



Designation: F 852 – 99 (Reapproved 2006)

Standard Specification for Portable Gasoline Containers for Consumer Use¹

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1. Scope

1.1 This specification establishes nationally recognized performance requirements for portable gasoline containers intended for reuse by the consumer. This specification does not cover single-trip prepackaged containers.

1.2 This specification is not a fire hazard standard, but a specification for portable gasoline containers for consumer use.

1.3 The following precautionary caveat applies only to the test method portion, Section 8, of this specification: *This standard does not purport to address all of the safety concerns, 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.* See Section 7 for additional precautionary information.

2. Referenced Documents

2.1 *ASTM Standards:*²

- B 117 Practice for Operating Salt Spray (Fog) Apparatus
- D 471 Test Method for Rubber Property—Effect of Liquids
- D 572 Test Method for Rubber—Deterioration by Heat and Oxygen
- D 638 Test Method for Tensile Properties of Plastics
- D 794 Practice for Determining Permanent Effect of Heat on Plastics³
- D 999 Test Methods for Vibration Testing of Shipping Containers
- D 2561 Test Method for Environmental Stress-Crack Resistance of Blow-Molded Polyethylene Containers
- D 2565 Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications
- F 839 Specification for Cautionary Labeling of Portable Gasoline Containers for Consumer Use
- G 23 Practice for Operating Light-Exposure Apparatus

¹ This specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.10 on Safety Standards for Flammable Liquid Containers.

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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.

³ Withdrawn.

(Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials³

2.2 *ANSI Standard:*⁴

B71.1b1977 Supplement to Safety Specifications for Power Lawn Mowers, Lawn and Garden Tractors, and Lawn Tractors

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *portable gasoline container, n*—a vessel designed to be carried by hand and to be used to transport gasoline from distribution point to use point.

3.1.2 *pouring vent, n*—the part of the container enabling free entry of air to replace the liquid being poured out.

3.1.3 *rated capacity, n*—the volume indicated on the container, may also be termed nominal capacity or maximum filling level.

3.1.4 *spout, n*—a component through which the contents of the container can be dispensed.

3.1.5 *total volume, n*—rated capacity plus any remaining space within the container.

4. Requirements

4.1 The container shall show evidence of good workmanship and meet the following requirements:

4.2 *Color*—The container shall be predominately red in color. Pigments, coatings, or other means used to impart color shall not be affected by gasoline.

4.3 *Capacity*—The maximum rated capacity shall be 25 L (6.6 gal).

4.3.1 The total volume of a container shall exceed its rated capacity by at least 5 %.

4.3.2 Capacity shall be determined with the container and its contents at $23 \pm 2^\circ\text{C}$ ($75 \pm 3.6^\circ\text{F}$).

4.4 *Stability*—Each container shall not upset when tested in accordance with 8.1.

4.5 *Handle*—Each container shall be provided with a handle. The container shall not leak or evidence any handle detachment when tested in accordance with 8.2.

4.6 *Drop Strength*—Containers shall show no evidence of rupture, cracks, or leakage when tested in accordance with 8.3.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

4.7 *Internal Pressure*—Containers shall show no evidence of leakage when tested in accordance with 8.4.

4.8 *Durability*:

4.8.1 *Aging*—This requirement applies only to nonmetallic containers. The material for the container shall retain at least 70 % of its original tensile strength when tested in accordance with 8.5 and 8.5.1.

4.8.2 *Permeability*—This requirement applies only to non-metallic containers. The filled container shall not have a weight loss greater than 1 % when tested in accordance with 8.6.

4.8.3 *Gasoline Resistance*—This requirement applies only to nonmetallic containers. The container material shall show no pitting, crazing, softening, bubbling, cracking, tackiness, or decomposition when tested in accordance with 8.7.1. The material shall retain at least 60 % of its tensile yield strength when tested in accordance with 8.7.2.

4.8.4 *Stress Cracking*—This requirement applies only to containers molded of polyethylene. The container shall not crack in 120 h when tested in accordance with 8.8.

4.8.5 *Corrosion Resistance*—This requirement applies only to metal containers or metal components of containers. No leakage shall be evident when tested in accordance with 8.9.

4.8.6 *Heat Resistance*—The container shall not leak when tested in accordance with 8.10. Any burning that occurs during the test specified in 8.10.1 shall not continue for more than 5 s after the heat source is removed.

