

CLASS 9

SCIENCE

NCERT SOLUTIONS

NCERT Solutions for Class 9 Science Chapter 5: Exploring Mixtures and their Separation – Free PDF Download

Chapter 5 of Class 9 Science Exploration is Exploring Mixtures and their Separation, the first chemistry chapter of the book. It covers how substances combine into mixtures, the different kinds of mixtures, and the practical techniques used to separate them. These Class 9 Science Chapter 5 solutions are also useful ...

Contents

- Pure Substances and Mixtures
- Homogeneous and Heterogeneous Mixtures
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Pure Substances and Mixtures

A **pure substance** has a fixed composition (elements or compounds). A **mixture** contains two or more substances combined in variable proportions, without any fixed composition.

Homogeneous and Heterogeneous Mixtures

A **homogeneous mixture** has uniform composition throughout (e.g. salt dissolved in water) — you cannot see the separate components. A **heterogeneous mixture** has visibly distinct components or regions (e.g. sand in water).

Solutions, Suspensions, and Colloids

Solution — a homogeneous mixture where the solute is completely dissolved in the solvent; particles are too small to scatter light or settle.

Suspension — a heterogeneous mixture where particles are large enough to be visible and settle over time (e.g. muddy water).

Colloid — particle size is between a solution and a suspension; particles don't settle but scatter light (Tyndall effect), e.g. milk, fog.

Expressing Concentration

The concentration of a solution can be expressed as mass by mass percentage, mass by volume percentage, or volume by volume percentage — describing how much solute is present relative to the solution.

Separation Techniques

Crystallisation — obtaining pure solid crystals from a solution by controlled cooling/evaporation, better than simple evaporation for heat-sensitive or impure substances.

Distillation — separates miscible liquids with different boiling points, by heating, then condensing the vapour.

Paper chromatography — separates components of a mixture (e.g. dyes) based on differing solubility and movement through paper.

Sublimation — separates a sublimable solid (e.g. camphor, ammonium chloride) from a non-sublimable one by direct solid-to-gas conversion on heating.

Centrifugation — spins a mixture at high speed to separate components by density (e.g.

separating cream from milk).

Coagulation — causes colloidal particles to clump together and settle, used to separate colloidal particles from a colloid.