What is an Exothermic Reaction?

Worksheet

Exothermic reactions release energy (H < 0) to the surroundings. Common examples: combustion, neutralization of acids/bases, many synthesis reactions. The temperature of the surroundings increases.

Questions

1. Which is exothermic?

A) Photosynthesis
B) Combustion of wood
C) Melting ice
D) Dissolving ammonium nitrate in water

2. In an exothermic reaction, H is

A) positive
B) negative
C) zero
D) very large

3. What happens to surroundings in exothermic?

A) Temperature decreases
B) Temperature increases
C) No change
D) Energy is absorbed

4. Is freezing water exothermic or endothermic?

A) Endothermic
B) Exothermic
C) Neither
D) Depends on pressure

5. Is the combustion of methane (CH + 2O CO + 2HO) exothermic or endothermic?

6. Neutralization: HCl + NaOH NaCl + HO. H = 57 kJ. Identify the reaction type.

7. Freezing water: HO(l) HO(s). H = 6 kJ/mol. Which type?

8. Define: What is an exothermic reaction?

9. Define: Exothermic examples?

10. Define: What does H < 0 mean?

Answer Key

1. B) Combustion of wood - Combustion releases large heat energy. Photosynthesis, melting, and dissolving NHNO are endothermic.

2. B) negative - H < 0 for exothermic (energy released). H > 0 for endothermic.

3. B) Temperature increases - Heat flows out surroundings warm up.

4. B) Exothermic - Freezing releases latent heat (H < 0). Exothermic.

5. Combustion always releases large amounts of heat and light energy. H = 890 kJ/mol (negative). This is exothermic.

6. H is negative (57 kJ). Negative H means energy is released. This is exothermic.

7. H is negative (releases energy as heat to surroundings). The process releases energy. This is exothermic.

8. A reaction that releases energy to the surroundings, usually as heat, light or sound. H < 0.

9. Combustion, neutralization (acid + base), rusting, freezing water, most synthesis reactions.

10. Energy is released (exothermic). The products have less energy than reactants.