

## SI UNITS CONVERSION TABLE (the units added { } is permitted to use)

Kinds of Quantity (Name of Unit)	Symbol of Unit [Definition] (a prefix added example)	Units avoid using (Relation to SI units)
<b>Length</b> (metre)	<b>m</b> (km, mm, $\mu\text{m}$ , nm)	$\text{\AA}$ ( $=10^{-10} \text{ m}=0.1 \text{ nm}$ )
<b>Area</b>	<b>m<sup>2</sup></b> (cm <sup>2</sup> , mm <sup>2</sup> , $\mu\text{m}^2$ )	
<b>Volume</b>	<b>m<sup>3</sup></b> (dm <sup>3</sup> , cm <sup>3</sup> , mm <sup>3</sup> ) {L( $=10^{-3} \text{ m}^3=\text{dm}^3$ )}	mL( $=10^{-6} \text{ m}^3=\text{cm}^3$ )
<b>Mass</b> (kilogramme)	<b>kg</b> (Mg, g, mg, $\mu\text{g}$ ) {t( $=10^3 \text{ kg}=\text{Mg}$ )}	
<b>Density</b>	<b>kg/m<sup>3</sup></b> (Mg/m <sup>3</sup> )	g/cm <sup>3</sup> ( $=10^3 \text{ kg/m}^3=\text{Mg/m}^3$ )
<b>Time</b> (second)	<b>s</b> (Ms, ks, ms, $\mu\text{s}$ ) {min( $=60 \text{ s}$ )} {h( $=3.6 \text{ ks}$ )} {d( $=86.4 \text{ ks}$ )}	1-y $\doteq 31.556926 \times 10^6 \text{ s}$ ( $\doteq 365.2422 \text{ d}$ )
<b>Frequency</b> (hertz)	<b>Hz</b> [ $\text{s}^{-1}$ ] (GHz, MHz, kHz)	
<b>Wave Number</b>	<b>m<sup>-1</sup></b>	$\text{\AA}^{-1}$ ( $=10^{10} \text{ m}^{-1}$ ) cm <sup>-1</sup> ( $=10^2 \text{ m}^{-1}$ )
<b>Speed</b>	<b>m/s</b>	
<b>Acceleration</b>	<b>m/s<sup>2</sup></b>	
<b>Diffusion Coefficient</b> <b>Kinematic Viscosity</b>	<b>m<sup>2</sup>/s</b>	St( $=10^{-4} \text{ m}^2/\text{s}=\text{cm}^2/\text{s}$ )
<b>Power</b> (newton)	<b>N</b> [ $\text{kg} \cdot \text{m}/\text{s}^2$ ]	dyn( $=10^{-5} \text{ N}=10 \mu\text{N}$ ) kgf( $=9.80665 \text{ N}$ )
<b>Pressure</b> (pascal)	<b>Pa</b> [ $\text{N}/\text{m}^2$ ] (GPa, MPa, mPa)	kgf/mm <sup>2</sup> ( $=9.80665 \text{ MPa}$ ) bar( $=10^5 \text{ Pa}=0.1 \text{ MPa}$ ) Torr( $\doteq 133.32 \text{ Pa}$ ) atm( $=101325 \text{ Pa}$ )
<b>Surface Tension</b>	<b>N/m</b>	dyn/cm( $=10^{-3} \text{ N/m}=\text{mN/m}$ )
<b>Viscosity</b>	<b>Pa · s</b>	P( $=10^{-1} \text{ Pa} \cdot \text{s}$ )
<b>Stress Intensity Factor</b>	<b>MPa · m<sup>1/2</sup></b>	kgf/mm <sup>3/2</sup> ( $=0.31012 \text{ MPa} \cdot \text{m}^{1/2}$ ) N/mm <sup>3/2</sup> ( $=0.031623 \text{ MPa} \cdot \text{m}^{1/2}$ )

<b>Quantity of Substance</b>	<b>mol</b>	
<b>Molecular Density</b>	<b>mol/m<sup>3</sup></b> {mol/L(=10 <sup>3</sup> mol/m <sup>3</sup> =kmol/m <sup>3</sup> )}	
<b>Molecular Mass Density</b>	<b>mol/kg</b>	
<b>Chemical Reaction Rate</b>	<b>mol/s</b>	
<b>Energy</b> <b>Work</b> <b>Heat</b>	<b>J</b> [N · m] (MJ, kJ, mJ) {eV(=1.60218×10 <sup>-19</sup> J)}	erg(=10 <sup>-7</sup> J)=0.1 μJ) kgf · m(=9.80665 J) cal <sub>th</sub> (=4.1840 J) cal <sub>IT</sub> (=4.1868 J) kWh(=3.6×10 <sup>6</sup> J=3.6 MJ)
<b>Moment of Force</b>	<b>N · m</b>	kgf · m(=9.80665 N · m)
<b>Power</b>	<b>W</b> [J/s=V · A]	
<b>Heat Flow Density</b>	<b>W/m<sup>2</sup></b> <b>J/mol</b> (kJ/mol)	cal/mol(= 4.184J/mol) erg/atom (= 1×10 <sup>-7</sup> J/atom = 6.022×10 <sup>16</sup> J/mol) eV/atom (= 1.60218×10 <sup>-19</sup> J/atom = 9.6485×10 <sup>4</sup> J/mol)
<b>Surface Energy</b>	<b>J/m<sup>2</sup></b>	erg/cm <sup>2</sup> (= 10 <sup>-3</sup> J/m <sup>2</sup> =mJ/m <sup>2</sup> )
<b>Temperature</b>	<b>K</b> {°C(= T(K)-273.15)}	
<b>Thermal Conductivity</b>	<b>W/(m · K)</b>	cal/(cm · sec · deg) (=0.4184kJ/(s · m · K))
<b>Specific Heat</b>	<b>J/(kg · K)</b>	cal/(g · deg) (= 4.184kJ/(kg · K))
<b>Entropy</b>	<b>J/K</b>	cal/deg(= 4.184J/K)
<b>Molecular Entropy</b>	<b>J/(mol · K)</b>	
<b>Current</b>	<b>A</b>	
<b>Current Density</b>	<b>A/m<sup>2</sup></b>	
<b>Charge</b>	<b>C</b> [A · s]	
<b>Voltage</b>	<b>V</b> [J/(A · s)]	
<b>Electrical Field Strength</b>	<b>V/m</b>	
<b>Resistance</b>	<b>Ω</b> [V/A]	
<b>Solution Resistance</b>	<b>Ωm</b>	Ωcm(= 10 <sup>-2</sup> Ωm)
<b>Electrical Conductance</b>	<b>S</b> [A/V]	

