What Are Oxidation-Reduction (Redox) Reactions?

Worksheet

In redox reactions, one substance is oxidized (loses electrons) and another is reduced (gains electrons). The substance losing electrons is the reducing agent; the one gaining electrons is the oxidizing agent. Electron transfer always drives the reaction.

Questions

1. In 2Na + Cl 2NaCl, what is oxidized?

A) Cl
B) NaCl
C) Na
D) Cl

2. Redox reactions always involve?

A) Oxygen only
B) Electron transfer
C) Combustion
D) Color change

3. The reducing agent?

A) Gains electrons
B) Reduces other substances
C) Is oxidized
D) Is negative

4. In Cu + 2Ag Cu + 2Ag, Ag is?

A) Oxidized
B) The reducing agent
C) Reduced
D) The catalyst

5. In Fe + O FeO, identify oxidation and reduction.

6. Identify redox in: 2H + O 2HO

7. In Cl + 2Br 2Cl + Br, which is oxidized?

8. Define: Define oxidation.

9. Define: Define reduction.

10. Define: What is a reducing agent?

Answer Key

1. C) Na - Na goes from 0 to +1 (loses 1 electron) - oxidation. Na is oxidized.

2. B) Electron transfer - Redox = electron transfer. Oxygen is not always involved.

3. C) Is oxidized - The reducing agent is the substance that is oxidized (loses electrons).

4. C) Reduced - Ag gains 1 electron each to form Ag - reduction.

5. Fe goes from 0 to +3 (loses 3 electrons) - oxidation. O goes from 0 to 2 (gains 2 electrons) - reduction. Fe is the reducing agent; O is the oxidizing agent.

6. H goes from 0 to +1 (loses electrons) - oxidation. O goes from 0 to 2 (gains electrons) - reduction. H is oxidized; O is reduced.

7. Br goes from 1 to 0 (loses 1 electron each) - oxidation. Cl goes from 0 to 1 (gains 1 electron each) - reduction. Br is oxidized (reducing agent).

8. Loss of electrons; an increase in oxidation number.

9. Gain of electrons; a decrease in oxidation number.

10. The substance that is oxidized (loses electrons) in a redox reaction.