



Standard Test Method for Pressure in Glass Aerosol Bottles¹

This standard is issued under the fixed designation D 3063; 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 test method covers the determination of pressure in glass aerosol bottles.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 3060 Test Method for Pressure Drop Rate of Compressed Gas-Propelled Products²

D 3074 Test Methods for Pressure in Metal Aerosol Containers²

E 1 Specification for ASTM Thermometers³

3. Significance and Use

3.1 Aerosols packaged in containers with a capacity of 4 oz (116 cm³) or less are exempt from the pressure regulations of the Department of Transportation (DOT). Since most glass aerosol bottles have a capacity of 4 oz or less, they have no pressure restrictions, and therefore there is no reason to measure the pressure at 130°F (54°C). However, for safety reasons, the aerosol industry has generally limited the pressure in coated glass bottles to 25 psi (172 kPa) at 70°F (21°C), and in uncoated bottles to 15 psi (103 kPa).

3.2 If aerosol products are packaged in glass containers larger than 4 oz (116 cm³), the pressure must not exceed 25 psi (172 kPa) at 70°F (21°C). Otherwise, a special permit must be obtained because there is no provision in the DOT regulations for glass aerosol bottles where the capacity of the bottle is larger than 4 oz, and the pressure exceeds 25 psi at 70°F.

3.3 For the preceding reasons, it is necessary to have an accurate test method for measuring the pressure in glass aerosol bottles at 70°F (21°C). In addition, this test method should be suitable for quality control.

4. Apparatus

4.1 *Water Bath*, constant-temperature, having an automatic

¹ This test method is under the jurisdiction of ASTM Committee D-10 on Packaging and is the direct responsibility of Subcommittee D10.32 on Consumer Packages. Originally developed by the Chemical Specialties Manufacturers Assn.

Current edition approved Nov. 15, 1994. Published January 1995. Originally published as D 3063 – 72. Last previous edition D 3063 – 79 (1984).

² *Annual Book of ASTM Standards*, Vol 15.09.

³ *Annual Book of ASTM Standards*, Vol 14.03.

temperature control with a maximum temperature variation of $\pm 0.5^\circ\text{F}$ ($\pm 0.25^\circ\text{C}$). Stirring should be provided to maintain a uniform temperature. The bath should have sufficient capacity for both glass bottles and metal containers (see Methods D 3074).

4.2 *Thermometer*, 12F, conforming to Specification E 1, or equivalent accurate thermometer with 0.5°F (0.25°C) graduations.

4.3 *Pressure Gage*, with a range from 0 to 200 psi (0 to 1.37 MPa). The gages used for metal aerosol containers are also satisfactory for glass aerosol bottles. In some instances, it may be desirable to use a gage with a smaller range to obtain greater accuracy.

4.4 *Pressure Gage Assembly* (Fig. 1), equipped with two valves. The prepressurizing valve (*a*) may be used either for prepressurizing the gage, or as an outlet for reducing the pressure in the gage. The gage valve (*b*) separates the aerosol container from the gage assembly.

4.4.1 Two types of adapters are suitable for making a connection with the valve stem as follows:

4.4.1.1 The tapered adapter (Fig. 1)⁴ achieves a gastight connection by insertion in the valve stem bore.

4.4.1.2 The second type of adapter⁵ forms a seal around the top of the valve stem by means of a gasket.

4.5 *Safety Shield*, transparent.

4.6 *Gloves*, heavy leather.

5. Reagents

5.1 Inert gases are necessary for prepressurizing the gage. The following are commonly used:

5.1.1 *Compressed Air*.

5.1.2 *Nitrogen* (N₂).

6. Sampling

6.1 Samples shall be selected from production or laboratory.

7. Preparation of Apparatus

7.1 Attach the hose from the compressed gas supply to the prepressurizing valve and allow a slow stream of gas to flow through the apparatus, to make certain that the apparatus is not clogged at any point.

⁴ A tapered adapter available from Modern Machine Shop, 123 N. Hazel St., Danville, IL 61832, has been found satisfactory for this test method.

⁵ An adapter available from Builders Sheet Metal Works, Inc., Model D CBA-6, has been found satisfactory for this test method.