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	137 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	138 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	139 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	140 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	141 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	142 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	143 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	144 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	145 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	146 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	147 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	148 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	149 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	150 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	151 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	152 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	153 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	154 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	155 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	156 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	157 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	158 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	159 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	160 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	161 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	162 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	163 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	164 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	165 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	166 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	167 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	168 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹ 6s ² Ytterbium	169 174.967 3668 1936 9.84 [Xe]4f ¹⁴ 5d ¹ 6s ² Lutetium	170 175.04 1469 1092 6.97 [Xe]4f ¹⁴ 5d ¹
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ACID-BASE EQUILIBRIUM



HA	A ⁻	pK _a
HI	I ⁻	-11
HBr	Br ⁻	-9
HClO ₄	ClO ₄ ⁻	-8
HCl	Cl ⁻	-7
H ₂ SeO ₄	HSeO ₄ ⁻	-3
H ₂ SO ₄	HSO ₄ ⁻	-3
HMnO ₄	MnO ₄ ⁻	-2,3
HNO ₃	H ₂ O	-1,74
HNO ₂	NO ₂ ⁻	-1,64
H ₂ CrO ₄	HCrO ₄ ⁻	-1
HClO ₃	ClO ₃ ⁻	-1
Fe ₃ C-COOH	Fe ₃ C-COO ⁻	0,23
Cl ₃ C-COOH	Cl ₃ C-COO ⁻	0,7
HIo ₃	IO ₃ ⁻	0,8
H ₄ P ₂ O ₇	H ₃ P ₂ O ₇ ⁻	0,85
H ₃ PO ₂	H ₂ PO ₂ ⁻	1,1
HOOC-COOH	HOOC-COO ⁻	1,2
Cl ₂ CH-COOH	Cl ₂ CH-COO ⁻	1,25
H ₂ SO ₃	HSO ₃ ⁻	1,8
HSO ₄ ⁻	SO ₄ ²⁻	1,92
H ₂ PO ₃	H ₂ PO ₃ ⁻	2,0
HClO ₂	ClO ₂ ⁻	2,0
H ₂ PO ₄	H ₂ PO ₄ ⁻	2,1
H ₂ AsO ₄	H ₂ AsO ₄ ⁻	2,2
ClCH ₂ -COOH	ClCH ₂ -COO ⁻	2,9
H ₂ Te	HTe ⁻	3
[Fe(H ₂ O) ₆] ³⁺	[Fe(H ₂ O) ₅ OH] ²⁺	3,1
HNO ₂	NO ₂ ⁻	3,4
HF	F ⁻	3,45
H-COOH	H-COO ⁻	3,8
HOON	NO ⁻	3,9
H ₂ Se	HSe ⁻	4
C ₆ H ₅ -COOH	C ₆ H ₅ -COO ⁻	4,2
HOOC-COO ⁻	OOC-COO ²⁻	4,3
HOCl	ClO ⁻	4,53
C ₆ H ₅ NH ₃ ⁺	C ₆ H ₅ NH ₂	4,6
HN ₃	N ₃ ⁻	4,7
H ₃ C-COOH	H ₃ C-COO ⁻	4,75
H ₃ C-CH ₂ -COOH	H ₃ C-CH ₂ -COO ⁻	4,9
[Al(H ₂ O) ₆] ³⁺	[Al(H ₂ O) ₅ OH] ²⁺	5
C ₆ H ₅ NH ⁺	C ₆ H ₅ N	5,25
NH ₃ OH ⁺	NH ₂ OH	6
H ₂ PO ₃ ⁻	HPO ₃ ²⁻	6,2
H ₂ CO ₃	HCO ₃ ⁻	6,4
HCOC ₄ ⁻	CO ₄ ²⁻	6,5
H ₂ P ₂ O ₇ ⁻	HP ₂ O ₇ ²⁻	6,6
H ₂ AsO ₄ ⁻	HASO ₄ ²⁻	6,77
H ₂ S	HS ⁻	7
H ₂ PO ₄ ⁻	HPO ₄ ²⁻	7,2
HSO ₃ ⁻	SO ₃ ²⁻	7,2
HBO ₃	BO ₃ ⁻	8,7
H ₂ BO ₃	H ₂ BO ₃ ⁻	9,14
