

CGS and SI (MKS) unit systems

Table D.1: The centimetre-gram-seconds (CGS) and the metre-kilogram-seconds (SI) unit systems. To convert from one system to the other, cgs unit \times factor = mks unit. Data from [Purcell \(1985\)](#) and [Jackson \(1999\)](#)

description	cgs	unit	SI (mks)	unit	factor
acceleration	galileo	Gal	metre per second squared	$\text{m} \cdot \text{s}^{-2}$	0.01
dynamic viscosity	poise	P	pascal second	$\text{Pa} \cdot \text{s}$	0.1
electric charge	franklin	Fr	coulomb	C	3.34×10^{-10}
electric current	biot	Bi	ampere	A	10
electric dipole moment	debye	D	coulomb metre	$\text{C} \cdot \text{m}$	3.34×10^{-30}
energy (work)	erg		joule	J	10^{-7}
force	dyne	dyn	newton	N	10^{-5}
heat energy	calorie	cal	joule	J	4.187
heat transmission	langley		kilojoule per square metre	$\text{kJ} \cdot \text{m}^{-2}$	41.84
illumination	phot	ph	lux	lx	10^4
kinematic viscosity	stokes	St	square metres per second	$\text{m}^2 \cdot \text{s}^{-1}$	10^{-4}
	lambert	Lb			3183.1
		stilb			sb
magnetic dipole moment	emu		ampere square metre	$\text{A} \cdot \text{m}^2$	10^{-3}
magnetic field strength	oersted	Oe	ampere per metre	$\text{A} \cdot \text{m}^{-1}$	79.577
	line	li			10^{-8}
		maxwell			Mx
		unit pole			
magnetic flux density	gauss	G	tesla	T	10^{-4}
magnetomotive force	gilbert	Gi	ampere	A	0.796
permeability	darcy		square metre	m^2	0.987×10^{-12}
pressure	barye	ba	pascal	Pa	0.1
wave number	kayser	K	per metre	m^{-1}	100

Conversion Table cgs/SI- Units

	cgs	Conv.- Factor	SI
Distance	cm	$=10^{-2}$	m
Mass	g	$=10^{-3}$	kg
Time	sec	=	sec
Force	dyne	$=10^{-5}$	Newton
Energy	erg	$=10^{-7}$	Joule
Charge	esu	$=3.336 \cdot 10^{-10}$	Coulomb
El. Potential	statvolt	=299.8	Volt
Magnetic Field	Gauss	$=10^{-4}$	Tesla
	Further units: 1 eV = $1.602 \cdot 10^{-12}$ erg 1 Ry = 13.6 eV (ionization energy of hydrogen) 1 eV = $k \cdot 11605^{\circ}K$		

Important Physical Constants

Speed of Light: $c = 2.998 \cdot 10^{10}$ cm/sec

Gravitational Constant: $G = 6.673 \cdot 10^{-8}$ dyne \cdot cm²/g²

Planck Constant: $h = 6.6262 \cdot 10^{-27}$ erg \cdot sec

Elementary Charge: $e = 4.8032 \cdot 10^{-10}$ esu

Atomic Mass Unit: $M = 1.6605 \cdot 10^{-24}$ g

Electron Mass: $m = 9.1095 \cdot 10^{-28}$ g

Boltzmann Constant: $k = 1.3803 \cdot 10^{-16}$ erg/deg