



Standard Specification for Laboratory Glass Volumetric Flasks, Special Use¹

This standard is issued under the fixed designation E1878; 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.

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 E288.

NOTE 2—Specifications for microvolumetric flasks in sizes from 1 to 25 mL are given in specification E237.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

2. Referenced Documents

2.1 ASTM Standards:²

E237 Specification for Laboratory Glass Microvolumetric Vessels (Volumetric Flasks and Centrifuge Tubes)

E288 Specification for Laboratory Glass Volumetric Flasks

E438 Specification for Glasses in Laboratory Apparatus

E542 Practice for Calibration of Laboratory Volumetric Apparatus

E694 Specification for Laboratory Glass 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

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

Current edition approved Nov. 1, 2013. Published December 2013. Originally approved in 1997. Last previous edition approved in 2008 as E1878–97 (2008). DOI: 10.1520/E1878-97R13.

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.

E1157 Specification for Sampling and Testing of Reusable Laboratory Glassware

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 E542.

4.2 *General*—See Specification E694 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 E694 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 nominal capacity, the word “contains” or the symbol “TC” and the temperature of calibration, that is, 20° C.

TABLE 1 Requirements for Flasks

Style	Capacity, mL	Capacity Tolerance, mL	Inside Dia At line, mm, max	Capacity Line		Rubber Stopper	Reference Dimensions	
				Distance from, mm, min Top	Bulb		Outside Diameter	X Length
1	100	0.08	12.5	20	5	00	60	130
2	100	0.08	14.5	10 ^A	10	6.5	65	160
2	200	0.10	15.0	15 ^A	10	7.5	76	200
2	500	0.20	18.5	15 ^A	10	9	102	265
3	100 to 110	0.08	13.5	30	10	0	65	195
3	200 to 220	0.10	20.5	30	10	3	75	215

^A From cup.

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.

6. Sampling and Testing

6.1 Refer to Specification **E1157**.

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7. Packaging and Package Marking

7.1 Select from one of Specifications **E920**, **E921** or Practice **E1133**.

8. Keywords

8.1 flasks; glass; special use; volumetric