Alcohol vs Mercury Thermometers

Thermometer is a device used for measuring temperature. It has a temperature sensitive bulb filled with liquid. And there is a scale showing the measured temperature. Normally, temperatures are measured in Celsius degree or Fahrenheit degrees. Thermometers have a narrow capillary tube, which is connected to the bulb with temperature sensitive fluid. As the temperature increases, the fluid expands and rises up the capillary. As the temperature decreases the fluid contracts and goes down in the capillary. The scale along the capillary shows the relevant temperature according to the height of the capillary column. We find the temperature by reading the marker where the meniscus is.There are different types of thermometers such as alcohol thermometer, mercury thermometer, infra red thermometer, recording thermometer, etc. Among these alcohol and mercury thermometers are commonly used for day to day measurement taking.

Alcohol Thermometer

Alcohol thermometer uses alcohol as the liquid to measure the temperature variations. Alcohol expands when it absorbs temperature and contract in colder temperatures. Most commonly used alcohol in these is ethanol, but different types of alcohols can be used depending on the measured temperature and environment in which the measurements are taken. The measurable temperature range varies according to the used fluid inside the bulb. For example, boiling point of alcohol is 80°C and the freezing point is -115°C. So in an alcohol thermometer containing alcohol, -115°C to 80°C temperature variations can be measured. Alcohol is a colourless, volatile fluid. A dye is used to colour alcohol (normally a red dye), so that the reading can be clearly obtained. Because of the volatile nature, the fluid within the bulb can easily evaporate, or can make the liquid column separated. To get accurate readings, this must be avoided. The thermometer should be housed in a casing to protect it from temperature fluctuations.

Mercury Thermometer

A small volume of silver colour mercury liquid is used inside the mercury thermometer. Mercury is a highly toxic liquid; therefore, it should be handled with care especially if the thermometer is broken. The freezing point of mercury is -38.83 °C and the boiling point is 357 °C. Therefore, mercury thermometers are best at measuring higher temperatures than the lower temperatures. Thus, this is widely used in laboratories to measure the temperature variations of chemical reactions.

What is the difference between Alcohol Thermometer and Mercury Thermometer?

¤ Mercury thermometer has mercury inside the bulb as the temperature sensitive fluid, and in alcohol thermometers, it is an alcohol.

¤ Since alcohol is non toxic, alcohol thermometers are much safer to use than the mercury thermometers.

¤ Alcohol thermometers can be used to measure very low temperatures. Since mercury has a higher boiling point than alcohol, mercury thermometer can be used to measure high temperatures.