



Designation: E1405 – 98 (Reapproved 2022)

# Standard Specification for Laboratory Glass Distillation Flasks<sup>1</sup>

This standard is issued under the fixed designation E1405; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers standard dimensional requirements for glass distillation flasks. It includes general purpose flasks and flasks designed for specific tests especially in the petroleum testing area.

NOTE 1—For packaging standards, choose among Specifications E920, E1157, and E1133.

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

1.3 *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:*<sup>2</sup>

- D20 Test Method for Distillation of Road Tars
- D86 Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure
- D216 Method of Test for Distillation of Natural Gasoline (Withdrawn 1988)<sup>3</sup>
- D233 Test Methods of Sampling and Testing Turpentine
- D246 Test Method for Distillation of Creosote and Creosote-Coal Tar Solutions (Withdrawn 2006)<sup>3</sup>
- D285 Test Method for DISTILLATION OF CRUDE PETROLEUM (Withdrawn 1985)<sup>3</sup>
- D402 Test Method for Distillation of Cutback Asphalt
- D447 Test Method for Distillation Of Plant Spray Oils (Withdrawn 1998)<sup>3</sup>

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

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<sup>2</sup> 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.

<sup>3</sup> The last approved version of this historical standard is referenced on www.astm.org.

- D801 Test Methods for Sampling and Testing Dipentene
  - D802 Test Methods for Sampling and Testing Pine Oils
  - D850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials
  - D1078 Test Method for Distillation Range of Volatile Organic Liquids
  - D2569 Test Method for Distillation of Pitch (Withdrawn 2006)<sup>3</sup>
  - E3 Guide for Preparation of Metallographic Specimens
  - E4 Practices for Force Calibration and Verification of Testing Machines
  - E438 Specification for Glasses in Laboratory Apparatus
  - E671 Specification for Maximum Permissible Thermal Residual Stress in Annealed Glass Laboratory 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
  - E1157 Specification for Sampling and Testing of Reusable Laboratory Glassware
- 2.2 *Other Documents:*
- U.S. Bureau of Mines Technical Paper 323B Method 100.13<sup>4</sup>

## 3. Classification

3.1 Distillation flasks shall be of the following types and sizes:

3.1.1 *Type I*—General purpose distilling flasks shall be of the following nominal capacities: 10 mL; 25 mL; 50 mL; 125 mL; 200 mL; 250 mL; 500 mL; 1000 mL; 2000 mL.

3.1.2 *Type II*—Special purpose distilling flasks shall be of the following classes:

3.1.2.1 *Class 1*—Barrett, 200 mL.

3.1.2.2 *Class 2*—Church, in the following sizes: 300 mL; 500 mL.

3.1.2.3 *Class 3*—Engler, 100 mL.

3.1.2.4 *Class 4*—Hempel, 500 mL.

<sup>4</sup> Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://dodssp.daps.dla.mil.

3.1.2.5 Class 5—Saybolt, 250 mL.

NOTE 2—The term millilitre (mL) is commonly used as a special name for the cubic centimetre (cm<sup>3</sup>) and similarly the litre (L) for 1000 cm<sup>3</sup>, in accordance with the International System of Units (SI).

4. Materials and Manufacture

4.1 Flasks shall be made of borosilicate glass conforming to the requirement of Type I, Class A of Specification E438.

4.2 Maximum residual thermal stress shall be such as to conform to Specification E671.

5. Workmanship, Finish, and Appearance

5.1 The general appearance of the flasks shall be illustrated in Fig. 1.

6. Design

6.1 Necks on all distilling flasks shall be circular in cross section and perpendicular to center of flask body.

6.2 Top shall be tooled or beaded.

6.3 Sidearms on all distilling flasks shall be circular in cross section. Sidearms shall be sealed at an angle of 75 ± 3° from the neck.

6.4 Bottoms of flasks shall be spherical in shape to the point of juncture with the flask neck. The 10-, 25-, and 50-mL sizes may have heart-shaped bottoms if desired.

7. Dimensions, Mass and Possible Variations

7.1 The nominal capacity of the flask shall not exceed the actual capacity to the base of the neck. Dimensions shall conform to the requirements of Table 1.

8. Product Marking

8.1 Each flask shall be permanently marked with the name or known trademark of the manufacturer and the nominal capacity.

8.2 There shall be an area on one side of the flask or flask neck for marking with a pencil.

9. Keywords

9.1 distilling; flasks; glass

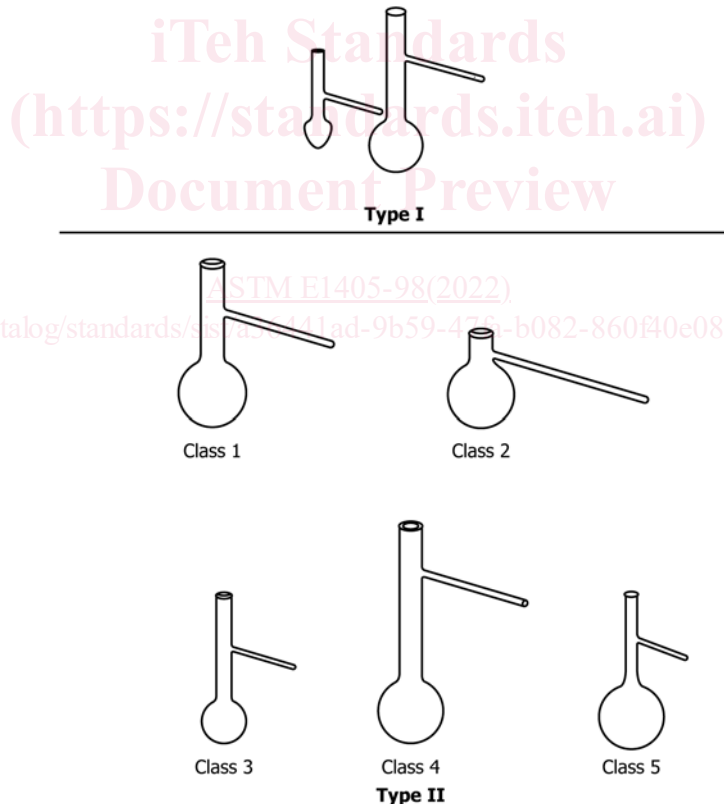


FIG. 1 General Appearance of Glass Distillation Flasks