

Acids, Bases and Salts Class 7 Science Notes - Chapter 5

Acids and Bases

Acids

- Acids are substances that taste sour and are corrosive in nature.
- It turns blue litmus paper to red.
- These substances are chemically acidic in nature. E.g.: -orange juice, curd, vinegar, hydrochloric acid etc.

Bases

- Bases are substances that, in aqueous solution, are slippery to the touch and bitter in taste.
- It turns red litmus paper to blue.
- These substances are chemically basic in nature. Eg:- soap, ammonium hydroxide, calcium hydroxide, etc

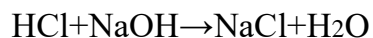
Neutralisation Reaction

- When an acid and base react with each other to form a salt, water and heat then such reaction is known as neutralisation reaction.
- In this reaction, the acidic and basic nature of the acid and base respectively are destroyed.
- The reaction between hydrochloric acid and sodium hydroxide is a classic neutralisation reaction where sodium chloride is formed.
$$\text{HCl} + \text{NaOH} \rightarrow \text{NaCl}(\text{salt}) + \text{H}_2\text{O}$$

Salts

Salts

- Salt is the product formed from the neutralisation reaction of acids and bases.
- In the reaction between hydrochloric acid and sodium hydroxide the salt formed is sodium chloride.



- Salt can be acidic, basic or neutral in nature.

Visual Indicators

Indicators

Substances, which are used to test whether a substance is acidic or basic are called indicators.

	Acidic Solution	Basic Solution
Red litmus	No change	Turns blue
Blue litmus	Turns red	No change

Natural Indicators

- Plants or plant parts contain useful chemicals that are used for testing an acidic or basic property of a solution are termed as natural indicators. China Rose and turmeric are examples of natural indicators.

Litmus

- Litmus is a naturally occurring purple indicator, which is extracted from lichens.
- When added to an acidic solution, it turns red and when added to a basic solution, it turns blue.
- It is available in the form of a solution or as strips of paper known as litmus paper.

(A) Red litmus turns blue indicating a basic solution

(B) Blue litmus turns red indicating an acidic solution

Phenolphthalein

- Phenolphthalein is an acid-base indicator which is colourless in acid solution but turns pink to red as the solution becomes alkaline.
- It is a synthetic indicator and is used for the neutralisation experiment.

Olfactory Indicators

- Olfactory indicators are substances whose smell changes whether they are mixed with an acidic or a basic solution.
- Onion, clove oil and vanilla extract are examples of such indicators.

Visual Indicators

- Visual Indicators are substances used to show visually (as by a change in colour) the condition of a solution with respect to the presence of a particular material (as a free acid or base).
- Common examples are litmus, red cabbage, phenolphthalein, etc

Neutralization

Neutralisation in Daily Life

- During indigestion, taking milk of magnesia (magnesium hydroxide) gives us relief as it neutralizes the effect of excess acid produced inside the stomach.
- The effect of ant sting which is caused by formic acid can be neutralized by rubbing moist baking soda (basic in nature).
- To ensure that plants can grow well, the soil is treated with either acids or bases depending if it's basic or acidic in nature.
- Factory wastes, generally being acidic in nature can cause environmental damage, are treated with basic substances before discharge.

Recap of Concepts

Safety Measures While Using Acids

- When diluting acids, pour the acid into the water, NOT water into acid as this may cause spattering of the acid.
- Safety gloves are to be worn whenever working with acids or bases.

Uses and Applications

pH of Soil

- Excessive use of chemical fertilisers changes the pH of the soil.
- Plants do not grow well when the soil is either too acidic or too basic.
- Hence substances are added to bring the pH at a neutral level.

Uses of Acids and Bases

- Food preservation – Citric acid.
- Aerated drinks – Carbonic acid.
- Baking powder – Tartaric acid.

- Cooking – Acetic acid(vinegar)
- Manufacture of soaps – Sodium hydroxide.
- Manufacture of bleaching powder – Calcium hydroxide
- As a foaming agent in fire extinguishers – Aluminium hydroxide.