

# RATES OF REACTION

## Key Concepts

- Reaction rates measure how fast reactants turn into products, indicating the speed of a chemical reaction.
- Factors affecting rates: temperature, concentration, surface area, catalysts, and pressure (for reactions involving gases).
- Collision theory explains that particles must collide with enough energy (activation energy) and correct orientation to react.



## Key Facts to Remember

- Higher temperature increases particle energy, leading to faster movement and more frequent, energetic collisions.
- Increasing concentration means more particles are in the same space, increasing the chance of collisions.
- Greater surface area (e.g., powdered solids) allows more particles to be exposed for reaction.
- Catalysts lower the activation energy required for a reaction, speeding it up without being consumed.
- Pressure increases the rate of reactions involving gases by forcing particles closer together, leading to more collisions.

## Quick Questions

1. What does a catalyst do?
2. Name two factors that affect reaction rate.
3. How does increasing temperature affect reaction rate?
4. What is collision theory?
5. Why does powdered magnesium react faster than a magnesium ribbon?
6. How does increasing pressure affect a reaction involving gases?
7. What is the activation energy of a reaction?
8. How can you tell if a reaction has been sped up by a catalyst?

## Fun Fact

**Enzymes in your body act as biological catalysts!**