Designation: E1378 – 99 (Reapproved 2016)

Standard Specification for Laboratory Glass Multiple Neck Distilling/Boiling Flasks[1]

This standard is issued under the fixed designation E1378; 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 provides standard dimensional requirements for multiple neck distilling/boiling flasks.

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]

E438 Specification for Glasses in Laboratory Apparatus
E671 Specification for Maximum Permissible Thermal Residual Stress in Annealed Glass Laboratory Apparatus
E676 Specification for Interchangeable Taper-Ground Joints
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

3. Classification

3.1 Flasks shall be of the following types and sizes.

3.1.1 *Type I*—Standard taper ($\bar{\$}$) necks, equal height:

500 mL
1 000 mL
2 000 mL
3 000 mL
5 000 mL

3.1.2 *Type II*—Three tooled necks, unequal height:

250 mL
500 mL
1 000 mL
2 000 mL
3 000 mL
5 000 mL

3.1.3 *Type III*—Three standard taper ($\bar{\$}$) necks, unequal height:

250 mL
300 mL
500 mL
1 000 mL
2 000 mL
3 000 mL
5 000 mL
12 000 mL

3.1.4 *Type IV*—Three standard taper ($\bar{\$}$) necks, equal height:

250 mL
500 mL
1 000 mL
2 000 mL
3 000 mL
5 000 mL

3.1.5 *Type V*—Three tooled necks, angled:

200 mL
500 mL
1 000 mL

3.1.6 *Type VI*—Three standard taper ($\bar{\$}$) necks, angled:

25 mL
50 mL
100 mL
200 mL
250 mL
300 mL
500 mL
1 000 mL

3.1.7 *Type VII*—Two standard taper ($\bar{\$}$) necks, unequal height:

500 mL
1 000 mL
2 000 mL
5 000 mL

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

Current edition approved Sept. 1, 2016. Published September 2016. Originally approved in 1990. Last previous edition approved in 2010 as E1378–99(2010). DOI: 10.1520/E1378-99R16.

[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.

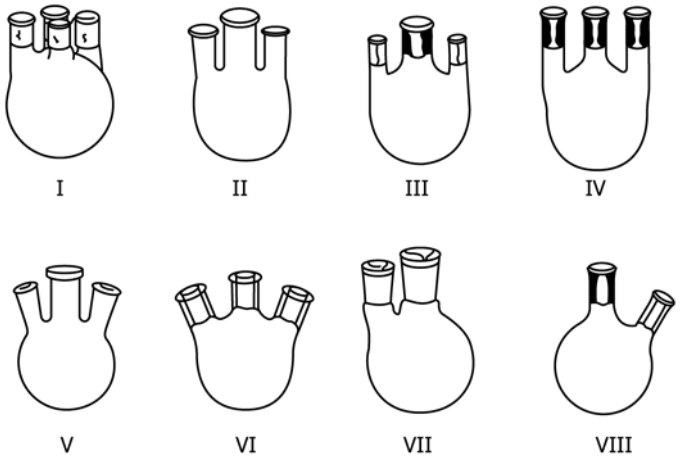

FIG. 1 Flask Types

3.1.8 *Type VIII*—Two standard taper (Ŝ) necks, angled:

100 mL
250 mL
500 mL
1 000 mL

NOTE 1—The term millilitre (mL) is commonly used as a special name for the cubic centimetre (cm^3) and similarly the litre (L) for 1000 cubic centimetres, in accordance with the International System of Units (SI).

4. Material and Annealing

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

4.2 Maximum residual thermal stress shall conform to Specification E671.

5. Appearance

5.1 The general appearance of the flasks shall conform to Fig. 1.

6. Design

6.1 Necks on all flasks shall be circular in cross sections, and center necks shall be perpendicular to center of flask body.

6.2 Top shall be strengthened and finished. Top finishes shall be either beaded, tooled or standard taper. (The latter complies with Specification E676.)

TABLE 1 Capacity and Dimensions for Multiple Neck Flasks

Nominal Capacity (mL)	O.D. Body Widest Point max (m/m)	Overall Height without Stopper max (m/m)	Wall Thickness[A] min (m/m)
25	43	85	0.8
50	52	108	0.8
100	66	122	0.8
200	76	130	0.8
250	87	151	0.8
300	89	153	0.8
500	107	208	0.8
1 000	134	247	0.8
2 000	170	313	1.1
3 000	192	260	1.4
5 000	223	386	1.5
12 000	298	385	2.0

[A] Neck seal zones may be a minimum of 70 % of these values.

6.3 Wall thickness minimums are shown in Table 1.

6.4 The flasks shall be spherical in shape to the point of junction with the flask necks.

7. Capacity and Dimensions

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

8. Markings

8.1 Each flask shall be permanently marked with the name or known trademark of the manufacturer and the nominal capacity. If applicable, the standard taper joint size shall be marked on each flask.

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

9. Sampling

9.1 Refer to Specification E1157

10. Packaging

10.1 Select from Specifications E920, E921, or E1133.

11. Keywords

11.1 boiling; distilling; flasks; glass; mult. neck