

## Conversion Table for natural and MKSA Units

Natural units defined by:  $\hbar = c = 1$  (and  $4\pi\epsilon_0 = 1$ ). Remaining unit is chosen to be Energy (eV).

Quantity	Symbol	natural units	MKSA
Length	$\ell$	1/eV	$1.9732705 \cdot 10^{-7}$ m $\approx$ 0.2 $\mu$ m
Mass	$m$	1 eV	$1.7826627 \cdot 10^{-36}$ kg
Time	$t$	1/eV	$6.5821220 \cdot 10^{-16}$ s $\approx$ .66 fs
Frequency	$\nu$	1 eV	$1.5192669 \cdot 10^{15}$ Hz
Speed	$v$	1	$2.99792458 \cdot 10^8$ m/s
Momentum	$p$	1 eV	$5.3442883 \cdot 10^{-28}$ kg·m/s
Force	$F$	1 eV <sup>2</sup>	$8.1194003 \cdot 10^{-13}$ N
Power	$P$	1 eV <sup>2</sup>	0.24341350 mW
Energy	$E$	1 eV	$1.6021773 \cdot 10^{-19}$ J
Charge	$q$	1	$1.8755468 \cdot 10^{-18}$ C
Charge density	$\rho$	1 eV <sup>3</sup>	244.10013 C/m <sup>3</sup>
Current	$I$	1 eV	2.8494561 mA
Current density	$J$	1 eV <sup>3</sup>	$7.3179379 \cdot 10^{10}$ A/m <sup>2</sup>
Electric field	$E$	1 eV <sup>2</sup>	432.90844 V/mm
Potential	$\Phi$	1 eV	85.424546 mV
Polarization	$P$	1 eV <sup>2</sup>	$4.8167560 \cdot 10^{-5}$ C/m <sup>2</sup>
Conductivity	$\sigma$	1 eV	$1.6904124 \cdot 10^5$ S/m
Resistance	$R$	1	29.979246 $\Omega$
Capacitance	$C$	1/eV	$2.1955596 \cdot 10^{-17}$ F
Magnetic flux	$\phi$	1	$5.6227478 \cdot 10^{-17}$ Wb
Magnetic induction	$B$	1 eV <sup>2</sup>	1.4440271 mT
Magnetization	$M$	1 eV <sup>2</sup>	$1.4440271 \cdot 10^4$ A/m
Inductance	$L$	1/eV	$1.9732705 \cdot 10^{-14}$ H
<b>some constants:</b>			
Planck's quantum	$\hbar$	1	$1.05457266 \cdot 10^{-34}$ J·s
$h = 2\pi\hbar$	$h$	$2\pi$	$6.6260755 \cdot 10^{-34}$ J·s
Charge of electron	$e$	$8.5424546 \cdot 10^{-2}$	$1.60217733 \cdot 10^{-19}$ C
Bohr radius, $\hbar^2/me^2$	$a_0$	$2.6817268 \cdot 10^{-4}/eV$	$5.29177249 \cdot 10^{-11}$ m
Energy 1 electron Volt	eV	1 eV	$1.60217733 \cdot 10^{-19}$ J
Rydberg energy, $e^2/2a_0$	$E_{\text{Ryd}}$	13.605698 eV	$2.1798741 \cdot 10^{-18}$ J
Hartree energy, $e^2/a_0$	$E_{\text{h}}$	27.211396 eV	$4.3597482 \cdot 10^{-18}$ J
Speed of light	$c$	1	$2.99792458 \cdot 10^8$ m/s
Permeability of vacuum	$\mu_0$	$4\pi$	$4\pi \cdot 10^{-7}$ H/m
Permittivity of vacuum	$\epsilon_0$	$1/4\pi$	$8.854187817 \cdot 10^{-12}$ F/m
Bohr magneton	$\mu_B$	$8.3585815 \cdot 10^{-8}/eV$	$9.2740154 \cdot 10^{-24}$ J/T
Mass of electron	$m_e$	510.99906 keV	$9.1093897 \cdot 10^{-31}$ kg
Mass of proton	$m_p$	938.27234 MeV	$1.6726231 \cdot 10^{-27}$ kg
Mass of neutron	$m_n$	939.56563 MeV	$1.6749286 \cdot 10^{-27}$ kg
Gravitation constant	$G$	$6.70711 \cdot 10^{-57}/eV^2$	$6.67259 \cdot 10^{-11}$ N·m <sup>2</sup> /kg <sup>2</sup>