CLASS 9 SCIENCE NCERT SOLUTIONS

NCERT Solutions for Class 9 Science Chapter 9: Atomic Foundations of Matter – Free PDF Download

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Law of Conservation of Mass

Mass can neither be created nor destroyed in a chemical reaction — the total mass of reactants equals the total mass of products.

Law of Constant (Definite) Proportions

A given chemical compound always contains its constituent elements in a fixed proportion by mass, regardless of the source or method of preparation of the compound (e.g. water is always 1:8 hydrogen to oxygen by mass).

Dalton's Atomic Theory

John Dalton proposed that matter is made of indivisible atoms; atoms of the same element are identical in mass and properties; atoms of different elements differ; atoms combine in simple whole-number ratios to form compounds; and atoms are neither created nor destroyed in chemical reactions — explaining both the law of conservation of mass and the law of constant proportions.

Ionic and Covalent Compounds

Ionic compounds form when atoms transfer electrons, creating oppositely charged ions held together by electrostatic attraction (e.g. NaCl, sodium chloride).

Covalent compounds form when atoms share electron pairs (e.g. H_2O, water; CO_2, carbon dioxide).

Writing Chemical Formulae Using Valency

The **criss-cross method** is used to write formulae: the valency (combining capacity) of one element becomes the subscript of the other. For example, for Mg (valency 2) and Cl (valency 1), the formula is $MgCl_2$.

Molecular Mass and Formula Unit Mass

Molecular mass (for molecular/covalent compounds) is the sum of the atomic masses of all atoms in a molecule. **Formula unit mass** (for ionic compounds, which don't exist as discrete molecules) is the sum of the atomic masses of all atoms in the compound's simplest formula unit.