



Designation: E934 – 94 (Reapproved 2015)

Standard Specification for Serological Pipet, Disposable Plastic¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers disposable plastic serological pipets, calibrated “to deliver” when measuring volumes of liquids.

1.1.1 *Any institution or individual who reuses a disposable pipet must bear full responsibility for its safety and effectiveness.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D703 Specification for Polystyrene Molding and Extrusion Materials (Withdrawn 0)³

E542 Practice for Calibration of Laboratory Volumetric Apparatus

E920 Specification for Commercially Packaged Laboratory Apparatus

E921 Specification for Export Packaged Laboratory Apparatus

E1133 Practice for Performance Testing of Packaged Laboratory Apparatus for United States Government Procurements

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *accuracy*—the expected distribution of mean volumes around the stated volume.

3.1.2 *coefficient of variation*—the expected distribution of individual volumes around the mean volume.

3.1.3 *disposable pipet*—such pipets will only be expected to provide their specified performance during their original use or operation.

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 The last approved version of this historical standard is referenced on www.astm.org.

4. Material and Manufacturer

4.1 The pipets made to this specification shall be fabricated from crystal grade, uncolored polystyrene, or regrind of same, in accordance with Specification D703.

5. Design

5.1 *Shape*—0.5, 1.0, and 2.0-cm³ pipets shall be straight and of one-piece construction. Any cross section of a pipet taken in a plane perpendicular to the longitudinal axis shall be circular.

5.1.1 Pipets of 5.0, 10.0, 25.0, and 50.0 cm³ shall be straight and may consist of one, two, or three components, the extruded pipet barrel, the pulled or injection molded tip, and the plain, pulled, or injection molded top end. Any cross section of a pipet taken in a plane perpendicular to the longitudinal axis shall be circular.

5.2 *Delivery Tips*—Delivery tips shall be made with a gradual taper of 10 to 40 mm. The tip end shall be reasonably perpendicular to the longitudinal axis of the pipet, and shall be free of internal flash.

5.3 *Top End*—The 5, 10, 25.0, and 50.0-cm³ sizes shall have a top end with an inside diameter of 2 to 6.5 mm for a minimum distance of 20 mm from the open end, and shall have an overall length of 24 to 28 mm. On all sizes, the top end shall be suitable for plugging with filtering material. The top may be flat or chamfered and must be without sharp outer edges. All top ends shall be reasonably perpendicular to the longitudinal axis of the pipet. The O.D. of top end should range from 7 to 9 mm.

5.4 *Dimensions and Outflow Times*—The limiting dimensions and outflow times shall be as shown in Table 1. Outflow times shall be determined by means of a stopwatch on unplugged pipets when using distilled water at 25 ± 5°C.

6. Markings

6.1 *Graduation Markings*—Graduation lines shall be between 0.2 mm and 0.5 mm in width, and in a plane perpendicular to the longitudinal axis of the pipet parallel to each other. A main graduation line shall extend at least 3/5 of the way around the pipet. The values of all main graduation lines shall be in Arabic numbers directly above the lines referenced. Intermediate graduation lines shall extend at least 1/5 of the way