4.9 *Openings*—Openings in containers shall be provided with a means of closure.

4.9.1 *Pouring*—The opening intended for pouring shall have an integral pouring spout or it shall accept a pouring spout supplied with the container. The pouring spout shall be designed to permit gasoline to be poured without leakage. The closures on the containers shall not leak when tested in accordance with 8.12.

4.9.2 *Pouring Vent*—The container shall be provided with a vented pouring spout or other means for venting the container during pouring.

4.9.3 *Filling*—The opening intended for filling the container shall have a minimum inside diameter of 31.7 mm (1.25 in.).

4.9.4 *Gasoline Resistance*—This requirement applies only to nonmetallic components. Closures, pouring spout, venting devices, and gaskets shall be resistant to aging and the action of gasoline when tested in accordance with 8.11.

5. Marking

5.1 The container shall be labeled in accordance with Specification F 839.

5.2 The container shall be clearly marked with at least one of the following:

- 5.2.1 The manufacturer's name,
- 5.2.2 The private labeler's name, and
- 5.2.3 An identifying symbol.

5.3 The container shall be marked with its rated capacity in litres and in gallons.

5.4 Marking durability shall comply with the applicable requirements of ANSI B71.1b1977.

6. Retest and Rejection

6.1 If any failure occurs, an additional container may be tested if the failure is judged to be nonrepresentative of production.

7. Precautions

7.1 Gasoline is used in some of the following tests. Cautionary standards for handling and disposal of hazardous materials should be observed. Containers containing gasoline should not be opened in the presence of open flame or other sources of ignition.

8. Test Methods

8.1 *Stability Test*—Fill a sample container with water at $23 \pm 2^\circ\text{C}$ ($75 \pm 3.6^\circ\text{F}$) to its rated capacity by volume. Secure the closures as in transportation and storage. Place the container with its base on an inclined plane forming an angle of 0.35 rad (20°) with the horizontal. During the test, rotate the container about its vertical axis so that stability can be checked with the sample facing any direction.

8.2 *Handle Strength*—Fill a sample container with an equivalent weight of water at $23 \pm 2^\circ\text{C}$ ($75 \pm 3.6^\circ\text{F}$) to its rated gasoline capacity. Secure the closures as in transportation and storage. One end of a 9.5 mm (0.375 in) diameter manila rope about 2 m (6.5 ft) long shall be secured to a rigid point of suspension and the other end attached so as to distribute the load across the container handle. Suspend the container from the rope for 1 min then raise it 305 mm (12 in.) from the suspended position and allow it to fall freely.

8.3 *Drop Strength Test*—Fill the container to its nominal capacity with water at $23 \pm 2^\circ\text{C}$ ($75 \pm 5^\circ\text{F}$) and secure the closures. Drop it, free fall, onto a flat, solid surface. Make drops in the following sequence: one drop on the bottom, one drop on a bottom corner, and one drop on a side. The distance of fall shall be 1.8 m (6 ft). Make the same tests with another container filled with a blend of 50 % glycol and 50 % water and with both the container and its contents cooled to $-18 \pm 1^\circ\text{C}$ ($0 \pm 2^\circ\text{F}$). For these latter tests, the distance of fall shall be 1.2 m (4 ft).

NOTE 1—The location of the spout is considered to be the front of the container. The side is considered to be approximately 90° to either left or right of the nozzle area.

8.4 *Internal Pressure Test*:

8.4.1 *Hydrostatic Pressure Test*—Fill the container to its total volume with water at $23 \pm 3^\circ\text{C}$ ($75 \pm 5^\circ\text{F}$) and secure the closures. Increase the internal pressure to a gage pressure of 138 kPa (20 psi) and maintain for 2 min. Conduct the same test with a container filled to its total volume with water at $60 \pm 3^\circ\text{C}$ ($140 \pm 5^\circ\text{F}$). For plastic containers, apply the pressure by inserting and securing an adaptor through a drilled hole in a flat, heavy section of the container wall, and not on a pinch-off or parting line. For metal containers, the pressure can be applied through a fill or pour closure.

8.5 *Aging Test*—Perform the following two tests. In both tests, determine tensile strength in accordance with the conditions outlined in Test Method D 638 using five specimens and a crosshead speed of 50 mm (2 in.) per min.