



Designation: E 982 – 94 (Reapproved 1998)

Standard Specification for Laboratory Glass Test Tubes¹

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1. Scope

1.1 This specification covers glass test tubes suitable for laboratory use.

2. Referenced Documents

2.1 ASTM Standards:

C 162 Definitions of Terms Relating to Glass and Glass Products²

D 700 Specification for Phenolic Molding Compounds³

D 2146 Specification for Propylene Plastic Molding and Extrusion Materials⁴

E 438 Specification for Glasses in Laboratory Apparatus⁵

E 542 Practice for Calibration of Volumetric Ware⁵

E 671 Specification for Maximum Permissible Thermal Residual Stress in Annealed Glass Laboratory Apparatus⁵

E 675 Specification for Interchangeable Taper-Ground Stopcocks and Stoppers⁵

E 920 Specifications for Commercially Packaged Laboratory Apparatus⁵

E 921 Specifications for Export Packaged Laboratory Apparatus⁵

E 1133 Practice for Performance Testing of Packaged Laboratory Apparatus United States Government Procurement⁵

E 1157 Specification for Sampling and Testing Reusable Laboratory Glassware⁵

2.2 Glass Packaging Institute Standard:

GPI Tall Continuous Thread Concealed Bead Finish, Glass Finish Drawing Nos. 410, 415, and 430⁶

3. Classification

3.1 Test tubes shall be of the following sizes:

Size	Nominal OD × Length, mm
1	6 × 50
2	10 × 70
3	10 × 75
4	12 × 75
5	12 × 100
6	13 × 100
7	14 × 100
8	14 × 150
9	15 × 125
10	16 × 100
11	16 × 125
12	16 × 150
13	18 × 150
14	19 × 150
15	20 × 125
16	20 × 150
17	21 × 150
18	22 × 175
19	25 × 150
20	25 × 200
21	25 × 250
22	38 × 200

3.1.1 Type I—General-Purpose, Beaded Rim:

Size	Nominal OD × Length, mm
3	10 × 75
4	12 × 75
6	13 × 100
9	15 × 125
11	16 × 125
12	16 × 150
13	18 × 150
14	19 × 150
16	20 × 150
19	25 × 150
20	25 × 200

3.1.2 Type II—Beaded Rim, Graduated:

Size	Nominal OD × Length, mm
5	12 × 100
8	14 × 150
11	16 × 125
12	16 × 150
16	20 × 150
17	21 × 150
20	25 × 200

3.1.3 Type III—Standard Taper, Glass-Stoppered:

Size	Nominal OD × Length, mm
6	13 × 100
12	16 × 150
14	19 × 150
18	22 × 175

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² Annual Book of ASTM Standards, Vol 15.02.

³ Annual Book of ASTM Standards, Vol 08.01.

⁴ Discontinued, see 1984 Annual Book of ASTM Standards, Vol 08.02.

⁵ Annual Book of ASTM Standards, Vol 14.04.

⁶ Available from Glass Packaging Institute, 6845 Elm Street, Suite 209, McLean, VA 22101.

20 25 × 200

3.1.4 Type IV—Culture Tubes, Rimless:

Size	Nominal OD × Length, mm
1	6 × 50
3	10 × 75
4	12 × 75
6	13 × 100
9	15 × 125
10	16 × 100
11	16 × 125
12	16 × 150
13	18 × 150
14	19 × 150
16	20 × 150
18	22 × 125
19	25 × 150
20	25 × 200
21	25 × 250

3.1.5 Type V—Culture Tubes, Filtered for Wave Lengths in the 3 000 to 5 000-Å Range:

Size	Nominal OD × Length, mm
13	18 × 150
19	25 × 150

3.1.6 Type VI—Culture Tubes, Screw Caps:

Size	Nominal OD × Length, mm
6	13 × 100
10	16 × 100
11	16 × 125
12	16 × 150
15	20 × 125
16	20 × 150
18	22 × 175
19	25 × 150
20	25 × 200
22	38 × 200

3.1.6.1 Class A—Screw cap with white rubber liner.

3.1.6.2 Class B—Screw cap with polytetrafluorethylene liner.

3.1.6.3 Class C—One-piece screw cap.

3.1.7 Type VII—Beaded Rim, Sidearm:

Size	Nominal OD × Length, mm
16	20 × 150
20	25 × 200

3.1.8 Type VIII—Ignition Heavy Wall, Rimless:

Size	Nominal OD × Length, mm
2	10 × 70
7	14 × 100
11	16 × 125
13	18 × 150
16	20 × 150
20	25 × 200

NOTE 1—The term millilitre (mL) is commonly used as a special name for the cubic centimetre (cm³) and similarly the litre (L) for 1 000 cubic centimetres in accordance with the International System of Units (SI).

4. Material

4.1 *Test Tubes*—Test tubes shall be made of borosilicate glass conforming to the requirements of Type I or of soda-lime glass conforming to the requirements of Type II glass of Specification E 438.

4.2 *Screw Caps*—Class A and B screw caps shall be molded of phenol-formaldehyde type resin, which is free of cellulose acetate and urea, conforming to Specification D 700. Class C screw cap shall be molded of polypropylene resin conforming

to Specification D 2146. Screw caps shall not deform, crack, turn color, or become tacky; and liners shall not detach or become tacky when autoclaved the first time.

4.3 *Liners*—Liners for Class A screw caps shall be fabricated of resilient white rubber. Class B caps shall have a polytetrafluoroethylene liner interface firmly bonded to the glued-in white rubber liner as described for Class A caps.

4.4 *Annealing*—Maximum thermal residual stress shall be such as to conform to Specification E 671.

5. Design

5.1 *Shape*—Test tubes covered by this specification shall be tubular, with one end having a rounded closure.

5.2 *Capacity*—Capacities on ungraduated tubes are only approximate, but any graduation on Type II tubes shall indicate the contained capacity within ±5 % of nominal tube capacity.

5.3 *Types I and II*—The open end of Types I and II test tubes shall have a beaded rim; dimensions shall be as specified in Table 1.

5.4 *Type III*—The open end of Type III test tubes shall have a standard taper stopper. The joint and stopper shall conform to Specification E 675 and Table 1.

5.5 *Types IV, V, and VIII*—The open end of Types IV, V and VIII test tubes shall be rimless and fire polished, dimensions shall be as specified in Table 1.

5.6 *Type VI*—The open end of Type VI test tubes shall have a standard GPI thread finish made to accommodate a plastic screw-on type cap. The inner edge of the cap shall be sufficiently threaded with a continuous thread formed as an integral part of the cap. The cap shall form a close fit with the tube to prevent loss of the contents. Class A and B screw caps shall be lined with tight-fitting cemented-in liner. Class C screw caps shall be one piece and shall contain no liner. Dimensions and threaded finish of the test tubes shall be as shown in Table 1.

5.7 *Type VII*—The open end of Type VII test tubes shall have a beaded rim and a ribbed sidearm near the open end. Dimensions shall be as specified in Table 1.

5.8 *Area for Marking*—Side wall of test tubes (except Types VII and VIII) may have an area that provides for marking. This area shall be durable, fused-on white enamel or roughened by sandblasting.

6. Identification Marking

6.1 Each test tube may be permanently and legibly marked with the manufacturer's name or trademark.

7. Sampling and Testing

7.1 For sampling refer to Specification E 1157.

8. Packaging

8.1 For packaging, select from Specifications E 920, E 921, or Practice E 1133.

9. Keywords

9.1 glass; test; tubes