



Designation: E672 – 87 (Reapproved 2019)^{ε1}

Standard Specification for Disposable Glass Micropipets¹

This standard is issued under the fixed designation E672; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Text in 6.2.2, 9.1.2, and 9.2 was corrected editorially in February 2019.

1. Scope

1.1 This specification covers two different types of disposable micropipets, calibrated “to contain,” used in measuring microlitre volumes of liquids.

1.2 The values stated in SI units are to be regarded as the standard.

1.3 The following precautionary caveat pertains only to paragraph 9.1.1 of this specification. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

E438 Specification for Glasses in Laboratory Apparatus

2.2 *ISO Standard:*³

R-1769 Color Coding for Pipets

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *accuracy*—the closeness of agreement between the nominal value and the mean volume, obtained by applying the

test procedure specified in 9.4.1. It is quantified by the inaccuracy of the mean (bias).

3.1.2 *disposable micropipet*—such micropipets will only be expected to provide their specified performance during their original use or operation.

NOTE 1—The descriptions of “accuracy” and “repeatability” apply only in cases where the distributions are Gaussian.

3.1.3 *repeatability*—the closeness of agreement between the individual volumes obtained by applying the test procedure specified in 9.4.2. It is quantified by the imprecision.

4. Classification

4.1 This specification covers two different pipet designs as follows:

4.1.1 *Type I*—Disposable micropipets with calibration line and color coding (see Fig. 1 and Table 1).

4.1.2 *Type II*—Disposable micropipets void of markings (see Fig. 2 and Table 2).

NOTE 2—Type I pipets were originally specified by the Department of Defense under MIL-P-36722.

5. Materials and Manufacture

5.1 The pipets made to these specifications shall be fabricated from borosilicate glass, Type I, Class A or B or soda lime glass, Type II, in accordance with Specification E438.

6. Dimensions and Permissible Variations

6.1 *Design*—Pipets shall be of one piece construction in accordance with Table 1 and Table 2 for shape, dimensions, and permissible variations. Any cross-section of the pipet, taken in a plane perpendicular to the longitudinal axis, shall be circular.

6.2 *Capacity*—The pipet capacity shall be stated on the package label, expressed as μL (microlitre); this shall be known as the stated capacity, V_1 , in making subsequent calculations. The expected deviation from the stated capacity shall be expressed as accuracy and coefficient of variation and shall be tested for capacity as specified in 9.1. The unit, microlitre, μL , may be considered as equivalent to 0.001 cm^3 .

¹ This specification is under the jurisdiction of ASTM Committee E41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.01 on Laboratory Ware and Supplies.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

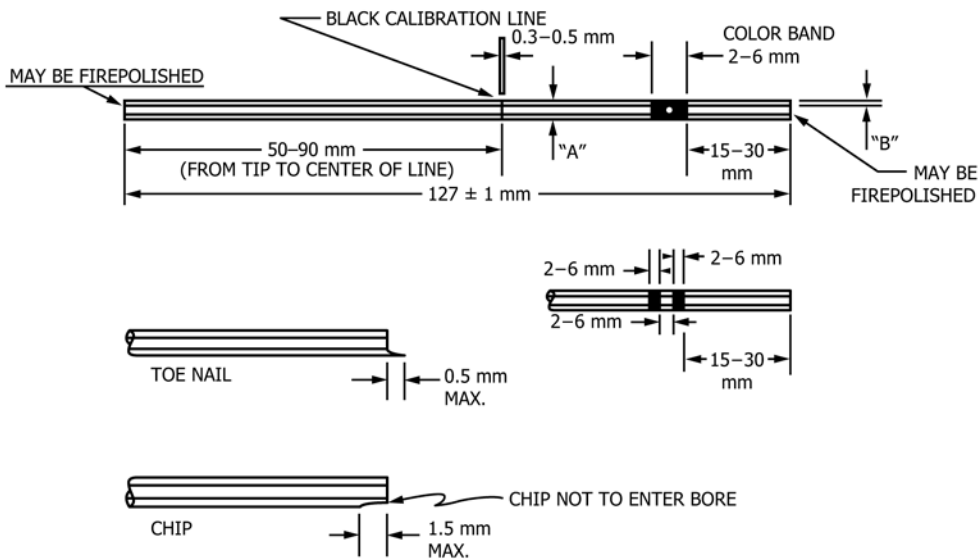


FIG. 1 Type I Pipet

TABLE 1 Dimensions for Type I Pipet

Stated Capacity, μL	Color Code	Minimum Diameter A, mm	Minimum Wall B, mm	Maximum Volumetric Deviation	
				Accuracy, %	Coefficient of Variation, %
5	white	1.0	0.35	± 1.0	< 1.5
10	orange	1.0	0.25	± 0.5	< 1.0
20	black	1.1	0.25	± 0.5	< 1.0
25	2 white	1.1	0.25	± 0.5	< 1.0
50	green	1.3	0.20	± 0.5	< 1.0
100	blue	1.6	0.20	± 0.5	< 1.0
200	red	2.2	0.20	± 0.5	< 1.0

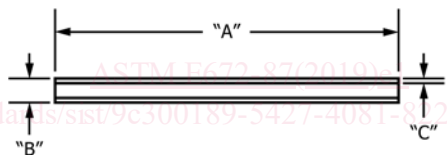


FIG. 2 Type II Pipet

TABLE 2 Dimensions for Type II Pipet

Stated Capacity, μL	Minimum Length A, mm	Minimum Diameter B, mm	Minimum Wall C, mm	Maximum Volumetric Deviation	
				Accuracy, %	Coefficient of Variation, %
1	20	0.5	0.20	± 1.5	< 2.0
2	20	0.5	0.20	± 1.2	< 1.5
3	20	0.6	0.20	± 1.2	< 1.5
4	20	0.6	0.20	± 1.2	< 1.5
5	20	0.6	0.20	± 1.2	< 1.5
10	20	0.6	0.10	± 1.0	< 1.2
20	20	0.6	0.10	± 1.0	< 1.2
25	30	0.6	0.10	± 1.0	< 1.2
50	30	1.0	0.10	± 1.0	< 1.2
100	50	1.3	0.10	± 1.0	< 1.2