

KEY POINTS

INTRODUCTION

"Acids, bases and salts are three main categories of chemical compounds. They have certain chemical properties which distinguish one from the other."

ACIDS

The word acid comes from the Latin word 'acere' which means sour. Lemon, grapefruit and orange are called natural acids.

GENERAL PROPERTIES OF ACIDS

- Acids are sour to taste.
- Acids turn blue litmus solution to red.

SOME NATURALLY OCCURRING ACIDS

	Acid	Occurrence
1	Citric acid	Citrus fruits like lemons and oranges
2	Lactic acid	Sour milk
3	Boric acid	Volcanic eruptions, minerals, sea water
4	Formic acid	Present in sting of bees and ants
5	Butyric acid	Rancid butter
6	Tartaric acid	Tamarind, grapes, apples
7	Acetic acid	Vinegar
8	Oxalic acid	Tomato
9	Malic acid	Apples
10	Uric acid	Urine
11	Carbonic acid	Sea water, rain water
12	Stearic acid	Fats





BASES

The substances which have a bitter taste and feel soapy and slippery to touch are called bases. Most of the bleaches, soaps, toothpastes, and cleaning agents contain bases.

GENERAL PROPERTIES OF BASES

- Bases are bitter to taste and soapy to touch.
- Bases turn red litmus solution to blue.

NAME OF SOME BASE

Name of base	Found in
Calcium hydroxide	Lime water
Ammonium hydroxide	Window cleaner
Sodium hydroxide	Soap
Potassium hydroxide	Soap
Magnesium hydroxide	Milk of magnesia

ACID RAIN

The rain containing excess of acids is called an acid rain. Gases like sulphur dioxide and nitrogen dioxide released from factories also dissolve in rain water and increase its acidity. This acid rain corrodes buildings and monuments, those made of limestone (CaCO_3) and marble (CaCO_3). Acid rain also damages plants and increases the acidity of the soil.

INDICATORS

It is a chemical which indicates the nature of a solution by the means of a sharp change in colour.

- Universal indicator : It is a mixture of dyes. It gives a range of colour changes.

e.g. pH paper

- Natural indicators :

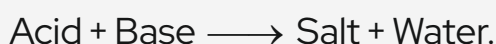
1. Litmus : a natural dye it is extracted from lichens. It has a mauve (purple) colour in distilled water.
2. Turmeric : It remains yellow in acidic or neutral solutions and turns red in basic solutions.
3. China Rose as indicator :

Laboratory indicators : Methyl orange, Phenolphthalein

Indicator properties of an acid and base		
Indicator	Colour change in acid	Colour change in base
1. Blue Litmus	Turns red	No change
2. Methyl orange	From orange to pink/red	From orange to yellow
3. Phenolphthalein	Remains colourless	Becomes pink from colourless
4. Red Litmus	No change	Turns blue

10 NEUTRALISATION

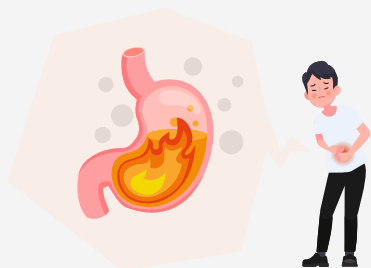
The reaction between an acid and a base is called neutralization.



NEUTRALISATION IN EVERY DAY LIFE

● SOIL TREATMENT:

Acidic soil can be neutralized by farmers spray it with calcium oxide (quick lime) or calcium hydroxide (slaked lime) or basic soil neutralized by adding, a large amount of organic manure is added.



● INDIGESTION:

Acidity in stomach can be neutralised by taking an edible base like baking soda.

● FACTORY WASTES:

The wastes of many factories contain acids. These wastes are treated with lime which neutralises acids.

● STINGS OF ANTS AND BEES:

To reduce the effect of formic acid (sting of ants and bees) is rubbed with a soap or baking soda solution or calamine which contains zinc carbonate.

● PRESERVING MILK FOR A SHORT PERIOD:

To prevent the ill effect of lactic acid the milk vendor adds a small amount of baking soda to the milk.

● PREVENTION OF TOOTH DECAY:

To prevent tooth decay, it is advised to clean the mouth and use toothpastes which are generally basic, for cleaning the teeth.

