

Physical Constants and Other Data

Gravitational constant	G	$6.673 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$
Speed of light (in vacuum)	c	$2.998 \times 10^8 \text{ m s}^{-1}$
Elementary charge	e	$1.602 \times 10^{-19} \text{ C}$
Electron mass	m_e	$9.109 \times 10^{-31} \text{ kg}$ (511.0 keV)
Proton mass	m_p	$1.673 \times 10^{-27} \text{ kg}$ (938.3 MeV)
Neutron mass	m_n	$1.675 \times 10^{-27} \text{ kg}$ (939.6 MeV)
Charge-to-mass ratio of electron	e/m_e	$1.759 \times 10^{11} \text{ C kg}^{-1}$
Unified atomic mass constant	m_u	$1.661 \times 10^{-27} \text{ kg}$
Boltzmann constant	k	$1.381 \times 10^{-23} \text{ J K}^{-1}$
Planck constant	h	$6.626 \times 10^{-34} \text{ J s}$
Avogadro constant	N_A	$6.022 \times 10^{23} \text{ mol}^{-1}$
Gas constant	R	$8.315 \text{ J mol}^{-1} \text{ K}^{-1}$
Permittivity of free space	ϵ_0	$8.854 \times 10^{-12} \text{ C V}^{-1} \text{ m}^{-1}$
Permeability of free space	μ_0	$4\pi \times 10^{-7} \text{ V s}^2 \text{ C}^{-1} \text{ m}^{-1}$
	$k =$	
Coulomb constant	$1/4\pi\epsilon_0$	$8.987 \times 10^9 \text{ V m C}^{-1}$
Compton wavelength of electron	λ_c	$2.426 \times 10^{-12} \text{ m}$
Mean radius of the Earth	R	6371 km
Sun-Earth distance (Astronomical Unit, AU)		$1.49 \times 10^8 \text{ km}$
Mean density of the Earth	ρ	5520 kg m^{-3}
Acceleration due to gravity	g	9.807 m s^{-2}
Mass of the Earth		$5.978 \times 10^{24} \text{ kg}$
Mass of the Sun		$1.989 \times 10^{30} \text{ kg}$
1 light year		$9.461 \times 10^{15} \text{ m}$
Surface tension of water	γ	0.073 N m^{-1} $2256 \text{ kJ kg}^{-1} = 40.6 \text{ kJ mol}^{-1}$
Heat of vaporisation of water	L	
Tensile strength of steel	σ	500–2000 MPa