H ₂ AsO ₃	H ₂ AsO ₃ ⁻	9,23
NH ₄ ⁺	NH ₃	9,25
HCN	CN ⁻	9,31
HP ₂ O ₇ ³⁻	P ₂ O ₇ ⁴⁻	9,6
H ₂ SO ₃	HSO ₃ ⁻	9,7
C ₆ H ₅ -OH	C ₆ H ₅ -O ⁻	9,89
HCO ₃ ⁻	CO ₃ ²⁻	10,4
HOI	IO ⁻	10,64
CH ₃ NH ₃ ⁺	CH ₃ NH ₂	10,7
HAsO ₄ ²⁻	AsO ₄ ³⁻	11,6
H ₂ O ₂	HO ₂ ⁻	11,6
HS ⁻	S ²⁻	11,96
HP ₂ O ₄ ²⁻	PO ₄ ³⁻	12,67
CH ₃ -CHO	OHC-CH ₂ ⁻	14,5
CH ₃ OH	CH ₃ O ⁻	15,5
H ₂ O	OH ⁻	15,7
CH ₃ -CH ₂ -OH	CH ₃ -CH ₂ -O ⁻	15,9
HO ₂ ⁻	O ₂ ²⁻	25
C ₃ H ₃	C ₃ H ₂ ⁻	25
PH ₃	PH ₂ ⁻	28
OH ⁻	O ²⁻	29
NH ₃	NH ₂ ⁻	35

REDOX EQUILIBRIUM



RED	e ⁻	OX	E°
Li	1	Li ⁺	-3,040
K	1	K ⁺	-2,931
Ba	2	Ba ²⁺	-2,912
Sr	2	Sr ²⁺	-2,880
Ca	2	Ca ²⁺	-2,868
Na	1	Na ⁺	-2,710
Mg	2	Mg ²⁺	-2,372
Be	2	Be ²⁺	-1,847
Al	3	Al ³⁺	-1,662
Mn	2	Mn ²⁺	-1,185
V	2	V ²⁺	-1,175
Cr	2	Cr ²⁺	-0,913
H ₂ + 2OH ⁻	2	2H ₂ O	-0,829
Zn	2	Zn ²⁺	-0,763
Cr	3	Cr ³⁺	-0,744
S ²⁻	2	S	-0,476
Fe	2	Fe ²⁺	-0,447
Cr ²⁺	1	Cr ³⁺	-0,407
Cl ⁻ + 4H ₂ O	8	ClO ₄ ⁻ + 8H ⁺	-0,403
Co	2	Co ²⁺	-0,280
Ni	2	Ni ²⁺	-0,257
V ²⁺	1	V ³⁺	-0,255
Ag ⁺ + I ⁻	1	AgI	-0,152
Sn	2	Sn ²⁺	-0,137
Pb	2	Pb ²⁺	-0,126
H ₂	2	2H ⁺	0,000
2S ₂ O ₃ ²⁻	2	SO ₄ ²⁻	0,080
H ₂ S	2	S + 2H ⁺	0,142
IO ⁻ + 4OH ⁻	4	IO ₃ ⁻ + 2H ₂ O	0,150
Sn ²⁺	2	Sn ⁴⁺	0,151
Cu ⁺	1	Cu ²⁺	0,153
H ₂ SO ₃ + H ₂ O	2	SO ₄ ²⁻ + 4H ⁺	0,172
Ag + Cl ⁻	1	AgCl	0,222
2Hg + 2Cl ⁻	2	Hg ₂ Cl ₂	0,268
U ⁴⁺ + 2H ₂ O	2	UO ₂ ²⁺ + 4H ⁺	0,327
Cu	2	Cu ²⁺	0,345
[Fe(CN) ₆] ⁴⁻	1	[Fe(CN) ₆] ³⁻	0,358
S + 3H ₂ O	4	H ₂ SO ₃ + 4H ⁺	0,449
Cu	1	Cu ⁺	0,521
2I ₂	2	I ₂	0,535
H ₂ AsO ₃ + 2H ₂ O	2	H ₂ AsO ₄ + 2H ⁺	0,560
H ₂ O ₂	2	O ₂ + 2H ⁺	0,695
Ag + Br ⁻	1	AgBr	0,713
Fe ²⁺	1	Fe ³⁺	0,771
2Hg	2	Hg ₂ ²⁺	0,797
Ag	1	Ag ⁺	0,800
Hg ₂ ²⁺	2	2Hg ²⁺	0,920
HNO ₂ + H ₂ O	2	NO ₃ ⁻ + 3H ⁺	0,934
NO + H ₂ O	1	HNO ₂ ⁻ + H ⁺	0,983
VO ₂ ²⁺ + H ₂ O	1	VO ₂ ³⁺ + 2H ⁺	0,991
