

IS 6593 : 1972 Electric Serological Water-baths

IS 6593:1972 establishes the specifications for electric serological water-baths, devices widely used in laboratories for maintaining precise water temperatures to support serological tests. These water-baths consist of a thermally insulated container fitted with electric heating elements and a thermostat, ensuring automatic control of water temperature within the range of 30°C to 80°C with a precision of $\pm 0.5^\circ\text{C}$. Key definitions in the standard include terms like “false bottom,” which supports test tube racks, “working space,” the usable interior volume of the bath, and various thermal parameters such as temperature variation, differential, and drift. These devices are designed to ensure accurate and consistent temperature regulation, essential for scientific applications.

The standard specifies material requirements, stipulating that the inner chamber, false bottom, and cover must be constructed from copper, brass, or stainless steel, with minimum thickness requirements for durability and corrosion resistance. The outer enclosure should be of mild steel or equivalent materials, finished with protective coatings to resist wear and rust. For thermal efficiency, the inner chamber is encased with at least 25 mm of insulation made from durable materials like foamed plastic or glass wool. Drain cocks or plugs are mandated to facilitate easy cleaning and maintenance, while covers must minimize heat loss and condensation. The heating elements must be efficiently positioned to ensure even water temperature distribution, with optional electric stirrers for enhanced uniformity.

Performance requirements emphasize strict control over heating-up time (not exceeding 45 minutes), temperature variation (within $\pm 0.5^\circ\text{C}$), differential (within $\pm 1^\circ\text{C}$), and drift (not exceeding $\pm 0.5^\circ\text{C}$ over extended periods). The devices must pass rigorous testing, including visual inspections, heating performance, insulation resistance, and protection against electric shock. Tests are conducted at benchmark temperatures of 37°C and 56°C to verify thermal stability and uniformity. Safety features, such as pilot lamps for operation indication and robust earthing connections, are also outlined.