

What Are Phase Changes?

Worksheet

A phase change is when a substance shifts between solid, liquid, and gas. Energy (heat) is absorbed during melting, boiling, and sublimation; energy is released during freezing, condensation, and deposition.

Questions

1. Water freezing at 0C is an example of
 - A) Melting
 - B) Freezing
 - C) Condensation
 - D) Sublimation
2. Which process absorbs heat?
 - A) Freezing
 - B) Condensation
 - C) Boiling
 - D) Deposition
3. Dry ice subliming is
 - A) Solid to liquid
 - B) Liquid to gas
 - C) Solid to gas
 - D) Gas to solid
4. When liquid water becomes water vapor, is there a chemical change?
 - A) Yes, HO becomes something else
 - B) No, only physical state changes
 - C) Yes, oxygen leaves
 - D) No change at all
5. Ice melts at 0C. Is this melting or freezing?
6. Water boils at 100C at 1 atm. Describe this phase change.
7. Dry ice (solid CO) disappears at room temperature without melting. What is happening?
8. Define: What is melting?
9. Define: What is boiling?
10. Define: What is sublimation?

Answer Key

1. B) Freezing - Freezing is liquid solid, releasing heat. This is water becoming ice.
2. C) Boiling - Boiling (liquid gas) requires a large amount of absorbed energy.
3. C) Solid to gas - Sublimation skips the liquid phase - solid transforms directly into gas.
4. B) No, only physical state changes - Phase changes are physical, not chemical. HO remains HO in all states.
5. Ice (solid) Water (liquid) at 0C. This is MELTING - the solid phase changes to liquid. Energy (heat) is ABSORBED.
6. Liquid water water vapor (gas) at 100C. This is BOILING - liquid becomes gas. A large amount of energy (latent heat of vaporization) is ABSORBED.
7. Solid CO CO gas directly (no liquid stage). This is SUBLIMATION - solid bypasses liquid and becomes gas. Energy is ABSORBED.
8. Melting is when a solid becomes a liquid by absorbing heat energy.
9. Boiling is when a liquid becomes a gas by absorbing heat energy; happens throughout the liquid.
10. Sublimation is when a solid directly becomes a gas without melting (e.g., dry ice).

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