Attachment

Values of some physical constants

Quantity	Usual symbol	Value
Charge on electron	e	1.602×10^{-19} C
Rest-mass of electron	m_e	9.109×10^{-31} kg
Electron charge/mass	e/m_e	1.759×10^{11} C kg^{-1}
Rest-mass of proton	M	1.673×10^{-27} kg
Ratio: proton/electron mass	M/m_e	1836
Boltzmann constant	k	1.381×10^{-23} J K^{-1}
Avogadro's number	N_A	6.022×10^{23} mol^{-1}
Gas constant	R	8.315 J mol^{-1} K^{-1}
Mechanical equivalent of heat	—	4.186 J cal^{-1}
Volume of 1 mole of gas at s.t.p.*	V	22.41×10^{-3} m^3
Faraday constant	F	96 490 C mol^{-1}
Planck's constant	h	6.626×10^{-34} J s
Planck's constant/2π	$\hbar$	1.055×10^{-34} J s
Bohr magneton [$eh/4\pi m_e$)	μ_B	9.274×10^{-24} J T^{-1}
Bohr radius	a_0	0.529×10^{-10} m
Gravitational constant	G	6.673×10^{-11} N m^2 kg^{-2}
Energy equivalent of 1 eV		1.602×10^{-19} J
Velocity of light	c	299 800 km s^{-1}
Permeability of free space	μ_0	$4\pi \times 10^{-7}$ H m^{-1}
Permittivity of free space	ε_0 $=(\mu_0 c^2)^{-1}$	8.854×10^{-12} F m^{-1}

The values in the above table for N_A, R, J and F are 'physical' constants based on the number of atoms in 0.012 kg of ^{12}C. The equivalent constants used by chemists are sometimes based on a different molar convention and the values quoted may differ by up to one part in a thousand. The calorie in this table is the 15 °C calorie defined on p. 33.

* s.t.p. = 273 K and 1 atm.