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Standard Practice for Filling and Inspection of Glass Aerosol Containers¹

This standard is issued under the fixed designation D 3073; 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.

^{ε1} NOTE—Section 12 was added editorially in June 1991.

1. Scope

1.1 This practice covers the inspection of glass aerosol containers.

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

2. Referenced Documents

2.1 ASTM Standards:

C 147 Test Methods for Internal Pressure Test on Glass Containers²

D 3063 Test Method for Pressure in Glass Aerosol Bottles³

3. Significance and Use

3.1 In view of the hazard involved in the use of glass containers for aerosol products, this practice has been established for optimum filling methods that will ensure marketable pressurized products presenting a minimum of danger to the purchaser.

3.2 This practice is presented to serve as a guide for present and potential packagers of aerosol products in glass. The practices, which have had excellent results in the field, are listed in descending order of occurrence after receipt of the containers from the glass manufacturer.

4. Physical Requirements

4.1 *Bottle Capacity*—Determine the internal volumes of randomly selected bottles, with valves inserted, to ensure that the headspace is adequate to prevent a liquid-fill condition from developing under any anticipated combination of filling volume and temperature.

4.2 *Other Bottle Dimensions*—Check overall height, mass, plastic coating thickness, and neck diameter to determine acceptance of the bottles on the filling equipment, with particular emphasis on attainment of satisfactory valve sealing.

NOTE—Specific dimensions are to be supplied in blueprint from the container manufacturer.

¹ This practice 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 Association.

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² Annual Book of ASTM Standards, Vol 15.02.

³ Annual Book of ASTM Standards, Vol 15.09.

5. Visual Inspection

5.1 Visually inspect the containers for possible defects in the glass or external plastic coating, which may have been imparted during the manufacturing process, or in transit to the purchaser.

6. Cleaning

6.1 Submit the bottles to a filtered, dry air blast prior to loading, to remove any dirt or lint particles that might otherwise present an unsightly appearance in formulations packaged in transparent containers, or cause valve clogging on dispensing.

7. Pressure Requirements

7.1 Test all aerosol bottles in accordance with Methods C 147, to ensure that they can withstand a minimum air pressure of 125 psi (860 kPa) without bursting. Provide a suitable shield to protect plant personnel from possible injury occasioned by glass fragments during the test.

7.2 This testing serves as a positive check on glass distribution in the bottle, and eliminates those containers exhibiting flaws obtained in handling prior to aerosol packaging.

8. Evacuation of Entrapped Air

8.1 Observe adequate precautions to remove air from the bottles during the filling process, in order to maintain product vapor pressures in accordance with the theory, and within the maximum limitation of 25 psi (170 kPa) at 70°F (21°C). Various methods are utilized for this purpose as follows:

8.1.1 *Refrigeration Filling*—Control product filling temperatures in order to provide the volatilization of sufficient propellant to displace air prior to valve closure.

8.1.2 Pressure Filling:

8.1.2.1 Following the concentrate loading, draw a vacuum on the container headspace to remove air prior to closing the valve.

8.1.2.2 An alternative method is to introduce a small amount of propellant-12, that flashed off and displaces the air.

9. Vapor Pressure Determination

9.1 Determine the internal pressure of glass aerosol bottles in accordance with Test Method D 3063.

10. Water Bath Testing

10.1 Subject the filled containers to immersion in a water