Units of Measurement

Quantity	Legally Regulated Units SI Units	Additional Units	Conversion	Other Units Remarks
Space and Time				
Length	**m** (metre)			ångström: 1 Å = 10^{-10} m
				nautical mile: 1 M = 1,852 km
				astronomical unit: 1 ua = 1.496...·10^{11} m
				refraction power of an optical system: 1 dioptre = 1 m^{-1}
Area	**m^2** (square metre)	a (are), ha (hectare)	1 a = 100 m^2; 1 ha = 10 000 m^2	
		b (Barn)	1 b = 100 fm^2 = 10^{-28} m^2	
Volume	**m^3** (cubic metre)	l, L (liter)	1 L = 1 dm^3	
Plane angle	**rad** (radian)		1 rad = 1 m·m^{-1}	
		° (degree), ' (minute), " (second)	1 ° = (π/180) rad; 1' = (1/60)°, 1" = (1/60)'	
		gon	1 gon = (π/200) rad; 1 cgon = 10^{-2} gon; 1 mgon = 10^{-3} gon	
Space angle	**sr** (steradian)		1 sr = 1 m^2·m^{-2}	
Time	**s** (second)	min (minute), h (hour)	1 min = 60 s; 1 h = 3 600 s	
		d (day)	1 d = 86 400 s	
Velocity	**m·s^{-1}**	km·h^{-1}	1 km·h^{-1} = 0,277 ... m·s^{-1}	
				knot: 1 kn = (1852/3600) m·s^{-1}
Acceleration	**m·s^{-2}**			gal: 1 gal = 10^{-2} m·s^{-2}
Frequency	**Hz** (hertz)	s^{-1}	1 Hz = 1 s^{-1}	
Mechanics and Acoustics				
Mass	**kg** (kilogram)	g (gram), t (ton)	1 t = 1 000 kg	quintal: 1 q = 100 kg (especially for Switzerland)
		u (atomic mass unit)	1 u = 1.660 540 2·10^{-27} kg	other name: dalton (Da)
		ct (carat metric)	1 ct = 0,2 g	
Mass per length	**kg·m^{-1}**	tex (for textile threads)	1 tex = 10^{-6} kg·m^{-1} = 1 g·km^{-1}	denier: 1 den = ⅑·10^{-6} kg·m^{-1}
Density	**kg·m^{-3}**			
Momentum	**kg·m·s^{-1}**		1 kg·m·s^{-1} = 1 N·s	
Moment of inertia	**kg·m^2**			1 kp·m·s^2 = 9.806 65 kg·m^2
Force	**N** (newton)		1 N = 1 kg·m·s^{-2}	1 kp = 9.806 65 N
Torque	**N·m**			1 kp·m = 9.806 65 N·m
Mechanical tension	**N·m^{-2}**			1 kp·m^{-2} = 9.806 65 N·m^{-2}
Pressure	**Pa** (pascal)	bar	1 Pa = 1 N·m^{-2}	1 at = 1 kp·cm^{-2} = 0.980 665 bar
			1 bar = 10^5 Pa	1 atm = 760 Torr = 1.013 25 bar
		mm Hg (millimeter mercury)	1 mm Hg = 1.333 22·10^2 Pa	1 Torr = 1.333 22 mbar

