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STUDY MATERIAL SCIENCE

CLASS-VII

Date : 03-06-2021

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▶ Heat

Heat is a form of energy which makes the substance hot. In winter, it is our common experience that we feel cold inside the house and if we come out in front of sun rays, then we feel warm. Now, if we know that how do we feel this sensation of warm or cold? Then, what will be our answer? Think. In this chapter, we will try to find out the answer to such kind of question.

Hot and Cold

In our daily routine, we come across a number of objects, out of which some are hot while other objects are cold, e.g. when a frying pan kept on a burning gas stove becomes hot but the handle of the pan is cold. Even among the hot objects, some objects may be hotter than the other. In the same manner, among the cold objects, some objects may be colder than the other. So, if I ask you how you decide the relative hotness or coldness of objects, then your answer will be 'by simply touching the objects'. But our sense of touch is not enough in telling us whether an object is really hot or cold so, this can be understood by performing a simple activity.

Temperature and Thermometer

The degree of hotness or coldness of the object is known as the temperature of an object. The temperature of an object is an only property that indicates which object is hot and which one is cold. A high temperature of a body indicates that it is very hot whereas a low temperature of the object indicates that it is quite cold, e.g. the temperature of boiling water is quite high, so boiling water appears to be very hot. On the other side, the temperature of melting ice is quite low. So, ice appears to be very cold on touch.

It is measured by using an instrument called thermometer, which has a scale marked on it which is used to read the temperature, e.g. the scale in laboratory thermometer is marked along the length of thermometer's tube between 0° mark and 100° mark into 100 equal divisions. So, each division is called a degree. The temperature of an object should always be stated with its unit. So, the most common unit for measuring temperature is degree Celsius ($^{\circ}\text{C}$).

Both the clinical thermometer and laboratory thermometer are mercury thermometers. So, when a particular amount of heat is supplied to the thermometer bulb consisting of mercury (by the hot body whose temperature is to be measured), then the mercury expands and get rises in the glass tube of the thermometer. This fact is used in measuring the temperature.