

Chemical Reactions and Equations

Chemistry is the branch of science in which we study the composition, properties and transformation of matter.

Physical Change	Chemical change
A change in physical appearance of a substance but no change in its basic composition	A change in which one or more new substance having properties and compositions different from the original substance.
Ex: Melting of butter and wax Boiling of water	Ex: Digestion of food Ripening of food
No new chemical substance is formed.	New chemical substance is formed.

Chemical Equations

- It is of two types: i) Word equation ii) Symbol equation
- A word equation simply shows the change of reactants to products through an arrow placed between them.
- An equation in which symbols and formulae's are used instead of words to show a chemical reaction is called symbol or skeletal equation.

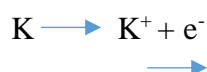
Chemical Reactions

Types of chemical reaction:

1. **Combination reaction:** A reaction in which two or more substances combine to form a single product is known as a combination reaction.
2. **Decomposition reaction:** The reaction in which a single substance breaks down to form two or more substances is called decomposition reaction.
3. **Displacement reaction:** The reaction in which one atom or a group of atoms of a compound is replaced by another atom, is called displacement reaction.
4. **Double displacement reaction:** The reaction in which anions and cations of different molecules exchange the places forming two completely different compounds is called double displacement reaction.

Redox Reaction:

1. **Oxidation:** If a substance gains oxygen or loses hydrogen in a reaction, the substance is said to be oxidised and the process is known as oxidation. Loss of electrons by a species.



2. **Reduction:** If a substance loses oxygen and gains hydrogen in a reaction, the substance is said to be reduced and the process involved is known as reduction.



Reduction and oxidation take place simultaneously in few reactions. Such reactions are known as redox reactions.

Exothermic reaction: A chemical reaction in which heat is released along with the formation of product, is called exothermic reaction.

Endothermic reaction: A chemical reaction in which heat is absorbed along with the formation of product, is called endothermic reaction.

Corrosion: It is the slow process of conversion of metals into their undesirable compounds by the attack of air and moisture.

1. **Rusting:** When iron and iron articles are exposed to air and water, a reddish brown layer is formed on the surface. This layer is called rust.
2. **Rancidity:** When cooked food items containing oil and fat are kept exposed and unprotected, they become rancid and produce an unpleasant smell and taste. The phenomenon involved is known as rancidity.
3. **Prevention of rancidity:** It can be prevented by adding antioxidants, keeping food items at low temperature, keeping food items in vacuum packing or airtight container and replacing air by nitrogen gas.