

# CHEMISTRY STUDY MATERIALS FOR CLASS 10 (NCERT Based: Revision of Chapter -02)

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## Acids, Bases and Salts

### BASES

Base is a substance which releases hydroxide ions when dissolved in water. It is a substance which is bitter in taste and soapy to touch (e.g. Washing soda, caustic soda and caustic potash). They change red litmus to blue. They are pink with phenolphthalein and yellow with methyl orange.

### CLASSIFICATION OF BASES

#### 1. Based on ionisation

**Strong bases:** - These are bases which ionise completely in aqueous solution  
eg. NaOH, KOH.

**Weak bases:-** These are bases which ionise partially in aqueous solution  
eg.  $\text{NH}_4\text{OH}$ ,  $\text{Ca}(\text{OH})_2$ .

#### 2. Based on their acidity

**Monoacidic base:-** It is a base which ionises in water to give one hydroxide ion per molecule eg. NaOH, KOH.

**Diacidic base:-** It is a base which ionises in water to give two hydroxide ions per molecule eg.  $\text{Ca}(\text{OH})_2$ ,  $\text{Mg}(\text{OH})_2$ .

**Triacidic base:-** It is a base which ionises in water to give three hydroxide ions per molecule eg.  $\text{Al}(\text{OH})_3$ ,  $\text{Fe}(\text{OH})_3$ .

#### 3. Based on the concentration:

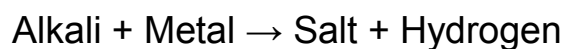
Depending on the percentage or amount of base dissolved in water, bases are classified as concentrated alkali and dilute alkali.

**Concentrated alkali:-** It is an alkali having a relatively high percentage of alkali in its aqueous solution.

**Dilute alkali:-** It is an alkali having a relatively low percentage of alkali in its aqueous solution.

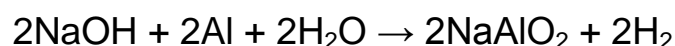
### Reaction of Base with Metals:

When alkali (base) reacts with metal, it produces salt and hydrogen gas.

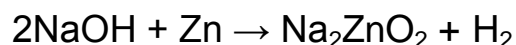


#### Example:

- Sodium aluminate and hydrogen gas are formed when sodium hydroxide reacts with aluminium metal.



- Sodium hydroxide gives hydrogen gas and sodium zincate when reacts with zinc metal.



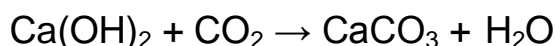
### Reaction of Base with Oxides of Non- Metals:-

Non-metal oxides are acidic in nature. For example; carbon dioxide is a non-metal oxide. When carbon dioxide is dissolved in water it produces carbonic acid. Therefore, when a base reacts with non-metal oxide both neutralize each other resulting respective salt and water are produced.

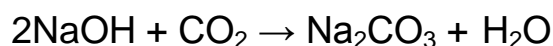


#### Example:

Calcium hydroxide gives calcium carbonate and water when it reacts with carbon dioxide.



Sodium hydroxide gives sodium carbonate and water when it reacts with carbon dioxide.



### Uses of Bases:

- Sodium hydroxide is used in the manufacture of soap.
- Calcium hydroxide is used in white washing the buildings.
- Magnesium hydroxide is used as a medicine for stomach troubles.
- Ammonium hydroxide is used to remove grease stains from clothes.

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