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Standard Specification for Common Laboratory Glass Funnels[1]

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1. Scope

1.1 This specification covers common laboratory or filter funnels, and filling or powder funnels for general laboratory use.

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
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 There shall be four types of laboratory glass funnels further divided into classes.
3.1.1 *Type 1*—Common laboratory funnel with smooth inner surface, divided into the following three classes:
3.1.1.1 *Class A, (short stem)*—Sizes 25, 35, 45, 55, 65, 75, 90, 100, 125, and 150-mm diameters.
3.1.1.2 *Class B, (long stem)*—Sizes 35, 45, 50, 55, 65, 75, 90, 100, 125, 150, 200, 250, and 300-mm diameters.
3.1.1.3 *Class C, (without stem)*—Sizes 50, 75, and 100-mm diameters.
3.1.2 *Type 2*—Laboratory funnel with fluted inner wall. The flutes are small grooves or depressions running upward from the bottom zone of the bowl.
3.1.2.1 *Class A, (short stem)*—Sizes 50, 65, 75, and 100-mm diameters.
3.1.2.2 *Class B, (long stem)*—Sizes 50, 65, 75, and 100-mm diameters.
3.1.3 *Type 3*—Laboratory funnel with ribbed inner wall. The ribs are small raised protuberances running from funnel rim toward the stem.
3.1.3.1 *Class A, (short stem)*—Sizes 50, 65, 75, and 100-mm diameters.
3.1.3.2 *Class B, (long stem)*—Sizes 50, 65, 75, and 100-mm diameters.
3.1.4 *Type 4*—Filling or powder funnels.
3.1.4.1 *Short, Wide Diameter Stem*—Sizes 60, 65, 75, 80, 100, 125, and 150-mm diameters.

4. Material and Annealing

4.1 *Material*—Funnels shall be made of glass conforming to the requirement of Type 1, Class A or B or Type 2 of Specification E438.

4.2 *Annealing*—Maximum residual stress shall be such as to conform to Specification E671.

5. Design

5.1 *Bowl*—The inner wall of the bowl shall diverge from the stem at an angle of 30 ± 1.2°. The bowl shall be securely sealed to the stem. The axis of the funnel bowl shall coincide with the stem axis and the rim shall be perpendicular to this axis. The edge of the rim shall be mold finish, beaded or ground to a horizontal surface, as specified.

[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~~Laboratory Ware and Supplies.

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[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.

TABLE 1 Dimensions

Nominal Inner Diameter Bowl Top, (mm)	Body Wall Thickness min, (mm)	Stem Length			Stem Outer Diameter		Stem Wall Thickness min, (mm)
		Types 1, 2, 3 ± 5 mm		Type 4 ± 10 mm	Types 1, 2, 3 max, (mm)	Type 4 max, (mm)	
		Class A	Class B				
25	1	40	...	...	7	...	0.8
35	1	50	150	...	7	...	0.8
45	1	50	150	...	7	...	1
50	1	65	150	...	8	...	1
55	1	65	150	...	8	...	1.3
60	1	...	...	30	8	14	1.3
65	1	65	150	30	8	16	1.3
75	1	75	150	30	8	18	1.3
80	1	...	150	30	8	18	1.3
90	1	95	150	...	10	...	1.3
100	1.2	100	150	30	10	21	1.3
125	1.2	70 or 100	150	35	16	26	1.3
150	1.2	70 or 100	150	35	16	31	1.6
200	1.5	...	150	...	20	...	1.6
250	1.5	...	150	...	26	...	1.6
300	1.5	...	150	...	32	...	1.6

5.1.1 *Type 1*—Bowl of common funnels shall be plain.

5.1.2 *Type 1, Class C*—Bottom of bowl shall be ground flat.

5.1.3 *Type 2*—Bowl of fluted funnels shall have an inner wall with 8 equally spaced small grooves or depressions that shall extend upward from the inner bottom zone of the bowl ½ to ⅝ times the inner bowl depth.

5.1.4 *Type 3*—Bowl of ribbed funnel shall have an inner wall with raised ribs spaced at the rim approximately 15 mm apart. Alternate ribs shall extend to within approximately 6 mm of the junction of the bowl and the stem, and the others to within approximately 19 mm of this junction. Ribbed funnels may also have ribs on the outer bowl surface or stem, or both. If the outer bowl surface is ribbed, there must be at least three ribs evenly spaced around the bowl.

5.2 *Stem:*

5.2.1 *Types 1, Class A and B; Type 2; and Type 3*—The stem shall have an oblique termination of not less than 30°, smoothly ground to a level point or fire polished. The stem shall have parallel sides, or a straight taper if drawn out of the bowl. The diameter of the stem at the bowl juncture shall be small enough so that the stem will fill readily but not so small as to retard the rate of flow in ordinary filtrations. The diameter at the end of the stem shall be small enough so that the column of filtrate will not break. (Both diameter requirements refer to use with water or dilute aqueous solutions.)

5.2.2 *Type 3*—Stem of Type 3 funnels may be ribbed on the outer wall. If so, the ribs must be diametrically opposed and extend the length of the stem.

5.2.3 *Type 4*—The stem shall end perpendicular to the stem wall and be smoothly ground or fire polished. The diameter of the stem shall be uniform and shall be large enough to permit rapid filling, also for use with dry powder or granular material.

6. Dimensions

6.1 Funnels shall conform to the dimensions in Table 1 for the type, class, and size specified.

7. Markings

7.1 Each funnel shall be permanently marked with the name or known trademark of the manufacturer, or both.

8. Sampling

8.1 For sampling and testing refer to Specification E1157

9. Packaging

9.1 For packaging select from Specifications E920, E921, and Practice E1133.