CLASS 12 | CHEMISTRY | FORMULAS HANDBOOK

Class 12 Chemistry Formulas Handbook (Chapter-wise)

Every key formula and result from the Class 12 Chemistry NCERT syllabus, organised by chapter, in one place. Cross-linked to our full Chapter-wise Solutions. More chapters will be appended here as their Solutions are published.

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Class 12 Chemistry Formulas Handbook

Chapter 1: The Solid State

Density formula: $d = ZM/(a^3N_A)$

Packing efficiency: simple cubic 52.4%, bcc 68%, ccp/hcp 74%

Coordination number: simple cubic=6, bcc=8, ccp/hcp=12

Void radius ratios: tetrahedral r/R≈0.225, octahedral r/R≈0.414

Voids in close packing: tetrahedral = 2n, octahedral = n (n=number of spheres)

Edge length relations: simple cubic a=2r; bcc √3a=4r; fcc √2a=4r

See full Chapter 1 Solutions

Chapter 2: Solutions

Mass % = (mass of component ÷ total mass of solution) × 100

Volume % = (volume of component ÷ total volume of solution) × 100

Mass by volume % = (mass of solute in g ÷ volume of solution in mL) × 100

ppm = (amount of component ÷ total amount of solution) × 10^6

Mole fraction: $x_A = n_A ÷ (n_A + n_B)$

Molarity: M = moles of solute ÷ volume of solution (L)

Molality: m = moles of solute ÷ mass of solvent (kg)

Henry's law: $p = K_H \cdot x$

Raoult's law (volatile solute): $p1 = x1\ p°1$; $p_{total} = x1\ p°1 + x2\ p°2$

Raoult's law (non-volatile solute): $(p° – p) ÷ p° = x2$ (relative lowering of vapour pressure)

Elevation of boiling point: $\Delta Tb = i \cdot Kb \cdot m$

Depression of freezing point: $\Delta Tf = i \cdot Kf \cdot m$

Osmotic pressure: $\pi = i \cdot C \cdot R \cdot T$

Van’t Hoff factor: i = normal molar mass ÷ observed molar mass = observed colligative property ÷ calculated colligative property

Van’t Hoff factor (dissociation into n ions): $i = 1 + (n-1)\alpha$

Van’t Hoff factor (association into n-mer): $i = 1 - \alpha(1 - 1/n)$

See full Chapter 2 Solutions NCERT Solutions.