2Br ⁻	2	Br ₂	1,066
Ir	3	Ir ³⁺	1,156
I ₂ + 6H ₂ O	10	2IO ₃ ⁻ + 12H ⁺	1,195
Mn ²⁺ + 2H ₂ O	2	MnO ₂ + 4H ⁺	1,224
2H ₂ O	4	O ₂ + 4H ⁺	1,229
2Cr ³⁺ + 7H ₂ O	6	Cr ₂ O ₇ ²⁻ + 14H ⁺	1,232
2Cl ⁻	2	Cl ₂	1,358
Cl ⁻ + 3H ₂ O	6	ClO ₃ ⁻ + 6H ⁺	1,451
Pb ²⁺ + 2H ₂ O	2	PbO ₂ + 4H ⁺	1,455
H ₂ O ₂	1	HO ₂ ⁻ + H ⁺	1,495
Mn ²⁺ + 4H ₂ O	5	MnO ₄ ⁻ + 8H ⁺	1,507
Mn ²⁺	1	Mn ³⁺	1,541
IO ₃ ⁻ + 3H ₂ O	2	IO ₃ ⁻ + H ⁺	1,601
Ce ³⁺	1	Ce ⁴⁺	1,610
1/2Cl ₂ + H ₂ O	1	HClO + H ⁺	1,611
MnO ₂ + 2H ₂ O	3	MnO ₄ ⁻ + 4H ⁺	1,679
2H ₂ O	2	H ₂ O ₂ + 2H ⁺	1,776
Co ²⁺	1	Co ³⁺	1,830
Ag ⁺	1	Ag ⁺	1,980
2SO ₄ ²⁻	2	S ₂ O ₈ ²⁻	2,010
OH ⁻	1	OH ⁻	2,020
O ₂ + H ₂ O	2	O ₃ + 2H ⁺	2,076
2HSO ₄ ⁻	2	S ₂ O ₈ ²⁻ + 2H ⁺	2,123
2HF	2	F ₂ + 2H ⁺	3,053

HETEROGENE EQUILIBRIUM



AnBm (v)	A ^m sol. + B ⁿ sol.	K _s
Co(IO ₃) ₂	Co ²⁺ + 2IO ₃ ⁻	1,21·10 ⁻²
Ba(OH) ₂	Ba ²⁺ + 2OH ⁻	2,55·10 ⁻⁴
CaSO ₄	Ca ²⁺ + SO ₄ ²⁻	7,10·10 ⁻⁵
Pb(SCN) ₂	Pb ²⁺ + 2SCN ⁻	2,11·10 ⁻⁵
Ag ₂ SO ₄	2Ag ⁺ + SO ₄ ²⁻	1,20·10 ⁻⁵
PbCl ₂	Pb ²⁺ + 2Cl ⁻	1,17·10 ⁻⁵
MgCO ₃	Mg ²⁺ + CO ₃ ²⁻	6,82·10 ⁻⁶
PbBr ₂	Pb ²⁺ + 2Br ⁻	6,60·10 ⁻⁶
Ca(IO ₃) ₂	Ca ²⁺ + 2IO ₃ ⁻	6,47·10 ⁻⁶
Ca(OH) ₂	Ca ²⁺ + 2OH ⁻	4,68·10 ⁻⁶
Zn(IO ₃) ₂	Zn ²⁺ + 2IO ₃ ⁻	4,29·10 ⁻⁶
Hg ₂ SO ₄	2Hg ⁺ + SO ₄ ²⁻	7,99·10 ⁻⁷
Mn(IO ₃) ₂	Mn ²⁺ + 2IO ₃ ⁻	4,37·10 ⁻⁷
SrSO ₄	Sr ²⁺ + SO ₄ ²⁻	3,44·10 ⁻⁷
CuCl	Cu ⁺ + Cl ⁻	1,72·10 ⁻⁷
NiCO ₃	Ni ²⁺ + CO ₃ ²⁻	1,42·10 ⁻⁷
AgIO ₃	Ag ⁺ + IO ₃ ⁻	3,17·10 ⁻⁸
PbSO ₄	Pb ²⁺ + SO ₄ ²⁻	1,82·10 ⁻⁸
PbI ₂	Pb ²⁺ + 2I ⁻	8,49·10 ⁻⁹
CuBr	Cu ⁺ + Br ⁻	6,27·10 ⁻⁹
CaCO ₃	Ca ²⁺ + CO ₃ ²⁻	4,96·10 ⁻⁹
Ba(IO ₃) ₂	Ba ²⁺ + 2IO ₃ ⁻	4,01·10 ⁻⁹
BaCO ₃	Ba ²⁺ + CO ₃ ²⁻	2,58·10 ⁻⁹
CaC ₂ O ₄	Ca ²⁺ + C ₂ O ₄ ²⁻	2,34·10 ⁻⁹
PbC ₂ O ₄	Pb ²⁺ + C ₂ O ₄ ²⁻	8,51·10 ⁻¹⁰
