

B. Phases of Matter

Phases of Matter

Matter is everything around us - the air we breathe, the water we drink, and the ground we walk on. Matter can exist in different forms, known as phases. The three main phases of matter are solids, liquids, and gases. Let's explore each phase and learn about the changes they undergo.

Solids

In the solid phase, matter has a definite shape and volume. It means that solids keep their shape and do not change easily. If you have a cube-shaped toy, it will always be a cube-shaped toy. Examples of solids are rocks, books, and ice cubes.

Liquids

Liquids also have a definite volume like solids, but they do not have a fixed shape. They take the shape of their container. For instance, if you pour water into a cup, it will take the shape of the cup. Some examples of liquids are water, juice, and milk.

Gases

Unlike solids and liquids, gases do not have a definite shape or volume. They can spread out to fill any space. When you blow up a balloon, the air inside takes the shape of the balloon. Examples of gases are oxygen, nitrogen, and the air we breathe.

Changing Phases

Matter can change from one phase to another through a process called phase change. The three main phase changes are melting, freezing, evaporation, and condensation.

1. Melting

Melting is when a solid changes into a liquid. For example, when you heat an ice cube, it melts into liquid water.

2. Freezing

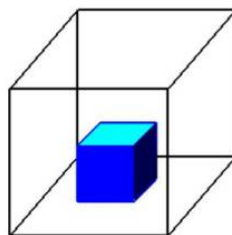
Freezing is the opposite of melting. It is when a liquid changes into a solid. When you put water in the freezer, it turns into ice.

3. Evaporation



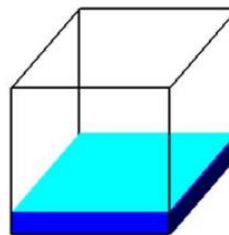
Phases of Matter

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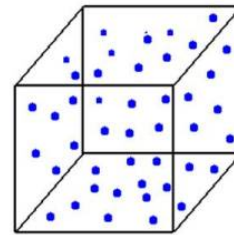
Solid

Holds Shape
Fixed Volume



Liquid

Shape of Container
Free Surface
Fixed Volume



Gas

Shape of Container
Volume of Container

Evaporation is when a liquid changes into a gas. When water is heated, it turns into water vapor and rises into the air.

4. Condensation

Condensation is the opposite of evaporation. It is when a gas changes into a liquid. When water vapor cools down, it condenses into tiny droplets to form clouds.

5. Sublimation

There is another phase change called sublimation. Sublimation happens when a solid changes directly into a gas without going through the liquid phase. For example, dry ice is solid carbon dioxide that undergoes sublimation to become carbon dioxide gas.

1. In which phase of matter do particles have a definite shape and volume?
 - A) Solids
 - B) Liquids
 - C) Gases
 - D) Plasma
2. What phase change occurs when a liquid changes into a gas?
 - A) Melting
 - B) Freezing
 - C) Evaporation
 - D) Condensation
3. Which of the following is an example of a gas?
 - A) Ice
 - B) Water
 - C) Air
 - D) Sand
4. What phase change occurs when a gas changes into a liquid?
 - A) Melting
 - B) Freezing
 - C) Evaporation
 - D) Condensation
5. When water vapor cools down and forms tiny droplets in the air, what is this phase change called?
 - A) Melting
 - B) Freezing
 - C) Evaporation
 - D) Condensation
6. Which phase of matter takes the shape of its container?
 - A) Solids

- B) Liquids
- C) Gases
- D) Plasma

7. When a solid changes directly into a gas without becoming a liquid, what is this phase change called?

- A) Melting
- B) Freezing
- C) Evaporation
- D) Sublimation

8. What is an example of a liquid?

- A) Rock
- B) Water
- C) Air
- D) Fire

9. What phase of matter has no definite shape or volume?

- A) Solids
- B) Liquids
- C) Gases
- D) Plasma

10. When an ice cube melts, what phase change is happening?

- A) Melting
- B) Freezing
- C) Evaporation
- D) Condensation

ANSWERS & EXPLANATIONS

1. A - Solids.
 - In the solid phase, particles have a definite shape and volume.
2. C - Evaporation.
 - Evaporation is the phase change when a liquid changes into a gas.
3. C - Air.
 - Air is an example of a gas.
4. D - Condensation.
 - Condensation is the phase change when a gas changes into a liquid.
5. D - Condensation.
 - Condensation is the phase change when water vapor cools down and forms tiny droplets in the air.
6. B - Liquids.
 - Liquids take the shape of their container.
7. D - Sublimation.
 - Sublimation is the phase change when a solid changes directly into a gas without becoming a liquid.
8. B - Water.
 - Water is an example of a liquid.
9. C - Gases.
 - Gases have no definite shape or volume.
10. A - Melting.
 - When an ice cube melts, it undergoes the phase change of melting and becomes liquid water.