

- Some general data are provided on this page.
- A Periodic Table with atomic weights is provided on the next page.

STP = 273.15 K, 1 bar

$N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$

$h = 6.6256 \times 10^{-34} \text{ Js}$

density(H_2O , l) = 1.00g/mL

Specific heat of water = 4.184 J / g·°C

$R = 8.3145 \text{ J K}^{-1} \text{ mol}^{-1} = 0.08206 \text{ L atm K}^{-1} \text{ mol}^{-1} = 0.083145 \text{ L bar K}^{-1} \text{ mol}^{-1}$

1 bar = 100.00 kPa = 750.06 mm Hg = 0.98692 atm

1 J = 1 kg m² s⁻² = 1 kPa L = 1 Pa m³ = 1 V C

1 cm³ = 1 mL

1 Hz = 1 cycle/s

$F = 96485 \text{ C/mol}$

$c = 2.9979 \times 10^8 \text{ m/s}$

$m_e = 9.109 \times 10^{-31} \text{ kg}$

$\Delta H^\circ_{\text{vap}}[\text{H}_2\text{O}] = 44.0 \text{ kJ mol}^{-1}$

0°C = 273.15 K

1 m = 10⁶ μm = 10⁹ nm = 10¹⁰ Å

1 g = 10³ mg

De Broglie wavelength:

$\lambda = h/mu = h/p$

Hydrogen atom energy levels:

$E_n = -R_H/n^2 = -2.179 \times 10^{-18} \text{ J} / n^2$

$KE = \frac{1}{2}mu^2$

Gibbs energy:

$\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ$

$\Delta G^\circ = -RT\ln K$

$\Delta G = \Delta G^\circ + RT\ln Q$

Nernst Equation:

$$E = E^\circ - \frac{RT}{zF} \ln Q = E^\circ - \frac{0.0257 \text{ V}}{z} \ln Q = E^\circ - \frac{0.0592 \text{ V}}{z} \log_{10} Q$$

Solubility Guidelines for Common Ionic Solids

Follow the lower-numbered guideline when two guidelines are in conflict. This leads to the correct prediction in most cases.

1. Salts of group 1 cations and the NH_4^+ cation are soluble . Except LiF and Li_2CO_3 which are insoluble.
2. Nitrates, acetates, bicarbonates, and perchlorates are soluble.
3. Salts of silver, lead and mercury (I) are insoluble. Except AgF which is soluble.
4. Fluorides, chlorides, bromides, and iodides are soluble. Except Group 2 fluorides which are insoluble
5. Carbonates, phosphates, chromates, sulfides, oxides, and hydroxides are insoluble. Except Group 2 sulfides and hydroxides of Ca^{2+} , Sr^{2+} , and Ba^{2+} which are soluble.).
6. Sulfates are soluble except for those of calcium, strontium, and barium.

PERIODIC TABLE OF THE ELEMENTS																	
ALDRICH®																	
Transition Metals																	
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	13	14	15	16	17	18
1 H 1.0079	2 He 4.0026	3 Li 6.941	4 Be 9.0122	5 B 10.811	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.180	11 Na 22.990	12 Mg 24.305	13 Al 26.982	14 Si 28.086	15 P 30.974	16 S 32.066	17 Cl 35.453	18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.88	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.847	27 Co 58.933	28 Ni 58.69	29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.922	34 Se 78.96	35 Br 79.904	36 Kr 83.80
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.94	43 Tc [98]	44 Ru 101.07	45 Rh 102.91	46 Pd 105.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.75	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57 *La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm [145]	62 Sm 150.36	63 Eu 151.97	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.04	71 Lu 174.97	72 Hf 178.49
87 Fr [223]	88 Ra 226.03	89 **Ac 227.03	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np 237.05	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]	104 Ta 180.95
101 Db [262]	102 Sg [266]	103 Bh [264]	104 Hs [277]	105 Mt [268]	106 Unp [288]	107 Unp [289]	108 Unp [290]	109 Unp [291]	110 Unp [292]	111 Unp [293]	112 Unp [294]	113 Nh [286]	114 Fl [289]	115 Mc [290]	116 Lv [293]	117 Ts [294]	118 Og [294]

Atomic weights are based on $^{12}\text{C} = 12$ and conform to the 1987 IUPAC report values rounded to 5 significant digits. Numbers in [] indicate the most stable isotope.

* Lanthanides																	
58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	La	Ce	Pr	Nd
140.12	140.91	144.24	[145]	150.36	151.97	157.25	158.93	162.50	164.93	167.26	168.93	173.04	174.97	138.91	140.12	140.91	144.24
** Actinides																	
90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	Th	Pa	U	Np
232.04	231.04	238.03	237.05	[244]	[243]	[247]	[247]	[251]	[252]	[257]	[258]	[259]	[262]	232.04	231.04	238.03	237.05