**DATA SHEET**

COMMON PHYSICAL QUANTITIES

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Quantity* | *Symbol* | *Value* | *Quantity* | *Symbol* | *Value* |
| Gravitational acceleration on Earth  Radius of Earth  Mass of Earth  Mass of Jupiter  Radius of Jupiter  Mean Radius of  Jupiter Orbit  Solar Radius  Mass of Sun  1 AU  Stefan-Boltzmann constant  Universal constant of gravitation | *g*  *rE*  *ME*  *MJ*  *RJ*  *σ*  *G* | 9·8 m s−2  6·4 x 106 m  6·0 x 1024 kg  1·9 x 1027 kg  7·15 x 107 m  7·79 x 1011 m  6·955 x 108 m  2·0 x 1030 kg  1·5 x 1011 m  5·67 x 10−8 W m−2 K−4  6·67 x 10−11 m3 kg−1 s−2 | Mass of electron  Charge on an electron  Mass of neutron  Mass of proton  Mass of alpha particle  Charge on alpha particle  Planck’s constant  Permittivity of free space  Permeability of free space  Speed of light in a vacuum  Speed of sound in  air | *me*  *e*  *mn*  *mp*  *mα*  *h*  *ε0*  *μ0*  *c*  *v* | 9·11 x 10−31 kg  −1·60 x 10−19 C  1·675 x 10−27 kg  1·673 x 10−27 kg  6·645 x 10−27 kg  3·20 x 10−19 C  6·63 x 10−34 J s  8·85 x 10−12 F m−1  4π x 10−7 H m−1  3·0 x 108 m s−1  3·2 x 102 m s−1 |

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  Glass  Ice  Perspex | 2·42  1·51  1·31  1·49 | Glycerol  Water  Air  Magnesium Fluoride | 1·47  1·33  1·00  1·38 |

SPECTRAL LINES

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *element* | *Wavelength /nm* | *colour* | *element* | *Wavelength /nm* | *colour* |
| hydrogen  sodium | 656  486  434  410  397  389  589 | Red  Blue-green Blue-violet Violet  Ultraviolet Ultraviolet  Yellow | Cadmium | 644  509  480 | Red Green Blue |
| *Lasers* | | |
| *element* | *Wavelength /nm*  } | *colour* |
| Carbon dioxide  Helium-neon | 9550  10590  633 | Infrared  Red |

PROPERTIES OF SELECTED MATERIALS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Substance* | *Density/*  *kg m−3* | *Melting Point/*  *K* | *Boiling Point/*  *K* | *Specific Heat Capacity/*  *J kg−1 K−1* | *Specific Latent Heat of Fusion/*  *J kg−1* | *Specific Latent Heat of*  *Vaporisation/ J kg−1* |
| Aluminium Copper Glass  Ice Glycerol Methanol Sea Water Water  Air  Hydrogen Nitrogen Oxygen | 2·70 × 103  8·96 × 103  2·60 × 103  9·20 × 102  1·26 × 103  7·91 × 102  1·02 × 103  1·00 × 103  1·29  9·0 × 10−2  1·25  1·43 | 933  1357  1400  273  291  175  264  273  . . . .  14  63  55 | 2623 2853  . . . .  . . . .  563  338  377  373  . . . .  20  77  90 | 9·02 × 102 3·86 × 102 6·70 × 102 2·10 × 103 2·43 × 103 2·52 × 103 3·93 × 103 4·18 × 103  . . . .  1·43 × 104  1·04 × 103 9·18 × 102 | 3·95 × 105  2·05 × 105  . . . .  3·34 × 105  1·81 × 105  9·9 × 104  . . . .  3·34 × 105  . . . .  . . . .  . . . .  . . . . | . . . .  . . . .  . . . .  . . . .  8·30 × 105 1·12 × 106  . . . .  2·26 × 106  . . . .  4·50 × 105  2·00 × 105 2·40 × 104 |

The gas densities refer to a temperature of 273 K and a pressure of 1·01 × 105 Pa.

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