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STUDY MATERIAL SCIENCE

CLASS-VII

Date : 26-06-2021

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▸ Physical and chemical changes :

Every day we come across many changes that are taking place all around us. These changes may involve one or more substances. Sometimes, milk becomes sour. Souring of milk is a change. Making a sugar solution is a change. Similarly, setting of curd from milk is a change.

Some changes that we have noticed around us are melting of ice, making of ice cream, melting of wax, stretching a rubber band, evaporation of water, cutting of paper, breaking of glass pane, bending of glass tube by heating, boiling of water, sublimation of camphor, etc.

Broadly, these changes are of two kinds:

- Physical changes
- Chemical changes

Physical Changes

In a physical change, a substance undergoes changes only in its physical properties such as shape, size, colour and state, and no new substance is formed. First, we shall perform some activities to show the physical changes that are taking place all around us are:

Characteristics of Physical Changes

The physical changes are temporary changes which can be easily reversed to form the original substance. In such a change, no new substance is formed.

Thus, we noticed that the important characteristics of physical changes are as follows:

- No new substance is formed in this change.
- It is a temporary change and is generally reversible.
- A temporary change in colour may take place.
- Very little energy (heat, etc) is either absorbed or evolved.

Chemical Changes

Chemical changes are also called chemical reactions. A chemical change occurs when two substances react chemically to form a new substance with different chemical properties. All the new substances which we use in various fields of our life are produced as a result of chemical changes (or chemical reactions).

A change with which we are quite familiar is the rusting of iron. Almost every iron (or steel) object kept in the open gets rusted slowly. It acquires a coating of a brownish substance called rust and the process is called rusting. We can usually see iron gates of parks or farmlands, iron benches kept in lawns and gardens, almost every article of iron, kept in the open gets rusted. The agricultural tools such as spades and shovels, also get rusted when exposed to the atmosphere for some time. In the kitchen, a wet iron pan (tawa) often gets rusted if left in that state for some time. Rust is not iron. It is different from iron on which it gets deposited.