

SUBJECT - CHEMISTRY

CLASS - BSc(Hons) PART-II

PAPER - III

GROUP - B

TOPIC - OXIDES

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The classification of oxides is done into neutral, amphoteric and basic or acidic based on their acid-base characteristics.

1. An acidic oxide is an oxide which when combined with water gives off an acid.
2. A basic oxide is an oxide which when combined with water gives off a base.
3. When a substance reacts chemically, both as a base or acid it is termed as an amphoteric solution.
4. Neutral oxide is one which neither has an acidic characteristic or a basic one.

Classification of oxides

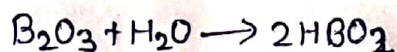
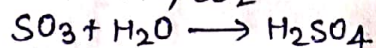
Depending upon nature and the properties exhibited by compounds, they are classified into

- Acidic oxides
- Basic oxides
- Amphoteric oxides
- Neutral oxides

Acidic oxide

Non-metals react with oxygen to form acidic compounds of oxides which are held together by covalent bonds. These compounds can also be called as acid anhydrides. Acid anhydrides usually have a low melting and boiling point except for compounds like B_2O_3 and SiO_2 which have high melting points and form giant molecules.

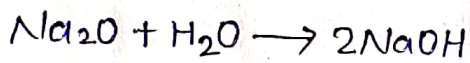
Example NO , CO_2



Basic oxide

Metals react with oxygen to give basic Compounds of oxygen. These Compounds are usually ionic in nature Group 1, 2 and lanthanides form basic Compounds of oxygen when they react with dioxygen. During the formation of these Compounds, a large amount of energy is released. These Compounds readily react with water except few exceptions.

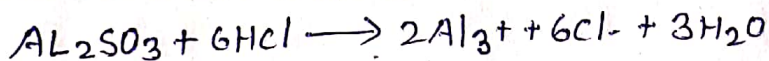
Examples M_2O_3, MO_2, ThO_2



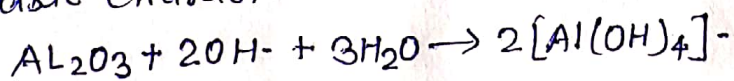
• Amphoteric oxide

Amphoteric oxides are Compounds of oxygen which exhibits both acidic as well as basic characteristics. These oxides when reacting with acid undergoes a neutralization reaction to form water and Salt. This exhibits the basic property of the Compounds. Similarly reacts with the alkali to form Salt and water, exhibiting acidic property. Example: aluminium oxide.

Acidic characteristics



Basic characteristics



Neutral oxides:

Some Compounds react with oxygen to form oxides which do not exhibit acidic nor basic characteristics. Such Compounds are called as neutral Compounds of oxygen.

Example NO, CO