


MAD SCIENCE
Periodic Table



1 H 1.008	2 He 4.003											13 B 10.81	14 C 12.011	15 N 14.007	16 O 15.999	17 F 18.999	18 Ne 20.18		
3 Li 6.941	4 Be 9.012											13 Al 26.982	14 Si 28.09	15 P 30.97	16 S 32.06	17 Cl 35.45	18 Ar 39.95		
11 Na 22.99	12 Mg 24.31	19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 51.99	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.38	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3		
55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 208.9	84 Po (209)	85 At (210)	86 Rn (222)		
87 Fr (223)	88 Ra 226.0	89 Ac 227.0	104 Rf (261)	105 Db (262)	106 Sg (266)	107 Bh (264)	108 Hs (269)	109 Mt (268)	110 Uun (271)	111 Uuu (272)	112 Uub (277)		114 Uuq (289)						

F
Cl
Br
I

Displace halogen below

Displace hydrogen from acids

Displace hydrogen from steam

Displace hydrogen from cold water

Li
K
Ba
Ca
Na
Mg
Al
Zn
Cr
Fe
Cd
Co
Ni
Sn
Pb
H
Cu
Hg
Ag
Pt
Au

58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm (145)	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0
90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np 237.0	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

POLYATOMIC IONS

Mercury (I), Hg₂²⁺
 Ammonium, NH₄⁺
 Nitrite, NO₂⁻
 Nitrate, NO₃⁻
 Sulfite, SO₃²⁻
 Sulfate, SO₄²⁻
 Hydrogen sulfate, HSO₄⁻
 (bisulfate - common name)
 Hydroxide, OH⁻
 Cyanide, CN⁻
 Phosphate, PO₄³⁻
 Hydrogen phosphate, HPO₄²⁻
 Dihydrogen phosphate, H₂PO₄⁻
 Thiocyanate, NCS⁻
 Carbonate, CO₃²⁻
 Hydrogen carbonate, HCO₃⁻
 (bicarbonate - common name)
 hypochlorite, ClO⁻
 Chlorite, ClO₂⁻
 Chlorate, ClO₃⁻
 Perchlorate, ClO₄⁻
 Acetate, C₂H₃O₂⁻
 Permanganate, MnO₄⁻
 Dichromate, Cr₂O₇²⁻
 Chromate, CrO₄²⁻
 Peroxide, O₂²⁻
 Oxalate, C₂O₄²⁻

SOLUBLE COMPOUNDS IMPORTANT EXCEPTIONS

NO₃⁻ None
 C₂H₃O₂⁻ None
 Cl⁻ Salts of Ag⁺, Hg₂²⁺, and Pb²⁺
 Br⁻ Salts of Ag⁺, Hg₂²⁺, and Pb²⁺
 I⁻ Salts of Ag⁺, Hg₂²⁺, and Pb²⁺
 SO₄²⁻ Salts of Sr²⁺, Ba²⁺, Hg₂²⁺, and Pb²⁺

INSOLUBLE COMPOUNDS IMPORTANT EXCEPTIONS

S²⁻ Salts of NH₄⁺, the alkali metal cations, and Ca²⁺, Sr²⁺, and Ba²⁺
 CO₃²⁻ Salts of NH₄⁺ and the alkali metal cations
 PO₄³⁻ Salts of NH₄⁺ and the alkali metal cations
 OH⁻ Compounds of the alkali metal cations, Ca²⁺, Sr²⁺, and Ba²⁺

USEFUL CONSTANTS

Mole = 6.02214 x 10²³ units/mol
 Speed of light = 2.9979 x 10⁸ m/s
 Planck's Constant (h) = 6.62608 x 10⁻³⁴ J/Hz
 Rydberg (R_h) = 2.178 x 10⁻¹⁸ J

GAS CONSTANT, R

R = 0.08206 L·atm/mol·K
 = 8.314 J/mol·K
 = 8.3145 L·kPa/mol·K

PRESSURE

1 atm = 101325 Pa
 = 1.110325 bar
 = 14.6959 psi
 = 760 mm Hg
 = 760 Torr