Energy, work, quantity of heat	**J** (joule)	kW·h (kilowatthour)	1 J = 1 N·m = 1 W·s	calorie: 1 cal = 4.186 8 J
			1 kW·h = 3.6 MJ	1 kp·m = 9.806 65 J
		eV (electron volt)	1 eV = 1.602 177 33·10^{-19} J	1 PS·h = 2.647 8 MJ
				1 erg = 10^{-7} J
Power, heat flux	**W** (watt)		1 W = 1 J·s^{-1} = 1 N·m·s^{-1} = 1 V·A	1 PS = 75 kp·m·s^{-1} = 0.735 499 kW
				1 kcal · h^{-1} = 1.163 W
Sound pressure	**Pa** (pascal)	dB (decibel)	sound pressure level in dB = 20 · log (sound pressure in µPa · (20 µPa)$^{-1}$)	
Dynamic viscosity	**Pa·s**		1 Pa·s = 1 N·s·m^{-2}	poise: 1 P = 10^{-1} Pa·s
Kinematic viscosity	**m^2·s^{-1}**			stokes: 1 St = 1 cm^2·s^{-1}
Temperature and Heat				
Temperature	**K** (kelvin)	°C (degree celsius)	temperature /°C = temperature /K – 273.15	
			temperature difference 1 °C = 1 K	
Heat capacity enthropy	**J·K^{-1}**			1 kcal·$°C^{-1}$ = 4.186 8 kJ·K^{-1}
Specific heat capacity	**J·(kg·K)$^{-1}$**			1 kcal·(kg·°C)$^{-1}$ = 4.186 8 kJ·(kg · K)$^{-1}$
Specific energy	**J·kg^{-1}**			1 kcal·kg^{-1} = 4.186 8 kJ·kg^{-1}
Thermal conductivity	**W·(m·K)$^{-1}$**			1 kcal·(h·m·°C)$^{-1}$ = 1.163 W·(m·K)$^{-1}$
Thermal transmission coefficient	**W·(m^2·K)$^{-1}$**			1 kcal·(h · m^2·°C)$^{-1}$ = 1.163 W·(m^2·K)$^{-1}$
Electricity and Magnetism				
Electric current	**A** (ampere)			
Electric charge	**C** (coulomb)	A·h (ampere hour)	1 C = 1 A·s; 1 A · h = 3 600 C	
Electric potential difference	**V** (volt)		1 V = 1 W·A^{-1}	
Electric field strength	**V·m^{-1}**			
Electric resistance	**Ω** (ohm)		1 Ω = 1 V·A^{-1}	
Electric conductance	**S** (siemens)		1 S = 1 $Ω^{-1}$	
Capacitance	**F** (farad)		1 F = 1 C · V^{-1}	
Magnetic flux	**Wb** (weber)		1 Wb = 1 V·s	maxwell: 1 Mx = 10^{-8} Wb
Magnetic induction	**T** (tesla)		1 T = 1 Wb·m^{-2}	gauss: 1 G = 10^{-4} T
Inductance	**H** (henry)		1 H = 1 Wb·A^{-1}	
Magnetic field strength	**A·m^{-1}**			oersted: 1 Oe = (1 000/4π) A·m^{-1}
Photometry and Radiometry				
Luminous intensity	**cd** (candela)			
Illuminance	**cd·m^{-2}**			stilb: 1 sb = 10^4 cd·m^{-2}
				apostilb: 1 asb = $π^{-1}$ cd·m^{-2}
Luminous flux	**lm** (lumen)		1 lm = 1 cd·sr	
Illuminance	**lx** (lux)		1 lx = 1 lm·m^{-2}	
Quantity of light	**lm·s**			
Luminous/light-exposure	**lx·s**			

Radiant power	**W**			
Radiant intensity	**W·sr^{-1}**			
Radiance	**W·(sr·m^2)$^{-1}$**			
Irradiance	**W·m^{-2}**			
Radiant energy	**W·s**			
Radiant exposure	**W·s·m^{-2}**			
Radioactivity, Ionising Radiation and Chemistry				
Activity	**Bq** (becquerel)		1 Bq = 1·s^{-1}	curie: 1 Ci = 37·10^9 Bq
Absorbed dose	**Gy** (gray)		1 Gy = 1 J·kg^{-1}	rad: 1 rd = 0.01 Gy
Equivalent dose	**Sv** (sievert)		1 Sv = 1 J·kg^{-1}	rem: 1 rem = 0.01 Sv
Ion dose	**C·kg^{-1}**			röntgen: 1 R = 0.000 258 C·kg^{-1}
Amount of substance	**mol** (mole)			
Molar volume	**m^3·mol^{-1}**			
Molar mass	**kg·mol^{-1}**			
Amount of substance concentration	**mol·m^{-3}**			
Amount of substance content	**mol·kg^{-1}**			
Amount of substance fraction	**1**		1 = 1 mol·mol^{-1}	
Catalytic activity	**kat** (katal)		1 kat = 1 mol·s^{-1}	