



IS 1117: 2018 Laboratory glassware – Single Volume Pipette

IS 1117: 2018 is a standard covering specifications for laboratory glassware, specifically single volume pipettes. This Indian Standard being identical with ISO 648 : 2008 ‘Laboratory glassware — Single-volume pipettes’ issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Glass, Glassware and Laboratoryware Sectional Committee. This standard was originally published in 1958 and subsequently revised in 1975. In that revision, pipettes of nominal capacities 0.5 and 200 ml had been included and those of capacities 3, 4, 15, 30, 35, 40 and 70 ml had been excluded. Further, the 0.5-ml pipette without bulb, the 1-ml pipette both with and without bulb and the 2-ml pipette with bulb for Class of accuracy A and both with and without bulb for Class of accuracy B had been specified. All the remaining sizes had been specified with bulb only. This standard specifies metrological and constructional requirements for volumetric pipettes with One mark (total delivery) and for volumetric pipettes with two marks, both of which are suitable for laboratory purposes. In this standard the unit of volume used is ml (ml) which is equivalent to one cubic centimetre (cm³) as it elaborates the following definitions “ Delivery volume , Delivery time and waiting time. This standard further classifies the One mark pipette into two classes of accuracy. The standard broadly divides single- volume pipette in two types the one in which no waiting time is specified and other type in which waiting time of 5 sec is specified. The standard also defines the material of construction of single volume pipette which shall be manufactured from glass of chemical resistance and thermal properties at least to HBG3 specification.

Key aspects of this standard is given below:

1. **Scope and Application:** The standard defines the requirements for single volume pipettes made of glass, used for precise measurements in laboratories.
2. **Material and Design:** Pipettes must be made from high-quality glass with chemical resistance. The standard specifies design aspects such as dimensions, markings, and tolerance.
3. **Capacity and Calibration:** Each pipette is calibrated to deliver (TD) a specific single volume with high accuracy. The calibration requirements include permissible error limits to ensure precision.
4. **Marking:** Each pipette should be clearly marked with capacity, unit, and other relevant identification marks. Marks must be permanent and legible.

5. Accuracy and Precision: The standard defines accuracy and precision criteria, providing acceptable limits for volume measurement deviations.
6. Testing and Verification: Guidelines for testing procedures, including volumetric performance and inspection of the pipette, are specified to ensure consistency.
7. Safety and Handling: Information on safe handling, usage, and maintenance of glass pipettes is included to prevent breakage or inaccurate results.

To align with **consumer expectations**, the standard emphasizes **accuracy and calibration**, establishing strict **tolerance levels** that ensure the pipette delivers the precise volume marked. The **material** used is high-quality glass, selected for its **chemical resistance** and durability against **thermal changes**, making it suitable for varied laboratory environments. Additionally, the standard mandates a design that promotes easy handling and minimizes **user error**, with clearly marked **volume graduations** for reliable use.

The standard covers physical aspects such as shape , bulb , dimensions and Graduation lines etc along with the marking requirement which shall be marked on each single volume pipette. The standard also permits the use of color codes on single volume pipette which shall comply to the requirement of ISO 1769.

For ease of identification and traceability, **markings** on the pipettes are specified to include essential details such as the **volume**, **manufacturer**, and **calibration** information. This detailed guidance ensures that single-volume pipettes not only provide the **accuracy** and **reliability** la a laboratory professionals would require but also maintain consistency and usability across different testing scenarios. Thus, IS 1117:2018 meets professional demands for high **quality standards** in laboratory measurement tools.

The DPIIT Quality Control Order mandates that Single volume pipette glassware sold, manufactured, or imported in India shall comply with IS 1117:2018 and display the BIS Standard Mark ensuring accuracy and reliability.