

Types of oxides

There are three types of oxides:

- ✓ Acidic oxides
 - ✓ Basic oxides
 - ✓ Neutral oxides
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Acidic oxides:

- ✓ Most non-metallic oxides are acidic oxides.
 - ✓ Acidic oxides react with alkalis to form a salt and water.
 - ✓ Some acidic oxides react with bases such as metal oxides when they are strongly heated.
 - ✓ Many non-metallic oxides react with water to form acidic solutions.
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Basic oxides

- ✓ Most metallic oxides are basic oxides.
 - ✓ Many basic oxides are formed by the direct combination of a metal with oxygen.
 - ✓ Basic oxides do not react with alkalis.
 - ✓ Only group 1 and 2 metal oxides react with water to form a metal hydroxide. An alkaline solution is formed which turns red litmus blue. Most other metal oxides do not react.
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Neutral oxides

- ✓ Neutral oxides do not react with acids or bases.
 - ✓ Examples: NO which is Nitrogen (I) oxide or nitric oxide and N_2O which is Nitrogen (II) oxide or nitrous oxide and Carbon monoxide i.e. CO.
 - ✓ Most neutral oxides are lower oxides of non-metals. Example: CO is neutral but CO_2 is acidic; similarly nitrogen (II) oxide is neutral while NO_2 i.e. nitrogen (IV) oxide is acidic.
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Amphoteric oxides:

- ✓ Amphoteric oxides show both acidic and basic properties.
- ✓ Examples: the oxides of aluminium and zinc are amphoteric.

General reactions:

Amphoteric oxide + Acid \rightarrow Salt + water



Amphoteric oxide + alkalis \rightarrow Complex Salt + water