Cu ₂ C ₂ O ₄	Cu ²⁺ + C ₂ O ₄ ²⁻	4,43·10 ⁻¹⁰
AgCl	Ag ⁺ + Cl ⁻	1,77·10 ⁻¹⁰
CaF ₂	Ca ²⁺ + 2F ⁻	1,46·10 ⁻¹⁰
ZnCO ₃	Zn ²⁺ + CO ₃ ²⁻	1,19·10 ⁻¹⁰
BaCrO ₄	Ba ²⁺ + CrO ₄ ²⁻	1,17·10 ⁻¹⁰
BaSO ₄	Ba ²⁺ + SO ₄ ²⁻	1,07·10 ⁻¹⁰
FeCO ₃	Fe ²⁺ + CO ₃ ²⁻	3,07·10 ⁻¹¹
MnCO ₃	Mn ²⁺ + CO ₃ ²⁻	2,24·10 ⁻¹¹
Ag ₂ CO ₃	2Ag ⁺ + CO ₃ ²⁻	8,45·10 ⁻¹²
Mg(OH) ₂	Mg ²⁺ + 2OH ⁻	5,61·10 ⁻¹²
CuI	Cu ⁺ + I ⁻	1,27·10 ⁻¹²
Ag ₂ CrO ₄	2Ag ⁺ + CrO ₄ ²⁻	1,12·10 ⁻¹²
AgSCN	Ag ⁺ + SCN ⁻	1,03·10 ⁻¹²
AgBr	Ag ⁺ + Br ⁻	5,35·10 ⁻¹³
Pb(IO ₃) ₂	Pb ²⁺ + 2IO ₃ ⁻	3,68·10 ⁻¹³
Mn(OH) ₂	Mn ²⁺ + 2OH ⁻	2,06·10 ⁻¹³
CuSCN	Cu ⁺ + SCN ⁻	1,77·10 ⁻¹³
PbCO ₃	Pb ²⁺ + CO ₃ ²⁻	1,46·10 ⁻¹³
MnS	Mn ²⁺ + S ²⁻	4,65·10 ⁻¹⁴
Cd(OH) ₂	Cd ²⁺ + 2OH ⁻	5,27·10 ⁻¹⁵
Co(OH) ₂	Co ²⁺ + 2OH ⁻	1,09·10 ⁻¹⁵
Ni(OH) ₂	Ni ²⁺ + 2OH ⁻	5,47·10 ⁻¹⁶
AgI	Ag ⁺ + I ⁻	8,51·10 ⁻¹⁷
Zn(OH) ₂	Zn ²⁺ + 2OH ⁻	7,71·10 ⁻¹⁷
Fe(OH) ₂	Fe ²⁺ + 2OH ⁻	4,87·10 ⁻¹⁷
Hg ₂ Cl ₂	2Hg ⁺ + 2Cl ⁻	1,45·10 ⁻¹⁸
FeS	Fe ²⁺ + S ²⁻	1,59·10 ⁻¹⁹
Pb(OH) ₂	Pb ²⁺ + 2OH ⁻	1,42·10 ⁻²⁰
AlPO ₄	Al ³⁺ + PO ₄ ³⁻	9,83·10 ⁻²¹
NiS	Ni ²⁺ + S ²⁻	1,07·10 ⁻²¹
Hg ₂ Br ₂	2Hg ⁺ + 2Br ⁻	6,41·10 ⁻²³
ZnS	Zn ²⁺ + S ²⁻	2,93·10 ⁻²⁵
Hg(OH) ₂	Hg ²⁺ + 2OH ⁻	3,13·10 ⁻²⁶
Sn(OH) ₂	Sn ²⁺ + 2OH ⁻	5,45·10 ⁻²⁷
SnS	Sn ²⁺ + S ²⁻	3,25·10 ⁻²⁸
FePO ₄	Fe ³⁺ + PO ₄ ³⁻	9,92·10 ⁻²⁹
PbS	Pb ²⁺ + S ²⁻	9,04·10 ⁻²⁹
Hg ₂ I ₂	2Hg ⁺ + 2I ⁻	5,33·10 ⁻²⁹
HgI ₂	Hg ²⁺ + 2I ⁻	2,82·10 ⁻²⁹
CdS	Cd ²⁺ + S ²⁻	1,40·10 ⁻²⁹
Ni ₃ (PO ₄) ₂	3Ni ²⁺ + 2PO ₄ ³⁻	4,73·10 ⁻³²
Ca ₃ (PO ₄) ₂	3Ca ²⁺ + 2PO ₄ ³⁻	2,07·10 ⁻³³
CuS	Cu ²⁺ + S ²⁻	1,27·10 ⁻³⁶
Cu ₃ (PO ₄) ₂	3Cu ²⁺ + 2PO ₄ ³⁻	1,39·10 ⁻³⁷
Fe(OH) ₃	Fe ³⁺ + 3OH ⁻	2,64·10 ⁻³⁹
Cu ₂ S	2Cu ⁺ + S ²⁻	2,26·10 ⁻⁴⁸
Ag ₂ S	2Ag ⁺ + S ²⁻	6,69·10 ⁻⁵⁰
Hg ₂ S	Hg ²⁺ + S ²⁻	6,44·10 ⁻⁵³
Bi ₂ S ₃	2Bi ³⁺ + 3S ²⁻	1,82·10 ⁻⁵⁹