

UNIT

14

ACIDS AND BASES



Learning Objectives

After the completion of this lesson, students will be able to:

- ◆ define acids and bases.
- ◆ understand the properties of acids and bases.
- ◆ distinguish between acids and bases.
- ◆ list out the uses of acids and bases.
- ◆ understand the neutralisation reaction between acids and bases.
- ◆ know about acid – base indicators.

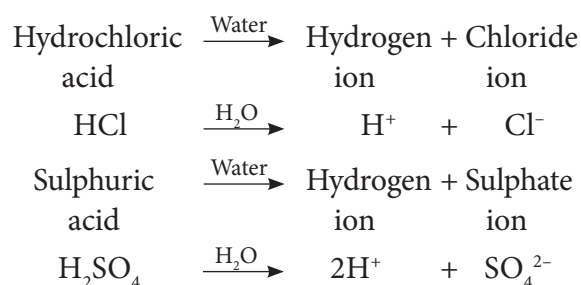


Introduction

In our daily life we come across different food substances. Some substances like tamarind, grapes, curd and lemon are sour. They are said to be acidic. Some substances like sodium bicarbonate and soap are bitter in taste. They are said to be basic. This means that they contain either acid or base. But what are acids and bases? Acids and bases are one of the important classifications of chemical compounds, which play a significant role in every field of science. Acids and bases find applications in various products from the soap used for shower to the vinegar in the kitchen. Acids and bases are biologically, industrially and environmentally important compounds. For example, among the medicines we use, aspirin is acidic and antacids are basic. Similarly, many biological molecules are also either acids or bases. Dietary fats are acids and the chemical compounds in DNA are bases. In this lesson we will study about the properties and uses of acids and bases, neutralisation of acids and bases and acid-base indicators.

14.1 Acids

The term acid is derived from the Latin word 'acidus' which means sour. Thus, the chemical compounds which have sour taste are generally called as acids. All acids contain one or more replaceable hydrogen atoms in their molecules and when dissolved in water they release H^+ ions. For example, Hydrochloric acid (HCl), Sulphuric acid (H_2SO_4) and Nitric acid (HNO_3) release hydrogen ions (H^+) when dissolved in water.



Swedish chemist Svante Arrhenius proposed a theory on acids. According to him, an acid is a substance which furnishes H^+ ions or H_3O^+ ions in aqueous solution.

