

	Physical Constants	Conversion Factors
Bohr radius	$a_0 = 5.29177249(24) \times 10^{-11} \text{ m}$	$T_0 = -273.15 \text{ K}$
Vacuum speed of light	$c = 2.99792458 \times 10^8 \text{ m s}^{-1}$	1 atm = 1.01325 $\times 10^5$ Pa
Vacuum permittivity	$\epsilon_0 = 8.854187817 \times 10^{-12} \text{ J}^{-1} \text{ C}^2 \text{ m}^{-1}$	1 bar = 0.98692 atm
Elementary charge	$e = 1.60217733(49) \times 10^{-19} \text{ C}$	1 bar = 750.062 torr
Faraday	$F = 9.6485309(29) \times 10^4 \text{ C mol}^{-1}$	1 cal = 4.184 J
Acceleration of gravity	$g = 9.80665 \text{ m s}^{-2}$	1 eV = 96.485309 kJ mol ⁻¹
Planck constant	$h = 6.6260755(40) \times 10^{-34} \text{ J s}$	1 eV = 8065.5409(55) cm ⁻¹
	$\hbar = 1.05457266(63) \times 10^{-34} \text{ J s}$	1 cm ⁻¹ = 11.962658(10) J mol ⁻¹
cm ⁻¹ → K	$hc/k = 1.4387782(16) \text{ cm K}$	1 H = 27.21138386(68) eV
Boltzmann constant	$k = 1.3806488(13) \times 10^{-23} \text{ J K}^{-1}$	1 H = 2625.4974(16) kJ mol ⁻¹
Room T → cm ⁻¹	$kT/hc = 207.22443(23) \text{ cm}^{-1}$	1 H = 4.35974394(22) $\times 10^{-18}$ J
Electron rest mass	$m_e = 9.1093897(54) \times 10^{-31} \text{ kg}$	1 H = 219474.6313705(15) cm ⁻¹
Neutron rest mass	$m_n = 1.6749286(10) \times 10^{-27} \text{ kg}$	1 H = 627.509469 kcal mol ⁻¹
Proton rest mass	$m_p = 1.6726231(10) \times 10^{-27} \text{ kg}$	1 kWh = 3.6 $\times 10^6$ J
Bohr magneton	$\mu_B = 9.2740154(31) \times 10^{-24} \text{ J T}^{-1}$	1 Å = 1 $\times 10^{-10}$ m
Electron magnetic moment	$\mu_e = 9.2847701(31) \times 10^{-24} \text{ J T}^{-1}$	1 in = 2.54 cm
Proton magnetic moment	$\mu_p = 1.41060761(47) \times 10^{-26} \text{ J T}^{-1}$	1 mi = 1.609 km
Avogadro constant	$N_A = 6.0221367(36) \times 10^{23} \text{ mol}^{-1}$	1 lb = 0.4536 kg
Gas constant	$R = 8.3144621(75) \text{ J K}^{-1} \text{ mol}^{-1}$	1 oz = 28.35 g
	$R = 0.083144621(75) \text{ L bar K}^{-1} \text{ mol}^{-1}$	1 qt = 0.9464 L
	$R = 0.08205746(14) \text{ L atm mol}^{-1} \text{ K}^{-1}$	1 gal = 3.7854 $\times 10^{-3}$ m ³
Rydberg Constant	$\mathfrak{R}_H = 2.1798741 \times 10^{-18} \text{ J}$	$\pi = 3.14159265359$
	$\mathfrak{R}_H = 109737.31534(13) \text{ cm}^{-1}$	$e = 2.7182818$

Notation: 1.2345(67) gives the uncertainty of 67 in the final two digits: 1.2345 ± 0.0067

T (K)	100.0	298.15	500.0	1000.0	1500.0	2000.0
kT/hc (cm ⁻¹)	69.50	207.224	347.5	695.0	1042.6	1390.1
kT/e (eV)	0.008617	0.025693	0.04309	0.08617	0.12926	0.17235
(kT/h) (s ⁻¹)	2.0837 $\times 10^{12}$	6.2124 $\times 10^{12}$	1.0418 $\times 10^{13}$	2.0837 $\times 10^{13}$	3.1255 $\times 10^{13}$	4.1673 $\times 10^{13}$

Isotopic Masses (amu) [abundance]

¹ H 1.007825 [99.9885]							³ He 3.016029 [0.000137]
² H 2.014102 [0.115]							⁴ He 4.002603 [99.999863]
⁶ Li 6.015122 [7.59]	⁹ Be 9.012182 [100]	¹⁰ B 10.012937 [19.9]	¹² C 12.000000 [98.93]	¹⁴ N 14.003074 [99.632]	¹⁶ O 15.994915 [99.757]	¹⁹ F 18.998403 [100]	²⁰ Ne 19.992440 [90.48]
⁷ Li 7.016004 [92.41]		¹¹ B 11.009305 [80.1]	¹³ C 13.003355 [1.07]	¹⁵ N 15.000109 [0.368]	¹⁷ O 16.999132 [0.038]		²¹ Ne 20.993847 [0.27]
			¹⁴ C 14.003242 [*]		¹⁸ O 17.999161 [0.205]		²² Ne 21.991386 [9.25]
²³ Na 22.989770 [100]	²⁴ Mg 23.985042 [78.99]	²⁷ Al 26.981538 [100]	²⁸ Si 27.976927 [92.2297]	³¹ P 30.973762 [100]	³² S 31.972071 [94.93]	³⁵ Cl 34.968853 [75.78]	³⁶ Ar 35.967546 [0.3365]
	²⁵ Mg 24.985837 [10.00]		²⁹ Si 28.976495 [4.6832]		³³ S 32.971458 [0.76]	³⁷ Cl 36.965903 [24.22]	³⁸ Ar 37.962732 [0.0632]
	²⁶ Mg 25.982593 [11.01]		³⁰ Si 29.973770 [3.0872]		³⁴ S 33.967867 [4.29]		⁴⁰ Ar 39.962383 [99.6003]
					³⁶ S 35.967081 [0.02]		
³⁹ K 38.963707 [93.2581]	⁴⁰ Ca 39.962591 [96.941]	⁶⁹ Ga 68.925581 [60.108]	⁷⁰ Ge 69.924250 [20.84]	⁷⁵ As 74.921596 [100]	⁷⁴ Se 73.922477 [0.89]	⁷⁹ Br 78.918338 [50.69]	⁷⁸ Kr 77.920386 [0.35]
⁴⁰ K 39.963999 [0.0117]	⁴² Ca 41.958618 [0.647]	⁷¹ Ga 70.924705 [39.892]	⁷² Ge 71.922076 [27.54]		⁷⁶ Se 75.919214 [9.37]	⁸¹ Br 80.916291 [49.31]	⁸⁰ Kr 79.916378 [2.28]
⁴¹ K 40.961826 [6.7302]	⁴³ Ca 42.958767 [0.135]		⁷³ Ge 72.923459 [7.73]		⁷⁷ Se 76.919915 [7.63]		⁸² Kr 81.913485 [11.58]
	⁴⁴ Ca 43.955481 [2.086]		⁷⁴ Ge 73.921178 [36.28]		⁷⁸ Se 77.917310 [23.77]		⁸³ Kr 82.914136 [11.49]
	⁴⁶ Ca 45.953693 [0.004]		⁷⁶ Ge 75.921403 [7.61]		⁸⁰ Se 79.916522 [49.61]		⁸⁴ Kr 83.911507 [57.00]
	⁴⁸ Ca 47.952534 [0.187]				⁸² Se 81.916700 [8.73]		⁸⁶ Kr 85.910610 [17.30]