

Chapter 2: *Is Matter Around Us Pure?*

◆ 1. Types of Matter

- **Pure Substance:** Has a uniform and definite composition.
 - Examples: Distilled water, pure gold.
 - **Impure Substance (Mixture):** Contains two or more substances mixed physically.
 - Examples: Salt water, air.
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◆ 2. Types of Mixtures

► *Homogeneous Mixture:*

- Uniform composition throughout.
- Particles not visible.
- Example: Salt in water, air.

► *Heterogeneous Mixture:*

- Non-uniform composition.
 - Particles are visible.
 - Example: Sand in water, oil and water.
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◆ 3. Separation of Mixtures

Methods based on properties of components:

- Filtration: Solid from liquid (e.g. sand + water).
 - Evaporation: Solute from solution (e.g. salt from saltwater).
 - Distillation: Based on boiling points.
 - Sublimation: For solids that sublime (e.g. ammonium chloride).
 - Chromatography: Separate colors/pigments.
 - Centrifugation: Separate fine solid from liquid (e.g. milk cream).
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◆ 4. Types of Pure Substances

► *Elements:*

- Made of same type of atoms.
- Cannot be broken down.
- Examples: Hydrogen, Oxygen, Gold.

► **Compounds:**

- Formed by chemical combination of elements.
 - Can be broken into simpler substances.
 - Examples: Water (H₂O), Carbon dioxide (CO₂).
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◆ 5. Solutions

- **Solute + Solvent = Solution**
- Homogeneous.
- E.g., Sugar in water.

Important Terms:

- **Solute:** Substance dissolved.
 - **Solvent:** Substance in which solute is dissolved.
 - **Concentration:** Amount of solute in given volume.
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◆ 6. Types of Solutions

Type	Example
Solid in Liquid	Sugar in water
Gas in Liquid	Oxygen in water
Liquid in Liquid	Alcohol in water

◆ 7. Suspensions and Colloids

► **Suspension:**

- Heterogeneous.
- Particles visible, settle down.
- Example: Muddy water.

► **Colloid:**

- Heterogeneous but looks homogeneous.
 - Particles do not settle.
 - Tyndall effect observed.
 - Example: Milk, fog.
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◆ 8. Tyndall Effect

- Scattering of light by particles in colloids.
 - Helps distinguish colloids from solutions.
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◆ 9. Physical vs Chemical Change

Physical Change	Chemical Change
No new substance formed	New substance formed
Usually reversible	Irreversible
Example: Melting ice	Example: Burning paper