International System of Units (SI Units)

Base SI units

Second	s	Time	The duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom at rest at a temperature of 0 K
Metre	m	Length	The length of the path travelled by light in vacuum during a time interval of 1 ⁄ 299,792,458 of a second
Mole	mol	Amount of substance	The amount of substance of a system which contains as many elementary entities as there are atoms in 0.012 kilogram of carbon 12 (unbound atoms of carbon 12, at rest and in their ground state, are referred to) When the mole is used, the elementary entities must be specified and may be atoms, molecules, ions, electrons, other particles, or specified groups of such particles
Ampere	A	Electric current	The constant current which, if maintained in two straight parallel conductors of infinite length, of negligible circular cross-section, and placed 1 metre apart in vacuum, would produce between these conductors a force equal to 2×10^{-7} newton per metre
Candela	cd	Luminous intensity	The luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency 540×1012 hertz and that has a radiant intensity in that direction of 1/683 watt per steradian
Kelvin	K	Temperature	The fraction 1 ⁄ 273.16 of the thermodynamic temperature of the triple point of water This definition refers to water having the isotopic composition defined exactly by the following amount of substance ratios: 0.000 155 76 mole of 2H per mole of 1H, 0.000 379 9 mole of 17O per mole of 16O, and 0.002 005 2 mole of 18O per mole of 16O
Kilogram	kg	Mass	The mass of the international prototype of the kilogram

Derived SI units

Hertz	Hz	s^{-1}	Frequency
Newton	N	$kg.m.s^{-2}$	Force
Pascal	Pa	$N.m^{-2}$	Pressure
Joule	J	N.m	Energy/Work
Watt	W	$J.s^{-1}$	Power
Celsius	°C	K + 273.15	Temperature
Coulomb	C	A.s	Electrical charge
Volt	V	W/A	Potential difference
Farad	F	C/V	Capacitance
Ohm	Ω	V/A	Resistance

etc.

The Prefixes Used with SI Units

Prefix	Symbol	Meaning	Scientific Notation
exa-	E	1,000,000,000,000,000,000	10^{18}
peta-	P	1,000,000,000,000,000	10^{15}
tera-	T	1,000,000,000,000	10^{12}
giga-	G	1,000,000,000	10^{9}
mega-	M	1,000,000	10^{6}
kilo-	k	1,000	10^{3}
hecto-	h	100	10^{2}
deka-	da	10	10^{1}
—	—	1	10^{0}
deci-	d	0.1	10^{-1}
centi-	c	0.01	10^{-2}
milli-	m	0.001	10^{-3}
micro-	μ	0.000 001	10^{-6}
nano-	n	0.000 000 001	10^{-9}
pico-	p	0.000 000 000 001	10^{-12}
femto-	f	0.000 000 000 000 001	10^{-15}
atto-	a	0.000 000 000 000 000 001	10^{-18}

Common non-SI units

Millimetres of mercury	mmHg	Pressure exerted by a column of mercury 1mm high Now defined as 133.322387415 Pa	Pressure
Centimetres of water	cmH_2O	Pressure exerted by a column of water 1cm high at 4°C (temp. of maximum density) at the standard acceleration of gravity	Pressure
Atmosphere	atm	101,325 Pa	Pressure
Bar	bar	100,000 Pa	Pressure
calorie	cal	Approximate amount of energy needed to raise the temperature of 1g of water by 1°C at a pressure of 1atm	Energy
Calorie	Cal	Approximate amount of energy needed to raise the temperature of 1kg of water by 1°C at a pressure of 1atm	Energy

Pressure conversions

1 atm = 101,325 Pa = 101.325 kPa = 1.01325bar = 760mmHg

1 bar = 100,000 Pa = 10^5 Pa = 100kPa = 750mmHg

1 mmHg = 133.322387415 Pa at 0°C

1 kPa = 7.5mmHg = 10.2 cmH_2O

Specific gravity of mercury is 13.6, therefore mmH_2O can be converted to mmHg by dividing by 13.6

→ cmH_2O can be converted to mmHg by dividing by 1.36

→ mmHg can be converted to cmH_2O by multiplying by 1.36

$1cmH_2O$ = 98Pa

1 Torr = 1/760 atm = 1mmHg = 133.322387415 Pa

1cal = 4.18J

1Cal = 1,000cal = 4,180J = 4.18kJ

Standard temperature and pressure (STP)

273.15K = 0°C

101.325 kPa = 1atm

Resistance (circulation)

R = V/I

= mmHg/(L/min) = **mmHg.min/L** = Hybrid Reference Units (HRU) = Wood units

x 80 = dynes.sec/cm^5 ≈ dynes.sec.cm^{-5}

Volume

Official SI unit = m^3

Accepted SI unit = litre (L) = dm^3 = 0.001 m^3