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Standard Specification for Laboratory Glass Volumetric Flasks, Special Use[1]

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1. Scope

1.1 This specification covers requirements for glass volumetric flasks of precision grades suitable for laboratory purposes and of specialty use. Each flask shall be marked with the letter "A" to signify compliance with applicable construction and accuracy requirements. Flasks may be marked with an identification number (serial number) at the option of the manufacturer.

NOTE 1—Specifications for standard volumetric flasks are given in specification E 288.

NOTE 2—Specifications for microvolumetric flasks in sizes from 1 to 25 mL are given in specification E 237.

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

2. Referenced Documents

2.1 *ASTM Standards:*

E 237 Specification for Microvolumetric Vessels (Volumetric Flasks and Centrifuge Tubes)[2]

E 288 Specification for Laboratory Glass Volumetric Flasks[2]

E 438 Specification for Glasses in Laboratory Apparatus[2]

E 542 Practice for Calibration of Volumetric Ware[2]

E 671 Specification for Maximum Permissible Thermal Stress in Annealed Glass Laboratory Apparatus[2]

E 694 Specification for Laboratory Glass Volumetric Apparatus[2]

E 920 Specification for Commercially Packaged Laboratory Apparatus[2]

E 921 Specification for Export Packaged Laboratory Apparatus[2]

E 1133 Practice for Performance Testing of Packaged Laboratory Apparatus for United States Government Procurements[2]

E 1157 Specification for the Sampling and Testing of Reusable Laboratory Apparatus[2]

3. Styles

3.1 *Style 1*—Bates, sugar, wide neck, size 100 mL

3.2 *Style 2*—Kohlraush, enlarged cup, sizes 100, 200, and 500 mL

3.3 *Style 3*—Sugar, two graduations, sizes 100 to 110 and 200 to 220 mL

4. General Requirements

4.1 *Calibration*—flasks calibrate in accordance with the methods outlined in Practice E 542.

4.2 *General*—See Specification E 694 for general requirements not covered in this specification.

5. Design

5.1 *Shape*—Style 1 and 3 flask necks shall be designed with re-inforced rims for acceptance of rubber stopper or may be flared. Style 2 shall have a neck with an enlarged cup beaded to accept a rubber stopper. Flask shapes shall permit complete emptying and thorough cleaning. The area of the bottom or base shall be of sufficient size so the flask, when empty, shall stand on an inclined plane of 15° to the horizontal.

5.2 *Volumetric Tolerances*—Flasks shall be in accordance with tolerances appearing in Table 1.

5.3 *Markings*—All markings shall be permanent and legible.

5.3.1 *Capacity Line*—The capacity line shall be sharply defined and of uniform width in a plane parallel to the base of the flask. The line shall be applied by one of the following methods; etched and filled with a permanent pigment; engraved; by application of a stain fired into the glass without etching or by application of an enamel which is fused on the glass without etching. Lines shall be in accordance with Specification E 694 for thickness and lengths.

5.3.2 *Identification Markings*—Each flask, marked by one of the methods given in 5.3.1 shall show the manufacturer's name or trademark, the nomical capacity, the word "contains" or the symbol "TC" and the temperature of calibration, that is, 20° C.

5.3.3 *Laboratory Marking Spot*—Each flask shall have an area roughened by blasting or enameled to provide a suitable area for laboratory marking.

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

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[2] *Annual Book of ASTM Standards*, Vol 14.02.