<b>Conductivity</b>	<b>S/m</b>	
<b>Electric Capacitance</b>	<b>F[C/V]</b>	
<b>Permittivity</b>	<b>F/m</b>	
<b>Luminous Intensity</b>	<b>cd</b>	
<b>Luminous Flux</b>	<b>lm[cd · sr]</b>	
<b>Illuminance</b>	<b>lx[cd · sr/m<sup>2</sup>]</b>	
<b>Angle</b>	<b>rad</b> {1° = (π/180)rad} {1' = (π/10800)rad} {1" = (π/648000)rad}	
<b>Solid Angle</b>	<b>sr</b>	
<b>Radiation Strength</b>	<b>J/(m<sup>2</sup> · s)</b>	erg/cm <sup>2</sup> · s (=mJ/(m <sup>2</sup> · s))
<b>Exposure</b>	<b>C/kg</b> (μC/kg, nC/kg)	R(=2.58×10 <sup>-4</sup> C/kg =0.258mC/kg)
<b>Absorbed Dose</b>	<b>Gy[J/kg]</b>	rad (=10 <sup>-2</sup> J/kg=10mGy)
<b>Radioactivity</b>	<b>Bq[s<sup>-1</sup>]</b> (MBq, kBq)	Ci (=3.7×10 <sup>10</sup> /s=37GBq)
<b>Mass Absorption Coefficient</b>	<b>m<sup>2</sup>/kg</b>	cm <sup>2</sup> /g(=0.1m <sup>2</sup> /kg)
<b>Equivalent Dose</b>	<b>Sv[J/kg]</b>	rem(=100Sv)

Kinds of Quantity (Name of Unit)	Symbol of Unit [Definition]	Units avoid using (Relation to SI units)	Symbol of Unit [Definition]	Units avoid using (Relation to MKSA units)
	SI Unit (E – B correspondence) $B = \mu_0(H + M)$	CGS Unit $B = H + 4\pi M$	MKSA Unit (E – H correspondence) $B = \mu_0 H + I$	CGS Unit $B = H + 4\pi M$
Magnetic Field Strength	A/m	Oe ( $= 10^3 / 4\pi$ ) A/m	A/m	Oe ( $= 10^3 / 4\pi$ ) A/m
Magnetic Flux (weber)	Wb	Mx ( $= 10^{-8}$ Wb = 10 nWb)	Wb	Mx ( $= 10^{-8}$ Wb = 10 nWb)
Magnetic Field (tesla)	T Wb/m <sup>2</sup>	G ( $= 10^{-4}$ T = 0.1mT), (( $= 10^{-4}$ Wb/m <sup>2</sup> = 0.1mWb/m <sup>2</sup> ))	T Wb/m <sup>2</sup>	G ( $= 10^{-4}$ T = 0.1mT), (( $= 10^{-4}$ Wb/m <sup>2</sup> = 0.1mWb/m <sup>2</sup> ))
Energy Density	J/m <sup>3</sup>	G · Oe(0.1/4π)J/m <sup>3</sup>	J/m <sup>3</sup>	G · Oe(0.1/4π)J/m <sup>3</sup>
(Volume) Magnetic Field Strength	A/m J/(T · m <sup>3</sup> )	emu/cm <sup>3</sup> , emu/cc ( $= 10^3$ A/m, $10^3$ J/(T · m <sup>3</sup> ))	Wb/m <sup>2</sup>	emu/cm <sup>3</sup> , emu/cc ( $4\pi \times 10^{-4}$ Wb/m <sup>2</sup> )
(Mass) Magnetic Field Strength	(A · m <sup>2</sup> )/kg J/(T · kg)	emu/g ( $= A \cdot m^2/kg = J/(T \cdot kg)$ )	(Wb · m)/kg	emu/g ( $4\pi \times 10^{-7}$ Wb · m/kg)
Inductance (henry)	H Wb/A		H	
(Volume) Magnetic Susceptibility	No Dimensions	No Dimensions ( $= 4\pi$ )	H/m	No Dimensions ( $= (4\pi)^2 \cdot 10^{-7}$ H/m)
(Mass) Magnetic Susceptibility	m <sup>3</sup> /kg	cm <sup>3</sup> /g ( $= 4\pi \cdot 10^{-3}$ m <sup>3</sup> /kg)	Hm <sup>2</sup> /kg	cm <sup>3</sup> /g ( $= (4\pi)^2 \cdot 10^{-10}$ Hm <sup>2</sup> /kg)
Magnetic Permeability	H/m	No Dimensions ( $= 4\pi \cdot 10^{-7}$ H/m )	H/m	No Dimensions ( $= 4\pi \cdot 10^{-7}$ H/m )