

Types of Chemical Reactions

A chemical reaction is a process that rearranges or changes the molecular structure of a substance. Chemical reactions are everyday occurrences. The digestion of food, photosynthesis, rusting metal, burning wood, and batteries are all examples of chemical reactions.

Chemical reactions can happen very quickly, such as an explosion, or they can happen very slowly, as when metal rusts. The amount of time it takes to complete a chemical reaction is called its reaction rate.

There are different kinds of chemical reactions. A synthesis reaction is when two substances combine to create a new substance. The substances being combined (called the reactants) can be individual elements or compounds. The end result (called the product) of a synthesis reaction is always a compound. A synthesis reaction is expressed by the equation $A + B = AB$. A decomposition reaction, in which a complex substance breaks down into simpler substances, is the opposite of a synthesis reaction. A decomposition reaction is expressed by the equation: $AB \rightarrow A + B$. In a combustion reaction, oxygen joins with another compound to form water and carbon dioxide. This produces energy in the form of heat. It also frequently produces light or flame. Combustion reactions are what we commonly refer to as burning.

In a displacement reaction, one compound takes a substance from another compound. In a single displacement reaction, a more reactive element replaces a less reactive element. A single displacement reaction is expressed by the equation: $A + BC \rightarrow AC + B$. In a double displacement reaction, the compounds on the left side of the equation switch substances. This kind of reaction can be expressed in the form $AB + CD \rightarrow AD + CB$. Double displacement reactions typically take place between a metal and a nonmetal or between acids and bases.



Name _____

QUESTIONS: Types of Chemical Reactions

1. What is a chemical reaction?

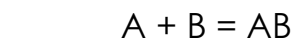
2. Name some examples of common chemical reactions.

3. What is a reaction rate?

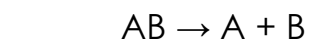
4. Match each equation to the type of chemical reaction it represents.



A synthesis



B decomposition



C single displacement



D double displacement

5. What happens in a combustion reaction?

6. What is the common word for a combustion reaction?