IS 2480 (Part 1) : 2024 - General Purpose Glass Thermometers - Specification Part 1 Solid-Stem Thermometers (Third Revision)

The temperature of the human body has been used as a diagnostic sign since the earliest days of clinical medicine. The earliest thermal instruments were developed during the sixteenth and seventeenth centuries. The Evolution of Thermometers:

In the Year 1654: Ferdinand II de' Medici, Grand Duke of Tuscany, invented the first liquid-based thermometer, utilizing alcohol expansion and contraction, independent of barometric pressure.

In the Year 1665: Christian Huygens proposed standardizing thermometers using ice and water's melting and boiling points.

In the Year 1694: Carlo Renaldini advocated for adopting ice and boiling water limits as a universal scale.

In the Year 1701: Isaac Newton suggested a 12-degree scale between melting ice and human body temperature.

These innovators paved the way for modern thermometry. The Fahrenheit scale (Year 1724) and Celsius scale (Year 1742) eventually standardized temperature measurement."

Glass Thermometers, it appears to be the Indian Standard (IS 2480 Part 1: 2024) for general-purpose glass thermometers, specifically solid-stem thermometers. Solid-stem general-purpose liquid-in-glass thermometers for vertical total and partial immersion, covering temperatures from -100°C to +500°C.

In this revision of the IS, the requirement for accuracy has been modified and a method for accuracy has been referred and a new requirement for stability has been added. Three new temperature ranges (- 100 to + 100, - 10 to + 50 with 0.5 °C and 0.25 °C smallest divisions) and kerosene oil as a thermometric liquid has also been added. A sampling plan for lot testing has been prescribed and several editorial changes, such as, inclusion of the reference clause, Hindi title, ICS No., BIS certification marking clause, etc have also been incorporated.

Assistance has been derived from the following publications:
ISO 1770 : 1981- Solid-stem general purpose thermometers
ASTM E1-14 - Standard specification for ASTM liquid-in-glass thermometers

The requirements for long solid-stem, short solid-stem, long enclosed-scale and short enclosed-scale thermometers for precision use are covered in a separate Indian Standard.

Requirements of reference thermometers meant for use in calibrating liquid-in-glass thermometers have been specified in IS 4825.

BIS, first published in 1964, the ‘General purpose glass thermometers’, and was later revised in 1973. In the second revision in 1983, the standard was prepared into two parts, Part 1 covers solid-stem type and Part 2 covers enclosed-scale type thermometers which were previously not covered in the standard. This standard has been revised in 2024 to enhance accuracy and stability requirements, incorporate new temperature ranges and thermometric liquids & reflect current industry needs and best practices.

This standard (IS 2480 Part 1: 2024) prescribes the requirements for solid-stem general purpose liquid-in-glass thermometers graduated for vertical total and partial immersion, covering the overall range from - 100 °C to + 500 °C. It covers specifications for solid-stem thermometers, including calibration, materials, construction, and accuracy requirements. This standard ensures our thermometers meet the necessary quality and performance criteria for temperatures ranging from -100°C to + 500°C. The standard outlines requirements for design, materials, construction, accuracy, stability, marking, packing, and sampling..