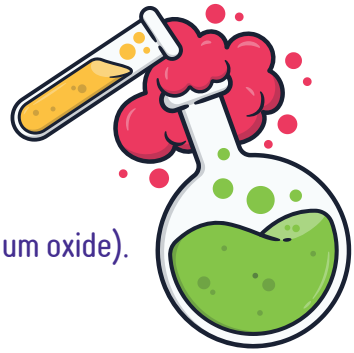
CHEMICAL REACTIONS AND EQUATIONS



Key Concepts

- A chemical reaction creates new substances.
- Reactants are substances that react, and products are formed.
- Word equations describe reactions (e.g., magnesium + oxygen magnesium oxide).

Key Facts to Remember

- Chemical reactions involve energy changes (e.g., heat, light, or sound). These energy changes can be exothermic (releasing energy) or endothermic (absorbing energy).
- Conservation of mass: total mass of reactants = total mass of products. This principle applies to all chemical reactions.
- **Types of chemical reactions include:**
  - Neutralization: Acid + Base Salt + Water. Example: Hydrochloric acid + Sodium hydroxide Sodium chloride + Water.
  - Thermal decomposition: A compound breaks down into simpler substances when heated. Example: Calcium carbonate Calcium oxide + Carbon dioxide.
  - Combustion: A substance reacts with oxygen to produce heat and light. Example: Methane + Oxygen Carbon dioxide + Water.
  - Oxidation: A substance gains oxygen. Example: Iron + Oxygen Iron oxide (rust).
  - Precipitation: Two solutions react to form an insoluble solid. Example: Silver nitrate + Sodium chloride Silver chloride (precipitate) + Sodium nitrate.
  - Chemical reactions often involve color changes, gas production, temperature changes, or precipitate formation.

Quick Questions

1. What are the reactants in the reaction: carbon + oxygen carbon dioxide?
2. What does the law of conservation of mass mean?
3. Name one sign of a chemical reaction.
4. What is thermal decomposition? Give an example.
5. Why is energy often involved in chemical reactions?
6. What happens in a neutralization reaction?
7. How can you identify a precipitation reaction?

Fun Fact

Fireworks are chemical reactions that release light and heat!