



Conditions necessary for making a solution

Conditions Necessary for Making a Solution

To make a solute dissolve faster in a solvent, the following conditions help:

i. Heating the solvent:

- When the temperature increases, the molecules move faster, creating more space between them.
- This allows more solute particles to dissolve.

Example: Sugar dissolves faster in hot water than in cold water.

ii. Stirring the solution:

- Stirring speeds up the dissolving process by moving the solute and solvent particles around.

Example: Stirring salt in water helps it dissolve faster.

iii. Increasing the amount of solvent:

- More solvent means more space for the solute to dissolve.

Example: Adding more water to a salty solution allows more salt to dissolve.

iv. Decreasing the amount of solute:

- When there is less solute, it dissolves quickly as there is more space available in the solvent.

Example: A small spoon of sugar dissolves faster than a large one in the same amount of water.

v. Grinding the solute materials:

- Smaller particles dissolve faster as they have more surface area.

Example: Crushed salt dissolves faster than salt chunks.

Activity: Dissolving Sugar at Different Temperatures

Materials Needed:

- Sugar cubes
- Cold water (in a clear glass)



- Hot water (in a clear glass – be careful)
- Spoon for stirring

Instructions:

1. Fill two glasses with an equal amount of water (one with hot and the other with cold water).
2. Add a sugar cube into the cold water and stir until it dissolves.
3. Keep adding sugar cubes one by one, counting how many cubes dissolve before the sugar starts collecting at the bottom.
4. Repeat the same steps with the hot water.

Compare:

More sugar dissolves in the hot water than in the cold water.

Observation:

Hot water dissolves more sugar because:

- Its molecules move faster, creating more space between them.
- More sugar molecules can fit in between.

Soluble and Insoluble Substances

Soluble substances:

These substances easily dissolve in water.

Examples:

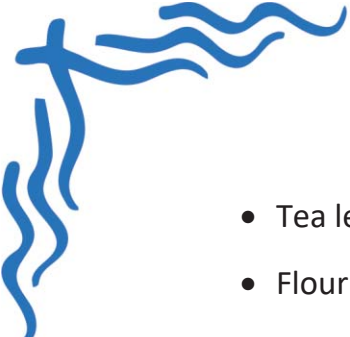
- Salt
- Sugar
- Coffee
- Milk powder

Insoluble substances:

These substances do not dissolve in water.

Examples:

- Sand
- Chalk powder

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- Tea leaves
 - Flour

Objects that Float and Sink in Water

Why do some objects float and others sink?

It depends on their density. Density → The amount of matter packed into an object.

Float: Objects with loosely packed molecules are less dense than water.

Examples:

- Wood
- Cork
- Sponge

Sink:

Objects with tightly packed molecules are denser than water.

Examples:

- Coin
- Stone
- Paper clip

Explanation:

A stone sinks in water because it is denser. A piece of wood floats because it is less dense than water.

Conclusion

Heating, stirring, and grinding help dissolve solutes faster. Hot water dissolves more solute than cold water. Soluble substances dissolve in water, while insoluble substances do not. Objects float or sink based on their density. Fun Fact: Ice floats on water because it is less dense than liquid water!