

Class 9 Science - Chapter 2: Is Matter Around Us Pure? (Q&A)

Q1: What is a pure substance?

A pure substance consists of only one kind of particle and has a fixed composition. Examples include elements like gold and compounds like water.

Q2: Define mixture. What are its types?

A mixture is a combination of two or more substances that are physically mixed and not chemically combined.

Types:

- Homogeneous mixture: Uniform composition (e.g., salt in water).
- Heterogeneous mixture: Non-uniform composition (e.g., sand in water).

Q3: What is the difference between a solution, a suspension, and a colloid?

Solution: Clear, very small particles, no settling, no Tyndall effect.

Suspension: Cloudy, large particles, settles on standing, shows Tyndall effect.

Colloid: Cloudy, intermediate particles, does not settle, shows Tyndall effect.

Q4: What is a solution? Name its components.

A solution is a homogeneous mixture of two or more substances.

- Solute: The substance that dissolves.
- Solvent: The substance in which the solute dissolves.

Q5: Define solubility. What factors affect it?

Solubility is the maximum amount of solute that can dissolve in a given amount of solvent at a specific temperature.

Factors affecting solubility:

- Temperature
- Nature of solute and solvent
- Pressure (for gases)

Q6: What is the Tyndall effect? Give an example.

The scattering of light by particles in a colloid is called the Tyndall effect.

Example: Light beam visible in fog or through mist.

Q7: List methods of separation used for mixtures.

Methods:

- Filtration: Solid from liquid

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- Evaporation: Solute from solution
- Distillation: Based on boiling points
- Centrifugation: Fine solids from liquids
- Sublimation: Sublimable solids
- Chromatography: Pigments

Q8: What is the difference between elements and compounds?

Element: Made of same atoms, cannot be broken down chemically. E.g., Oxygen (O₂).

Compound: Made of different atoms, can be broken chemically. E.g., Water (H₂O).

Q9: Why is air considered a mixture?

Air is a mixture because it contains multiple gases like nitrogen, oxygen, carbon dioxide, etc., which are not chemically combined and can be separated physically.

Q10: What is meant by concentration of a solution?

Concentration refers to the amount of solute present in a given quantity of solvent or solution.

Formula: $\text{Concentration} = (\text{Mass of solute} / \text{Mass of solution}) \times 100$