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Standard Specification for Laboratory Glass Separatory Funnels¹

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INTRODUCTION

Separatory funnels are used in laboratories primarily for liquid extractions, and are intended to facilitate the separation of two immiscible liquids of different densities into separate layers. Some funnels are used to add reagent solution into a reaction vessel. They are, therefore, often provided with a tapered ground joint at the bottom of the delivery stem for joining to vessels having similarly tapered ground necks. They may also be provided with pressure equalizing side arms.

1. Scope

1.1 This specification provides standard dimensional requirements for glass separatory funnels for general laboratory use.

2. Referenced Documents

2.1 ASTM Standards:

- E 438 Specification for Glasses in Laboratory Apparatus²
- E 671 Specification for Maximum Permissible Thermal Residual Stress in Annealed Glass Laboratory Apparatus²
- E 675 Specification for Interchangeable Taper-Ground Stopcocks and Stoppers²
- E 676 Specification for Interchangeable Taper-Ground Joints²
- E 694 Specification for Volumetric Ware²
- E 911 Specification for Glass Stopcocks with Polytetrafluoroethylene (PTFE) Plugs²

3. Classification

3.1 Separatory funnels shall be in the following types and sizes:

- 3.1.1 *Type 1A*—Cylindrical shape with open top.
 - 3.1.1.1 *Sizes*—60, 125, and 250 cm³
- 3.1.2 *Type 1B*—Cylindrical with stopper finish top.
 - 3.1.2.1 *Sizes*—60, 125, 250, 500, and 1000 cm³.
- 3.1.3 *Type 1C*—Cylindrical with stopper finish top, graduated.
 - 3.1.3.1 *Sizes*—125, 250, 500, and 1000 cm³.
- 3.1.4 *Type 2*—Globe shape with stopper finish top.
 - 3.1.4.1 *Sizes*—60, 125, 250, 500, 1000, 2000, and 4000 cm³.

3.1.5 *Type 3*—Globe shape, “French”, with stopper finish top.

3.1.5.1 *Sizes*—125, 250, 500, and 1000 cm³.

3.1.6 *Type 4*—Pear shape, Squibb, with stopper finish top.

3.1.6.1 *Sizes*—20, 60, 125, 250, 500, 1000, 2000, and 4000 cm³.

NOTE 1—The term millilitre (mL) is commonly used as a special name for the cubic centimetre (cm³) and similarly the litre (L) for 1000 cubic centimetres, in accordance with the International System of Units (SI).

4. Materials and Annealing

4.1 Separatory funnels shall be made of borosilicate glass conforming to the requirement of Type 1, Class A of Specification E 438.

4.2 Maximum residual thermal stress shall be such as to conform to Specification E 671.

5. Design

5.1 Type 1 cylindrical separatory funnels shall have straight sides and comply with the dimensions given in Table 1. (Type 1A stem length shall comply with Table 2.) See Fig. 1, Type 1A; 1B; and 1C.

5.2 Type 2 globe-shaped separatory funnels shall be roughly globular in shape and have dimensions complying with those given in Table 2. See Fig. 2, Type 2.

5.3 Type 3 separatory funnels shall be like Type 2, however, a straight-walled portion shall be between the globe and the stopcock assembly and shall meet the dimensions listed in Table 2, except for stem length which shall have a maximum length of 40 mm. See Fig. 2, Type 3.

5.4 Type 4 Squibb separatory funnels shall be pear-shaped or conical-shaped and meet the requirements of Table 3. See Fig. 2, Type 4.

5.5 Type 1 and 4 separatory funnels may be supplied with a taper-ground joint below the stopcock, (see Specification E 676 and Fig. 1C. Type 1 funnels with this feature may also have

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² Annual Book of ASTM Standards, Vol 14.02.