



Standard Specification for 44.7-μL Disposable Glass Micropipets¹

This standard is issued under the fixed designation E 733; 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—Keywords were added in March 2000.

1. Scope

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

1.2 The following precautionary statement pertains only to the test method portion, Section 9, 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 438 Specification for Glasses in Laboratory Apparatus²

E 672 Specification for Disposable Glass Micropipets²

2.2 Other Standard:

USP XIX United States Pharmacopeia

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 micropipets*—in accordance with this specification and the expected product performance expressed in this standard, those micropipets which are to be used one time only. *Any institution or individual who reuses a disposable micropipet must bear full responsibility for its safety and effectiveness.*

4. Classification

4.1 This specification covers two different pipets as follows:

Type I—Coated with heparin.

Type II—Uncoated.

5. Material

5.1 *Glass*—The pipets made to this specification shall be fabricated from borosilicate glass, Type I, Class A or B, or soda-lime glass, Type II, in accordance with Specification E 438.

5.2 *Heparin*—Heparin shall be of sodium salt isolated from the intestinal mucosa of hog origin. The heparin potency shall be 1 mg of sodium heparin compound and shall be equal to at least 100 United States Pharmacopeia (USP) units.

6. Physical Requirements

6.1 *Design*—Pipets shall be of one-piece construction for shape, dimensions, and permissible variations. Any cross section of the pipet, taken in a plane perpendicular to the longitudinal axis, shall be circular. The pipet design is similar to that expressed in Specification E 672 except for sizing, heparin coating, and specific color coding requirements.

6.2 *Capacity*—The pipet shall be calibrated “to contain” (T.C.) and shall have a capacity of 44.7 μL. 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 expressed on the package label. The pipets shall be tested for capacity as specified in 9.1.

6.2.1 *Accuracy*—(see 4.1)—The accuracy from stated volume shall be within $\pm 0.5\%$ and shall be determined as specified in 9.4.

6.2.2 *Coefficient of Variation* (see section 3.1.2)—The coefficient of variation from stated volume shall not exceed 1.0 % and shall be determined as specified in 9.4.

6.3 *Capacity Mark*—Pipets (Fig. 1) shall have a capacity line that is calibrated “to contain” a volume of liquid at 20°C. The capacity line shall be 0.3 to 0.5 mm wide and shall completely encircle the pipet in a plane perpendicular to its longitudinal axis.

6.4 *Heparin Coating* (Type I, Heparinized, only)—The inner surface of Type I pipets shall be evenly coated with sodium heparin. At his option, the manufacturer may label Type I, heparinized pipets with a statement of expected units of heparin activity. An expiration date on specified units of heparin activity may be claimed by the manufacturer. The pipet shall contain a minimum of 5 and a maximum of 10 units of

¹ This specification is under the jurisdiction of ASTM Committee E-41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.01 on Apparatus.

Current edition approved April 10, 1980. Published June 1980.

² *Annual Book of ASTM Standards*, Vol 14.04.