

$$30 \text{ mtor eV} \times X = \frac{1 + \sqrt{5}}{2} \approx 1.62$$

Table A.3 Energy conversion factors

	eV	erg	kcal/mole	Hz	cm ⁻¹	°K	a.u.
eV	1	1.60210 × 10 ⁻¹²	23.0609	2.41804 × 10 ¹⁴	8.06573 × 10 ³	1.16049 × 10 ⁴	3.67502 × 10 ⁻²
erg	6.24181 × 10 ¹¹	1	1.43942 × 10 ¹³	1.50929 × 10 ²⁶	5.03448 × 10 ¹⁵	7.24356 × 10 ¹⁵	2.29388 × 10 ¹⁰
kcal/mole	4.33634 × 10 ⁻²	6.94725 × 10 ⁻¹⁴	1	1.04854 × 10 ³	3.49757 × 10 ²	5.03228 × 10 ²	1.59362 × 10 ⁻³
Hz	4.13558 × 10 ⁻¹⁵	6.62561 × 10 ⁻²⁷	9.53702 × 10 ⁻¹⁴	1	3.33565 × 10 ⁻¹¹	4.79930 × 10 ⁻¹¹	1.51983 × 10 ⁻¹⁶
cm ⁻¹	1.23981 × 10 ⁻⁴	1.98630 × 10 ⁻¹⁶	2.85911 × 10 ⁻³	2.99793 × 10 ¹⁰	1	1.43879	4.56633 × 10 ⁻⁶
°K	8.61705 × 10 ⁻⁵	1.38054 × 10 ⁻¹⁶	1.98717 × 10 ⁻³	2.08364 × 10 ¹⁰	6.95028 × 10 ⁻¹	1	3.16678 × 10 ⁻⁴
a.u.	27.2107	4.35943 × 10 ⁻¹¹	6.27503 × 10 ²	6.57966 × 10 ¹⁵	2.19474 × 10 ⁵	3.15777 × 10 ⁵	1

NOTE: To convert a quantity expressed in the unit given in the left-hand column to a quantity expressed in a unit given in the top row, multiply by the factor appearing at the intersection of the column and row. For example, to convert from eV to erg, multiply 1.60210 × 10⁻¹².

$$e = 4.8 \times 10^{-10} \text{ esu}$$

$$1D = 10^{-18} \text{ esu} \cdot \text{cm}$$

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$$\rho = 7243.54$$

PHYSICAL CONSTANTS (cgs)⁷

Physical Quantity	Symbol	Value	Units
Boltzmann constant	k	1.3807×10^{-16}	erg/deg (K)
Elementary charge	e	4.8032×10^{-10}	statcoulomb (statcoul)
Electron mass	m_e	9.1094×10^{-28}	g
Proton mass	m_p	1.6726×10^{-24}	g
Gravitational constant	G	6.6726×10^{-8}	dyne-cm ² /g ²
Planck constant	h	6.6261×10^{-27}	erg-sec
	$\hbar = h/2\pi$	1.0546×10^{-27}	erg-sec
Speed of light in vacuum	c	2.9979×10^{10}	cm/sec
Proton/electron mass ratio	m_p/m_e	1.8362×10^3	
Electron charge/mass ratio	e/m_e	5.2728×10^{17}	statcoul/g
Rydberg constant	$R_\infty = \frac{2\pi^2 m e^4}{ch^3}$	1.0974×10^5	cm ⁻¹
Bohr radius	$a_0 = \hbar^2/m_e^2$	5.2918×10^{-9}	cm
Atomic cross section	πa_0^2	8.7974×10^{-17}	cm ²
Classical electron radius	$r_e = e^2/mc^2$	2.8179×10^{-13}	cm
Thomson cross section	$(8\pi/3)r_e^2$	6.6525×10^{-25}	cm ²
Compton wavelength of electron	$h/m_e c$	2.4263×10^{-10}	cm
	$\hbar/m_e c$	3.8616×10^{-11}	cm
Fine-structure constant	$\alpha = e^2/\hbar c$	7.2974×10^{-3}	
	α^{-1}	137.04	
First radiation constant	$c_1 = 2\pi h c^2$	3.7418×10^{-5}	erg-cm ² /sec
Second radiation constant	$c_2 = hc/k$	1.4388	cm-deg (K)
Stefan-Boltzmann constant	σ	5.6705×10^{-5}	erg/cm ² - sec-deg ⁴
Wavelength associated with 1 eV	λ_0	1.2398×10^{-4}	cm

Physical Quantity	Symbol	Value	Units
Frequency associated with 1 eV	ν_0	2.4180×10^{14}	Hz
Wave number associated with 1 eV	k_0	8.0655×10^3	cm^{-1}
Energy associated with 1 eV		1.6022×10^{-12}	erg
Energy associated with 1 cm^{-1}		1.9864×10^{-16}	erg
Energy associated with 1 Rydberg		13.606	eV
Energy associated with 1 deg Kelvin		8.6174×10^{-5}	eV
Temperature associated with 1 eV		1.1604×10^4	deg (K)
Avogadro number	N_A	6.0221×10^{23}	mol^{-1}
Faraday constant	$F = N_A e$	2.8925×10^{14}	statcoul/mol
Gas constant	$R = N_A k$	8.3145×10^7	erg/deg-mol
Loschmidt's number (no. density at STP)	n_0	2.6868×10^{19}	cm^{-3}
Atomic mass unit	m_u	1.6605×10^{-24}	g
Standard temperature	T_0	273.15	deg (K)
Atmospheric pressure	$p_0 = n_0 k T_0$	1.0133×10^6	dyne/cm^2
Pressure of 1 mm Hg (1 torr)		1.3332×10^3	dyne/cm^2
Molar volume at STP	$V_0 = RT_0/p_0$	2.2414×10^4	cm^3
Molar weight of air	M_{air}	28.971	g
calorie (cal)		4.1868×10^7	erg
Gravitational acceleration	g	980.67	cm/sec^2