

Physical and Mathematical Constants and Conversion Factors

Atomic mass unit	amu	1.66053×10^{-27} kg
Avogadro's number	N_0	6.02217×10^{23} mol ⁻¹
Boltzmann constant	k	1.38062×10^{-23} J K ⁻¹
Charge on proton	e	1.60219×10^{-19} C
Faraday's constant	F	9.64867×10^4 C
Gas constant	R	8.3143 J mol ⁻¹ K ⁻¹
Gravitational acceleration*	g	9.80665 m s ⁻²
Mass of electron		9.1096×10^{-31} kg
Mass of proton		1.67261×10^{-27} kg
Permittivity of vacuum	ϵ_0	8.85419×10^{-12} J ⁻¹ C ² m ⁻¹
Planck's constant	h	6.62620×10^{-34} J · s
Planck's constant (reduced)	$\hbar$	1.05459×10^{-34} J · s
Speed of light	c	2.997925×10^8 m s ⁻¹
Stefan-Boltzmann constant	σ	5.6696×10^{-8} W m ⁻² K ⁻⁴
Pi	π	3.14159265
Base of natural logarithms	e	2.718281828
British thermal unit	BTU	1.055 kJ
Calorie	cal	4.1840 J
Foot	ft	0.3048 m
Pound (mass)	lb	0.45359 kg
Pound (force)	lb	4.44823 N

* Average value; varies with altitude, latitude, position of the moon, etc.

Most of the physical constants were taken from B. N. Taylor, W. H. Parker, and D. N. Langenberg, *The Fundamental Constants and Quantum Electrodynamics*, Academic Press, New York, 1969.