

DATA SHEET

COMMON PHYSICAL QUANTITIES

Quantity	Symbol	Value	Quantity	Symbol	Value
Gravitational acceleration on Earth	g	9.8 m s^{-2}	Mass of electron	m_e	$9.11 \times 10^{-31} \text{ kg}$
Radius of Earth	R_E	$6.4 \times 10^6 \text{ m}$	Charge on electron	e	$-1.60 \times 10^{-19} \text{ C}$
Mass of Earth	M_E	$6.0 \times 10^{24} \text{ kg}$	Mass of neutron	m_n	$1.675 \times 10^{-27} \text{ kg}$
Mass of Moon	M_M	$7.3 \times 10^{22} \text{ kg}$	Mass of proton	m_p	$1.673 \times 10^{-27} \text{ kg}$
Radius of Moon	R_M	$1.7 \times 10^6 \text{ m}$	Mass of positron	m_{e^+}	$9.11 \times 10^{-31} \text{ kg}$
Mean Radius of Moon Orbit		$3.84 \times 10^8 \text{ m}$	Charge on positron	e^+	$1.60 \times 10^{-19} \text{ C}$
Solar radius		$6.955 \times 10^8 \text{ m}$	Charge on copper nucleus		$4.64 \times 10^{-18} \text{ C}$
Mass of Sun		$2.0 \times 10^{30} \text{ kg}$	Planck's constant	h	$6.63 \times 10^{-34} \text{ J s}$
Mass of Mars	M_{Mars}	$6.42 \times 10^{23} \text{ kg}$	Permittivity of free space	ϵ_0	$8.85 \times 10^{-12} \text{ F m}^{-1}$
Radius of Mars	R_{Mars}	$3.39 \times 10^6 \text{ m}$	Permeability of free space	μ_0	$4\pi \times 10^{-7} \text{ H m}^{-1}$
1 AU		$1.5 \times 10^{11} \text{ m}$	Speed of light in vacuum	c	$3.00 \times 10^8 \text{ m s}^{-1}$
Stefan-Boltzmann constant	σ	$5.67 \times 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$	Speed of sound in air	v	$3.4 \times 10^2 \text{ m s}^{-1}$
Universal constant of gravitation	G	$6.67 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$			

REFRACTIVE INDICES

The refractive indices refer to sodium light of wavelength 589 nm and to substances at a temperature of 273 K.

Substance	Refractive index	Substance	Refractive index
Diamond	2.42	Glycerol	1.47
Glass	1.51	Water	1.33
Ice	1.31	Air	1.00
Perspex	1.49	Magnesium fluoride	1.38

SPECTRAL LINES

Element	Wavelength (nm)	Colour	Element	Wavelength (nm)	Colour
Hydrogen	656	Red	Cadmium	644	Red
	486	Blue-green		509	Green
	434	Blue-violet		480	Blue
	410	Violet	Lasers		
	397	Ultraviolet	Element	Wavelength (nm)	Colour
	389	Ultraviolet	Carbon dioxide	9550 } 10 590 }	Infrared
Sodium	589	Yellow	Helium-neon	633	Red

PROPERTIES OF SELECTED MATERIALS

Substance	Density (kg m^{-3})	Melting Point (K)	Boiling Point (K)	Specific Heat Capacity ($\text{J kg}^{-1} \text{ K}^{-1}$)	Specific Latent Heat of Fusion (J kg^{-1})	Specific Latent Heat of Vaporisation (J kg^{-1})
Aluminium	2.70×10^3	933	2623	9.02×10^2	3.95×10^5	....
Copper	8.96×10^3	1357	2853	3.86×10^2	2.05×10^5	....
Glass	2.60×10^3	1400	....	6.70×10^2	....	....
Ice	9.20×10^2	273	....	2.10×10^3	3.34×10^5	....
Glycerol	1.26×10^3	291	563	2.43×10^3	1.81×10^5	8.30×10^5
Methanol	7.91×10^2	175	338	2.52×10^3	9.9×10^4	1.12×10^6
Sea Water	1.02×10^3	264	377	3.93×10^3	....	....
Water	1.00×10^3	273	373	4.18×10^3	3.34×10^5	2.26×10^6
Air	1.29	....	....	....	....	....
Hydrogen	9.0×10^{-2}	14	20	1.43×10^4	....	4.50×10^5
Nitrogen	1.25	63	77	1.04×10^3	....	2.00×10^5
Oxygen	1.43	55	90	9.18×10^2	....	2.40×10^4

The gas densities refer to a temperature of 273 K and a pressure of $1.01 \times 10^5 \text{ Pa}$.



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Mass of Jupiter	M_J	$1.90 \times 10^{27} \text{ kg}$	Mass of proton	m_p	$1.673 \times 10^{-27} \text{ kg}$
Radius of Jupiter	R_J	$7.15 \times 10^7 \text{ m}$	Mass of alpha particle	m_α	$6.645 \times 10^{-27} \text{ kg}$
Mean Radius of Jupiter Orbit		$7.79 \times 10^{11} \text{ m}$	Charge on alpha particle		$3.20 \times 10^{-19} \text{ C}$
Solar radius		$6.955 \times 10^8 \text{ m}$	Planck's constant	h	$6.63 \times 10^{-34} \text{ J s}$
Mass of Sun		$2.0 \times 10^{30} \text{ kg}$	Permittivity of free space	ϵ_0	$8.85 \times 10^{-12} \text{ F m}^{-1}$
1 AU		$1.5 \times 10^{11} \text{ m}$	Permeability of free space	μ_0	$4\pi \times 10^{-7} \text{ H m}^{-1}$
Stefan-Boltzmann constant	σ	$5.67 \times 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$	Speed of light in vacuum	c	$3.00 \times 10^8 \text{ m s}^{-1}$
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