

Rate of a Chemical Reaction

Increasing the temperature increases the rate of the reaction

The rate of a chemical reaction is a measure of how fast the reactants are changed into products. A simple way to increase the rate of chemical reactions is by increasing the temperature of the reactants.

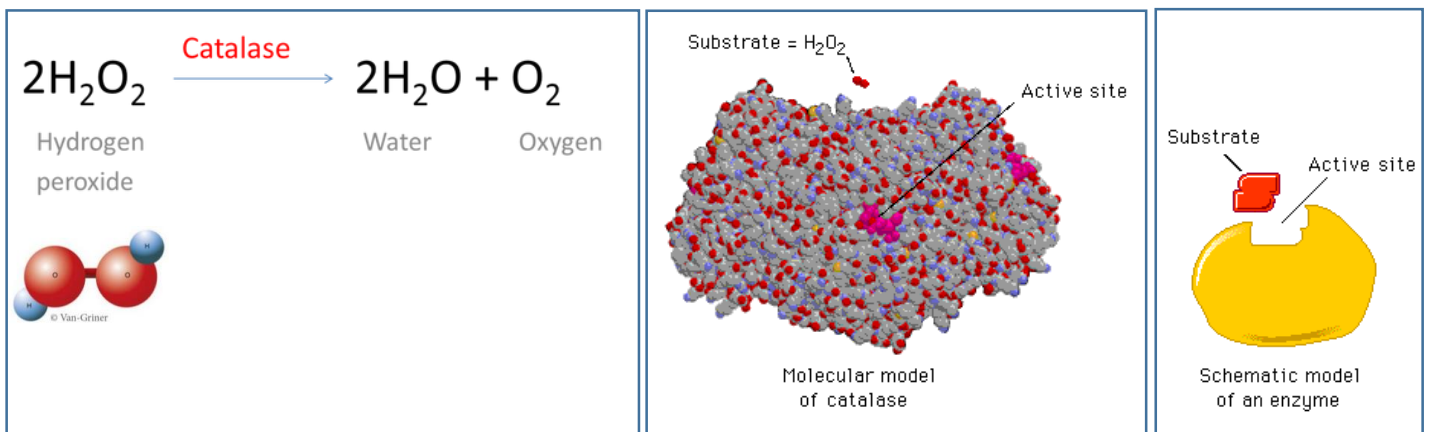
For reactant molecules to react, they need to meet other reactant molecules with enough energy for atoms or groups of atoms to come apart and recombine to make the products. If they do not have enough energy, most reactants molecules just bounce off one another and do not react at all.

But if the reactants are heated, the average kinetic energy of the molecules increases. This means that more molecules are moving faster and hitting each other with more energy. If more molecules hit each other with enough energy to react, then the rate of the reaction increases.

A catalyst can increase the rate of the reaction

Another way to increase the rate of the reaction is by adding a substance that helps bring the reactants together so they can react. A substance which helps speed up a chemical reaction in this way, but does not become a product of the reaction is called a *catalyst*.

A common catalyst in the cells of living organism is called *catalase*. During normal cell processes, living things produce hydrogen peroxide in their cells. But hydrogen peroxide is a poison so the cells need a way to break it down very quickly. Catalase helps break down hydrogen peroxide at a very fast rate. Catalase and many other catalysts in living things, are large complex molecules. Reactants attach to specific parts of the catalysts which helps the reactants to come apart or bond together. A single molecule of catalase can catalyze the breakdown of millions of hydrogen peroxide molecules every second.



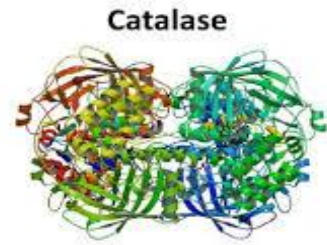
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(reading comprehension exercise)



Questions to answer based on the reading. **Use complete sentence.**

1. What is the rate of a chemical reaction?
2. Name 2 ways that we can increase the rate of a chemical reaction?
3. What is catalyst?
4. What happens to the poisonous hydrogen peroxide produced by the cells of living things?

