# Appendices

# SI units

## Base and dimensionless SI units

| Physical quantity | Name | Symbol |
|---|---|---|
| length | metre | m |
| mass | kilogram | kg |
| time | second | s |
| electric current | ampere | A |
| thermodynamic temperature | kelvin | K |
| luminous intensity | candela | cd |
| amount of substance | mole | mol |
| *plane angle | radian | rad |
| *solid angle | steradian | sr |

*dimensionless units

## Derived SI units with special names

| Physical quantity | Name of SI unit | Symbol of SI unit |
|---|---|---|
| frequency | hertz | Hz |
| energy | joule | J |
| force | newton | N |
| power | watt | W |
| pressure | pascal | Pa |
| electric charge | coulomb | C |
| electric potential difference | volt | V |
| electric resistance | ohm | Ω |
| electric conductance | siemens | S |
| electric capacitance | farad | F |
| magnetic flux | weber | Wb |
| inductance | henry | H |
| magnetic flux density (magnetic induction) | tesla | T |
| luminous flux | lumen | lm |
| illuminance | lux | lx |
| absorbed dose | gray | Gy |
| activity | becquerel | Bq |
| dose equivalent | sievert | Sv |

## Decimal multiples and submultiples to be used with SI units

| Submultiple | Prefix | Symbol | Multiple | Prefix | Symbol |
|---|---|---|---|---|---|
| $10^{-1}$ | deci | d | 10 | deca | da |
| $10^{-2}$ | centi | c | $10^{2}$ | hecto | h |
| $10^{-3}$ | milli | m | $10^{3}$ | kilo | k |
| $10^{-6}$ | micro | μ | $10^{6}$ | mega | M |
| $10^{-9}$ | nano | n | $10^{9}$ | giga | G |
| $10^{-12}$ | pico | p | $10^{12}$ | tera | T |
| $10^{-15}$ | femto | f | $10^{15}$ | peta | P |
| $10^{-18}$ | atto | a | $10^{18}$ | exa | E |
| $10^{-21}$ | zepto | z | $10^{21}$ | zetta | Z |
| $10^{-24}$ | yocto | y | $10^{24}$ | yotta | Y |

## Conversion of units to SI units

| From | To | Multiply by |
|---|---|---|
| in | m | $2.54 \times 10^{-2}$ |
| ft | m | 0.3048 |
| sq. in | $m^2$ | $6.4516 \times 10^{-4}$ |
| sq. ft | $m^2$ | $9.2903 \times 10^{-2}$ |
| cu. in | $m^3$ | $1.638\,71 \times 10^{-5}$ |
| cu. ft | $m^3$ | $2.831\,68 \times 10^{-2}$ |
| l(itre) | $m^3$ | $10^{-3}$ |
| gal(lon) | l(itre) | 4.546 09 |
| miles/hr | m $s^{-1}$ | 0.477 04 |
| km/hr | m $s^{-1}$ | 0.277 78 |
| lb | kg | 0.453 592 |
| g $cm^{-3}$ | kg $m^{-3}$ | $10^{3}$ |
| lb/$in^3$ | kg $m^{-3}$ | $2.767\,99 \times 10^{4}$ |
| dyne | N | $10^{-5}$ |
| poundal | N | 0.138 255 |
| lbf | N | 4.448 22 |
| mmHg | Pa | 133.322 |
| atmosphere | Pa | $1.013\,25 \times 10^{5}$ |
| hp | W | 745.7 |
| erg | J | $10^{-7}$ |
| eV | J | $1.602\,10 \times 10^{-19}$ |
| kW h | J | $3.6 \times 10^{6}$ |
| cal | J | 4.1868 |