

SI is the abbreviation of "Système International d'Unités". This international system of units is based upon:

- seven base units as "length", "time", "temperature", "mass" etc.
- two supplementary units
- derived units

base units of SI

base unit	name	symbol
length	metre	m
mass	kilogram	kg
time	second	s
electric current	ampere	A
temperature	kelvin	K
luminous intensity	candela	cd
amount of substance	mole	mol

supplementary units of SI

supplementary unit	name	symbol
plane angle	radian	rad
solid angle	steradian	sr

The derived units may be divided into three groups:

- units which are expressed in terms of base and supplementary units
- units which have been given special names and symbols
- units which are expressed in terms of other derived units

Some **derived units** expressed in terms of base and supplementary units

derived units	name	symbol
acceleration	metre per second squared	m/s ²
angular acceleration	radian per second squared	rad/s ²
area	square metre	m ²
density	kilogram per cubic metre	kg/m ³
kinematic viscosity	square metre per second	m ² /s
mass flow rate	kilogram per second	kg/s
molar mass	kilogram per mole	kg/mol
specific volume	cubic metre per kilogram	m ³ /kg
velocity	metre per second	m/s
volume	cubic metre	m ³

some derived units having special names and symbols

derived unit	name	symbol
force	newton	1 N = 1 kg.m/s ²
pressure, stress	pascal	1 Pa = 1 N/m ²
energy, work, quantity of heat	joule	1 J = 1 N.m
power, radiant flux	watt	1 W = 1 J/s
electric potential, potential difference	volt	1 V = 1 W/A
electrical resistance	ohm	1 Ω = 1 V/A

onwards are:

- kilopascal (kPa) = 10³ N/m² = kN/m²
- kilonewton (kN) = 10³ kg.m/s²
- kilojoule (kJ) = 10³ N.m = kN.m

conversion table

from the old (metre-kilogram-second-ampere) system to units of SI

- 1 bar = 100 kPa (0.1N/mm²)
- 1 Btu (British thermal unit) = 1.055 kl = 1055 J
- 1 cP (centipoise) = 10⁻³Pa.s.
- 1 cSt. (centistokes) = 10⁻⁶m²/s.
- 1 dyne = 1 g.cm/s² = 10⁻⁵N
- 1 erg = 1 dyn.cm = 10⁻⁷J
- 1 hp (horsepower) ≈ 745.7 W.
- 1 kcal = 4.1868 kJ = 41868 J
- 1 kcal/h = 1.163 W
- Kelvin ≈ °C + 273
- 1 mbar (millibar) = 100 Pa
- 1 mmHg (torr) ≈ 133.32 Pa
- 1 mwc ≈ 9.81 kPa (9.81 kN/m²)
- 1 pk (paardekracht NL) ≈ 735.5 W
- 1 psi ≈ 6.89 kPa (6.89 kN/m²)
- 1 kgf ≈ 9.81 N
- 1 kgf/cm² ≈ 98.07 kPa

some more conversions

- 1 in = 1 inch = 25.4 x 10⁻³m (=25.4 mm)
- 1 ft = 1 foot = 0.3048 m
- 1 in² = 1 inch² = 0.64516 x 10⁻³m² (≈ 6.452 cm²)
- 1 ft² = 1 foot² = 0.0929 m²
- 1 lb = 0.454 kg
- 1 lb/h ≈ 0.12599 x 10⁻³ kg/s
- 1 in³ ≈ 16.387 x 10⁻⁶m³ (= 16.387 cm³)
- 1 UK gal ≈ 4.546 x 10⁻³m³ (= 4.546 dm³)
- 1 US gal ≈ 3.785 x 10⁻³m³ (= 3.785 dm³)