What are Exothermic and Endothermic Reactions?

Worksheet

Exothermic reactions release energy: products have lower energy than reactants (H < 0). Endothermic reactions absorb energy: products have higher energy than reactants (H > 0). The difference determines whether reactions feel hot or cold.

Questions

1. Burning candle releases heat. This is

A) endothermic
B) exothermic
C) thermal
D) reversible

2. Melting ice cream requires heat from surroundings. This is

A) exothermic
B) endothermic
C) isothermal
D) adiabatic

3. In an exothermic reaction, H is

A) positive
B) negative
C) zero
D) undefined

4. Which is endothermic?

A) rusting
B) freezing water
C) melting ice
D) neutralization

5. Classify: C + O CO (releases 393 kJ/mol) as exothermic or endothermic.

6. Is melting ice endothermic or exothermic?

7. Burning wood releases 15 MJ. Is this exothermic?

8. Define: What is an exothermic reaction?

9. Define: What is an endothermic reaction?

10. Define: Is combustion exothermic or endothermic?

Answer Key

1. B) exothermic - Burning is combustion, which always releases energy exothermic.
2. B) endothermic - Melting absorbs heat endothermic (H > 0).
3. B) negative - Energy released = H < 0 (negative enthalpy change).
4. C) melting ice - Melting ice absorbs heat from surroundings endothermic. The other three release heat.
5. Combustion reaction releases 393 kJ/mol to surroundings Exothermic (H = 393 kJ/mol < 0) You feel heat; surroundings warm up.
6. Ice must absorb heat from surroundings to become liquid Endothermic (H > 0) Surroundings cool down (ice pack effect).
7. Wood burning releases energy (negative H) Yes, exothermic You feel warmth; chemical energy heat + light.
8. A reaction that releases energy to surroundings: H < 0. Products have lower energy than reactants.
9. A reaction that absorbs energy from surroundings: H > 0. Products have higher energy than reactants.
10. Exothermic - burning always releases heat and light energy.