Appendix: Constants and Conversions

CONSTANTS[a]

Acceleration of gravity, g	9.80 . . . m/s^2
Atomic mass unit, amu	1.66 . . . $\times 10^{-24}$ g
Avogadro's number, N	0.6022 . . . $\times 10^{24}$ mol^{-1}
Boltzmann's constant, k	86.1 . . . $\times 10^{-6}$ eV/K
	13.8 . . . $\times 10^{-24}$ J/K
Electron charge, q	0.1602 . . . $\times 10^{-18}$ C
Electron moment, β	9.27 . . . $\times 10^{-24}$ A·m^2
Electron volt, eV	0.160 . . . $\times 10^{-18}$ J
Faraday, $\mathcal{F}$	96.5 . . . $\times 10^{3}$ C
Gas constant, R	8.31 . . . J/mol·K
	1.987 . . . cal/mol·K
Gas volume (STP)	22.4 . . . $\times 10^{-3}$ m^3/mol
Permittivity (vacuum), ε	8.85 . . . $\times 10^{-12}$ C/V·m
Planck's constant, h	0.662 . . . $\times 10^{-33}$ J·s
Velocity of light, c	0.299 . . . $\times 10^{9}$ m/s

CONVERSIONS[a]

1 angstrom	= 10^{-10} m
	= 10^{-8} cm
	= 0.1 nm
	= 3.937 $\times 10^{-9}$ in.
1 amu	= 1.66 . . . $\times 10^{-24}$ g
1 Btu	= 1.055 . . . $\times 10^{3}$ J
1 calorie	= 4.18 . . . J
1 centimeter	= 10^{-2} m
	= 0.3937 in.
1 cubic centimeter	= 0.0610 . . . in.^{3}
1 cubic inch	= 16.3 . . . $\times 10^{-6}$ m^3
1°C difference	= 1.8°F
1 electron volt	= 0.160 . . . $\times 10^{-18}$ J
1 foot	= 0.3048 . . . m
1 foot·pound	= 1.355 . . . J
1 gram	= 0.602 . . . $\times 10^{24}$ amu
	= 2.20 . . . $\times 10^{-3}$ lb$_m$
1 gram/centimeter^3	= 62.4 . . . lb$_m$/ft^3
	= 1000 kg/m^3
	= 1 Mg/m^3
1 inch	= 0.0254 . . . m
1 joule	= 0.947 . . . $\times 10^{-3}$ Btu
	= 0.239 . . . cal
	= 6.24 . . . $\times 10^{18}$ eV
	= 0.737 . . . ft·lb$_f$
	= 1 watt·s

1 kilogram	= 2.20 . . . lb_m
1 megagram/meter^3	= 1 g/cm^3
	= 10^6 g/m^3
	= 1000 kg/m^3
1 meter	= 10^{10} Å
	= 10^9 nm
	= 3.28 . . . ft
	= 39.37 in.
1 micrometer	= 10^{-6} m
1 nanometer	= 10^{-9} m
1 newton	= 0.224 . . . lb_f
1 pascal	= 0.145 . . . × 10^{-3} lb_f/in.^{2}
1 pound (force)	= 4.44 . . . newtons
1 pound (mass)	= 0.453 . . . kg
1 pound/foot^3	= 16.0 . . . kg/m^3
1 pound/inch^2	= 6.89 . . . × 10^{-3} MPa
1 watt	= 1 J/s
1 (watt/m^2)/(°C/m)	= 1.92 . . . × 10^{-3} [Btu/(ft^2·s)]/[°F/in.]

SI PREFIXES

giga	G	10^9
mega	M	10^6
kilo	k	10^3
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}

[a]All irrational values are rounded downward.