

COMMONLY USED CONVERSION FACTORS

Category	Quantity	Conversion Factor / Relation	Notes
Mass	1 kg	1000 g	SI base unit = kg
	1 lbm (pound mass)	0.4536 kg	Common in US units
	1 ton (metric)	1000 kg	
	1 ton (US, short)	2000 lbm = 907.2 kg	
Moles	n (mol)	$n = m / MW$	m = mass (g), MW = molar mass (g/mol)
	1 lbmol	453.6 mol	US customary unit
	1 kmol	1000 mol	
Avogadro's Number	N_A	6.022×10^{23} particles/mol	Converts mol ↔ molecules/atoms
Volume	1 m ³	1000 L = 10 ⁶ cm ³	SI
	1 L	0.001 m ³	
	1 gal (US)	3.785 L	
	1 ft ³	28.317 L	
Density / Specific Volume	ρ (kg/m ³)	$\rho = m / V$	
	Specific volume v	$v = 1 / \rho$	m ³ /kg
Concentration	Mass fraction	$w_i = m_i / m_{\text{total}}$	dimensionless
	Mole fraction	$y_i = n_i / n_{\text{total}}$	
	Molarity (M)	$C = n / V$	mol/L
	Molality (m)	$m = n_{\text{solute}} / m_{\text{solvent}} \text{ (kg)}$	mol/kg
Energy	1 cal	4.184 J	Heat unit
	1 Btu	1055 J	US unit
	1 kWh	3.6×10^6 J	
Pressure	1 atm	101.325 kPa	~14.7 psi
	1 bar	100 kPa	
	1 mmHg (torr)	133.3 Pa	
Gas Law (Ideal)	PV = nRT	$R = 0.08206 \text{ L} \cdot \text{atm} / \text{mol} \cdot \text{K} = 8.314 \text{ J} / \text{mol} \cdot \text{K}$	Very commonly used