

UNIT

7

MAGNETISM



Learning Objectives

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

- ◆ know about magnet and its types.
- ◆ distinguish between natural and artificial magnets.
- ◆ define magnetic field and compare uniform and non-uniform magnetic fields.
- ◆ summarize the properties of magnet.
- ◆ understand the concept of Earth's magnetism.
- ◆ list out the uses of magnets.



Introduction

Magnets are objects of stone, metal or other material which have the property of attracting metals like iron, cobalt and nickel. The attracting property of a magnet is called magnetism and it is either natural or induced. The branch of physics which deals with the property of a magnet is also called magnetism. The earliest evidence for magnets are found in a region of Asia Minor called Magnesia. It is believed that the Chinese had known the property of magnet even before 200 B.C. They used a magnetic compass for navigation in 1200 A.D. Use of magnets in compasses facilitated long-distance sailing. After the discovery of magnets the world progressed into a new direction. Today magnets play an important role in our lives. Magnets are used in refrigerators, computers, car engines, elevators and many other devices. In this lesson we will study about the types, properties and uses of magnets.

7.1 Classification of Magnets

Magnets are classified into two types. They are natural magnets and artificial magnets.

Natural Magnets

Magnets found in the nature are called natural magnets. They are permanent magnets i.e., they will never lose their magnetic power. These magnets are found in different places of the earth in the sandy deposits. Lodestone called magnetite (Iron oxide) which is the ore of iron is the strongest natural magnet. Minerals like Pyrrhotite (Iron Sulphide), Ferrite and Coulumbite are also natural magnets.



Figure 7.1 Natural magnet



There are three types of iron ores. They are: Hematite (69% of Iron), Magnetite (72.4% of Iron) and Siderite (48.2% of Iron). Magnetite is an oxide ore of iron with the formula Fe_3O_4 . Among these ores, magnetite has more magnetic property.