

Periodic Table of the Elements

1	1 H 1.008															18 He 4.003		
2	3 Li 6.94	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
3	11 Na 22.99	12 Mg 24.31											13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
4	19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87	23 V 50.94	24 Cr 52.00	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 72.63	33 As 74.92	34 Se 78.97	35 Br 79.90	36 Kr 83.80
5	37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.95	43 Tc (97)	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
6	55 Cs 132.9	56 Ba 137.3	57 La* 138.9	72 Hf 178.5	73 Ta 181.0	74 W 183.8	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 209.0	84 Po (209)	85 At (210)	86 Rn (222)
7	87 Fr (223)	88 Ra (226)	89 Ac ^a (227)	104 Rf (267)	105 Db (268)	106 Sg (269)	107 Bh (270)	108 Hs (269)	109 Mt (278)	110 Ds (281)	111 Rg (282)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)

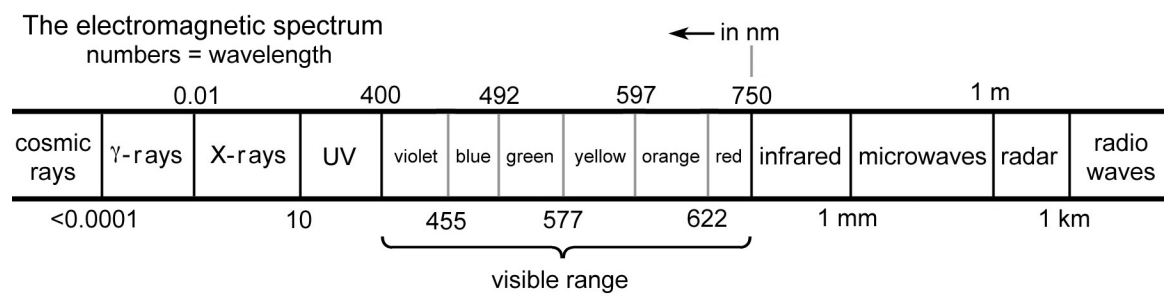
☐ : metalloid

*Lanthanides	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
^a Actinides	90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (2257)	101 Md (258)	102 No (259)	103 Lr (266)

Constants (* exact value since 2019)

Conversions

Bohr's Energy	$B = 2.178 \times 10^{-18} \text{ J}$	$K = ^\circ\text{C} + 273.15$
Speed of light in vacuum	$c^* = 2.99792458 \times 10^8 \text{ m} \cdot \text{s}^{-1}$	1 cal \equiv 4.184 J
Planck's constant	$h^* = 6.62607015 \times 10^{-34} \text{ J} \cdot \text{s}$	Pa = N·m ⁻²
Mass of an electron	$m_e = 9.109 \times 10^{-31} \text{ kg}$	J = kg·m ² ·s ⁻²
Mass of a neutron	$m_n = 1.675 \times 10^{-27} \text{ kg}$	101.3 J = 1 L·atm
Mass of a proton	$m_p = 1.673 \times 10^{-27} \text{ kg}$	
Avogadro's number	$N_A^* = 6.02214076 \times 10^{23} \text{ mol}^{-1}$	
Rydberg's constant	$R_H = 1.0974 \times 10^7 \text{ m}^{-1}$	
Gas constant	$R = \begin{cases} 8.314 \text{ J} \cdot \text{K}^{-1} \cdot \text{mol}^{-1} \\ 8.314 \text{ L} \cdot \text{kPa} \cdot \text{K}^{-1} \cdot \text{mol}^{-1} \\ 0.08206 \text{ L} \cdot \text{atm} \cdot \text{K}^{-1} \cdot \text{mol}^{-1} \end{cases}$	$1 \text{ atm} = \begin{cases} 101.32 \text{ kPa} \\ 1.0132 \text{ bar} \\ 760.0 \text{ mm of Hg or torr} \end{cases}$



SI prefix multipliers

prefix	symbol	multiplier	prefix	symbol	multiplier
femto	f	10^{-15}	kilo	k	10^3
pico	p	10^{-12}	mega	M	10^6
nano	n	10^{-9}	giga	G	10^9
micro	μ	10^{-6}	tera	T	10^{12}
milli	m	10^{-3}	peta	P	10^{15}

Numerical prefixes for hydrates and binary covalent compounds.

number	prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-
7	hepta-
8	octa-
9	nona-
10	deca-

The first 10 straight-chain alkanes

name	formula
methane	CH_4
ethane	C_2H_6
propane	C_3H_8
n-butane	C_4H_{10}
n-pentane	C_5H_{12}
n-hexane	C_6H_{14}
n-heptane	C_7H_{16}
n-octane	C_8H_{18}
n-nonane	C_9H_{20}
n-decane	$\text{C}_{10}\text{H}_{22}$

Common ions (listed by charge)

-1		-2	
formula	name	formula	name
NO_3^-	nitrate	CO_3^{2-}	carbonate
OH^-	hydroxide	SO_4^{2-}	sulfate
CH_3COO^-	acetate	$\text{S}_2\text{O}_3^{2-}$	thiosulfate
HCO_3^-	hydrogen carbonate	S^{2-}	sulfide
MnO_4^-	permanganate	O^{2-}	oxide
CN^-	cyanide	O_2^{2-}	peroxide
OCN^-	cyanate	$\text{C}_2\text{O}_4^{2-}$	oxalate
SCN^-	thiocyanate	CrO_4^{2-}	chromate
ClO_4^-	perchlorate	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
H^-	hydride		

-3		+1	
formula	name	Formula	name
PO_4^{3-}	phosphate	H_3O^+	hydronium
N^{3-}	nitride	NH_4^+	ammonium