

# Units and Constants in MedeA

## Contents

- *Units and Constants in MedeA*
  - *Units*
  - *Constants*

## 1 Units

Quantity	Symbol	Units	SI units
<b>Amount</b>	mol	Mole	1.0 mol
<b>Capacitance</b>	F	Farad	1.0 F
<b>Electric Charge</b>	C	Coulomb	1.0 C
<b>Electric Conductance</b>	S	Siemens	1.0 S
<b>Electric Current</b>	A	Ampere	1.0 A
<b>Electric Potential</b>	V	Volt	1.0 V
<b>Electric Resistance</b>	ohm	Ohm	1.0 ohm
<b>Energy</b>	E rel	Rest Energy of Electron	8.187111E-14 J
	Ha	Hartree	4.359748E-18 J
	J	Joule	1.0 J
	Ry	Rydberg	2.179874E-18 J
	btu	British Thermal Unit	1.054350E+03 J
	cal	Calorie	4.184000E+00 J
	eV	Electronvolt	1.602177E-19 J
	erg	Erg	1.000000E-07 J
	<b>Energy Density</b>	Pa	Pascal
bar		Bar	100000.0 Pa
<b>Force</b>	N	Newton	1.0 N
	dyn	Dyne	1.000000E-05 N
<b>Frequency</b>	Hz	Hertz	1.0 Hz
<b>Inductance</b>	H	Henry	1.0 H
<b>Length</b>			
	Ang	Angstrom	1E-10 m
	bohr	Bohr	5.291773E-11 m
	ft	Foot	3.048000E-01 m
	in	Inch	2.540000E-02 m
	l rel	Length Unit Relativistic	3.861593E-13 m
	m	Meter	1.0 m
	mi	Mile	1.609344E+03 m
	rd	Rod	5.029200E+00 m
	ua	Astronomical Unit	149598000000.0 m
yd	Yard	9.144000E-01 m	
<b>Magnetic Flux</b>	Wb	Weber	1.0 Wb
<b>Magnetic Flux Density</b>	T	Tesla	1.0 T
<b>Mass</b>	g	Gram	0.001 kg

Continued on next page

Table 1 – continued from previous page

	kg	Kilogram	1.0 kg
	lb	Pound	4.535924E-01 kg
	t	Ton	1000.0 kg
	u	Unified Stomic Mass Unit	1.6605402E-27 kg
<b>Moment of Force</b>	E rel	Rest Energy	8.187111E-14 J of electron
	Ha	Hartree	4.359748E-18 J
	J	Joule	1.0 J
	Ry	Rydberg	2.179874E-18 J
	btu	British thermal unit	1.054350E+03 J
	cal	Calorie	4.184000E+00 J
	eV	Electronvolt	1.602177E-19 J
	erg	Erg	1.000000E-07 J
<b>Plane Angle</b>	°	Degree	1.745329E-02 rad
	'	Angular Minute	2.908882E-04 rad
	rad	Radian	1.0 rad
	deg	Degree	1.745329E-02 rad
<b>Power</b>	W	Watt	1.0 watt
<b>Pressure</b>	Pa	Pascal	1.0 Pa
	bar	Bar	100000.0 Pa
<b>Solid Angle</b>	sr	Steradian	1.0 sr
<b>Temperature</b>	K	Kelvin	1.0 K
	C	Deg Celsius	1.0 K
	F	Deg Fahrenheit	5.555556E-01 K
<b>Time</b>	d	Day	86400.0 s
	h	Hour	3600.0 s
	min	Minute	60.0 s
	s	Second	1.0 s
<b>Volume</b>	L	Liter	1.0 s

## 2 Constants

Constant	Description	SI units
Eh	Hartree Energy	4.359748E-18 J
G	Gravitational Constant	6.672590E-11 m <sup>3</sup> /(kg*s <sup>2</sup> )
Na	Avogadro Constant	6.022137E+23 1/mol
R	Molar Gas Constant	8.314510E+00 m <sup>2</sup> *kg/(mol*K*s <sup>2</sup> )
Ralpha	Rydberg Constant	1.097373E+07 1/m
Vm	Molar Volume of Ideal Gas	2.241410E-02 m <sup>3</sup> /mol
a0	Bohr Radius	5.291773E-11 m
alpha	Fine Structure Constant	7.297353E-03 1
atm	Standard Atmosphere	101325.0 Pa
c	Speed of Light in Vacuum	299792458.0 m/s
e	Elementary Charge	1.602177E-19 C
eps0	Permittivity of Vacuum	8.854188E-12 A <sup>2</sup> *s <sup>4</sup> /(m <sup>3</sup> *kg)
gamma	Euler's Constant	5.772157E-01 1
gn	Standard Acceleration of Gravity	9.806650E+00 m/s <sup>2</sup>
h	Planck Constant	6.6260755E-34 m <sup>2</sup> *kg/s
hbar	Planck Constant / 2pi	1.054573E-34 m <sup>2</sup> *kg/s
k	Boltzmann Constant	1.380658E-23 m <sup>2</sup> *kg/(K*s <sup>2</sup> )
lambdac	Compton Wavelength	2.426311E-12 m
me	Electron Mass	9.109390E-31 kg
mp	Proton Mass	1.672623E-27 kg
mu0	Permeability of Vacuum	1.256637E-06 m*kg/(A <sup>2</sup> *s <sup>2</sup> )
re	Classical Electron Radius	2.817941E-15 m
ub	Bohr Magneton	9.274015E-24 m <sup>2</sup> *A