

Mixtures

Chapter 4.3

Mixture: A combination of two or more substances that are **not** chemically combined.

Mixture = No chemical change.

1. Separating Mixtures

- 1. Distillation:** Method of separating mixtures based on different boiling points.
- 2. Magnets:** Used to separate iron from other components of a mixture.
- 3. Centrifuge:** Used to separate components of a mixture based on density.

2. Mixtures vs. Compounds

Mixtures	Compounds
Made of elements, compounds, or both.	Made of elements.
No change in original properties of components.	Change in original properties of components.
Separated by physical means.	Separated by chemical means.
Formed using any ratio of components.	Formed using a specific ratio of components.

3. Solutions

Solution: a mixture composed of two or more substances that appear to be a single substance.

Examples:

Salt Water

Soda

Juice

Dissolving: Process in which particles of substances separate and spread evenly throughout a mixture.

Solute: The substance that is dissolved (salt).

Solvent: The substance in which the solute is dissolved (water).

4. Examples of Different Types of Solutions

States	Examples
Gas in gas	Air (oxygen and nitrogen)
Gas in liquid	Soda (carbon dioxide in water)
Liquid in liquid	Antifreeze (Glycol in water)
Solid in liquid	Salt water (salt and water)
Solid in solid	Brass (zinc and copper) = Alloy

5. Concentration of Solutions

Concentrated Solution: Lots of solute

Dilute Solution: Less solute

These terms describe the relative, but not the actual amount of solute.

6. Solubility

Solubility: the amount of **solute** that can be dissolved in a **solvent** at a particular temperature.

TPS: Why is temperature important?

Temperature is a measure of how fast the particles are moving.

Solids in Liquids

Higher temperature increases solubility.

**Example: More salt dissolve in hot than
in cold water.**

Gases in Liquids

Higher temperature decreases solubility.

Example: Less oxygen gas dissolves in warm water.

7. Suspensions

Suspension: A mixture in which particles are spread out, but are heavy enough to settle to the bottom.

Suspensions scatter light and can be filtered.

Examples: Snow globe, large dirt particles in water.

8. Colloids

Colloids: Mixture where particles are spread out (dispersed), but do not settle to the bottom.

Examples: Milk, mayonnaise, gelatin, whipped cream, fine dirt in water

Self Check

- What are the three types of mixtures?
- Why should you dissolve sugar in lemonade before you add the ice?
- When salt is dissolved in water, which is the solvent and which is the solute?
- What method can you use to separate particles in suspensions?
- Why can't the particles in a colloid be separated by filtration?