

Types of Chemical Reactions

PowerPoint 6.1

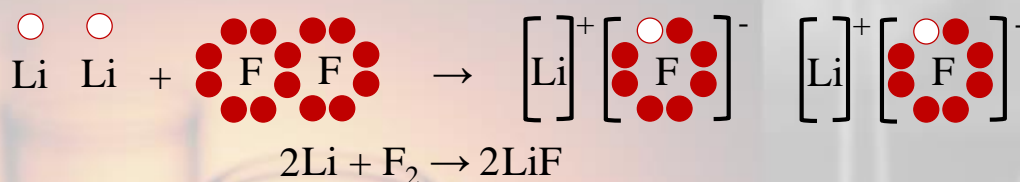
Six Common Types of Reactions to Know

1. Synthesis (Combination) Reactions
2. Decomposition Reactions
3. Single Replacement
4. Double Replacement
5. Neutralization (Acid-Base) Reactions
6. Combustion Reactions

1. Synthesis (Combination) Reaction

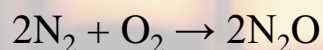
The elements can be either metals or non-metals

Metals transfer electrons to non-metals to form an ionic compound

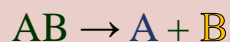


Metal + Non-metal \rightarrow Ionic Compound

Non-metals can also react to form covalent compounds, molecules.

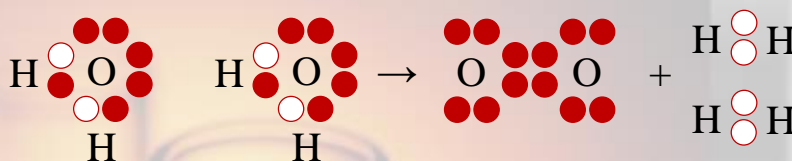


2. Decomposition Reaction



Generally, compound \rightarrow element + element

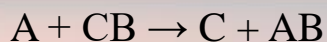
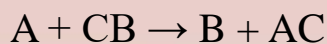
➤ The reverse of a synthesis reaction



In the decomposition of an ionic compound, electrons are transferred back to the metal, leaving neutral elements as products.

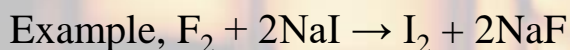


3. Single Replacement Reaction

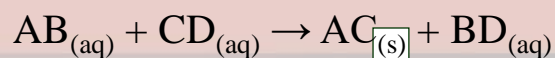


Generally, **element** + **compound** \rightarrow **element** + **compound**

- One of the elements in the compound is replaced by another element.



4. Double Replacement Reaction

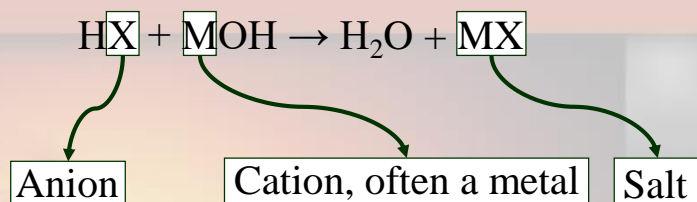


Usually involves two ionic solutions that react to produce two other ionic compounds.

One of the new compound often forms a precipitate.

An insoluble *solid*

5. Neutralization (Acid-Base) Reaction



Acid + Base → Water + Salt

Example, $\text{HCl} + \text{NaOH} \rightarrow \text{H}_2\text{O} + \text{NaCl}$

6. Combustion Reaction

Generally, Organic Compound + Oxygen → Carbon dioxide + Water



The rapid reaction of a compound or element with oxygen to form an oxide and to produce heat.

Example, $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$

Summary

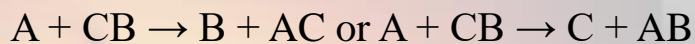
1. Synthesis (Combination) Reactions



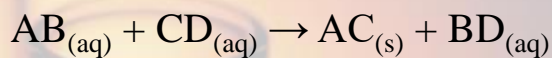
2. Decomposition Reactions



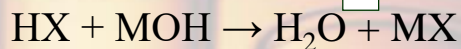
3. Single Replacement



4. Double Replacement



5. Neutralization (Acid-Base) Reactions



6. Combustion Reactions

