Designation: F2874 – 12

Standard Specification for One Time Use Portable Emergency Fuel Containers (PEFC) for Use by Consumers[1]

This standard is issued under the fixed designation F2874; 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 specification establishes nationally recognized construction, performance and marking standards for portable emergency fuel containers intended for attended transport of fuel and for one time use by consumers. This specification is not for containers intended for unattended storage of fuel.

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 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:*[2]

F2517 Specification for Determination of Child Resistance of Portable Fuel Containers for Consumer Use

2.2 *Other References:*

16 CFR 1500 Federal Hazardous Substance Act[3]

16 CFR 1500.121 Labeling Requirements; Prominence, Placement, and Conspicuousness[3]

Children's Gasoline Burn Prevention Act Public Law 110-278 [H.R. 814]

3. Terminology

3.1 *Definitions:*

3.1.1 *bag-in-box, n*—any container consisting of an inner non-rigid plastic container supported by an outer rigid container. The inner container will be fitted with a fill neck fitting that is interconnected to the outer rigid container.

3.1.2 *constrictor, n*—part of the nozzle that prevents refilling the container with fuel.

3.1.3 *fill neck, n*—part of the container where the fuel can be dispensed into at the fuel station.

3.1.4 *portable emergency fuel container (PEFC), n*—a vessel designed to be carried by hand and to be used only one time in emergencies to transport fuel from distribution points to stranded motor vehicles.

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

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

3.1.7 *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:

4.1.1 All container tests shall be performed after closures are secured as usage dictates.

4.2 *Capacity*—The maximum rated capacity shall be 5 L (1.3 gal).

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

4.3 *Stability*—Each container shall not tip over when tested in accordance with 6.1.

4.4 *Handle*—Each container shall be provided with a handle that passes the test described in 6.8.

4.5 *Drop Strength*—Containers shall show no evidence of leakage when tested in accordance with 6.2.

4.6 *Internal Pressure*—Containers must pass the test described in 6.4 with pressure vent held closed or bypassed.

4.7 *Exposure Test*—Containers must pass the test described in 6.4 (internal pressure test) after 6.6 for each fuel type tested.

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

4.8.1 *Pour Spout*—The fill neck shall accept a pouring spout The pouring spout shall be designed to permit fuel to be poured without leakage. The fill spout must contain a constrictor to prevent refilling. The closures on the container shall not leak when tested in accordance with 6.5. The fuel must dispense

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

Current edition approved March 1, 2012. Published March 2012. DOI: 10.1520/F2874-12.

[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] Code of Federal Regulations, available from U.S. Government Printing Office, Washington, DC 20402.

without spilling when dispensed into a typical on-road vehicle. All closures must also meet Specification F2517 for the first use only as applicable. Portable Emergency Fuel Containers are exempt from the sections of Specification F2517 dealing with reuse or second use such as to open and close the closure for 250 cycles or the adult-re-securing portion of the test.

4.8.2 *Constrictor*—The pouring spout must contain a non-removable restriction that will not allow refilling of the container. The maximum internal diameter of the constrictor shall be 19 mm (0.75 in.). The constrictor must not be removable by unscrewing and must not be removable by hand without tools in accordance with 6.7.

4.8.3 *Pressure Vent*—The container with spout installed shall vent between ¼ psi and 2 psi per 6.3.

4.8.4 *Fill Neck*—The fill neck shall have a minimum diameter of 28 mm (1.125 in.) in order to receive a fuel dispensing nozzle.

5. Marking

5.1 The lettering shall be of block style and shall be of a style consistent with the requirements listed in 16 CFR 1500. The color and contrast shall also be consistent with 16 CFR 1500.121. Because this product is not sold with hazardous chemicals inside at the time of retail sale an outer removable package may be included without warning labels. The marking requirements must be on the outer surface on the functional carrier that contains the hazardous fuel *after* filling.

5.2 The information required is for a single panel or label, or both. If, because of size restrictions, the information must be divided, the main panel shall contain language consistent with the requirements in 16 CFR 1500 and a statement, "Read carefully other cautions on the _____panel."

NOTE 1—If the information is divided, it would be a good practice to have a statement "Harmful or Fatal if swallowed" and "If swallowed, do not induce vomiting, call physician immediately," together.

5.3 The following information shall appear on either the top or two opposing side of all PEFCs included in an ANSI style hazard window with ANSI hazard triangle:

DANGER
EXTREMELY FLAMMABLE
VAPORS CAN EXPLODE
HARMFUL OR FATAL IF SWALLOWED
THIS CONTAINER APPROVED FOR (LIST SPECIFIC FUELS APPROVED FROM SUBSECTION 6.6)
DO NOT EVER USE FUELS TO IGNITE FIRES

- If swallowed, do not induce vomiting, call physician immediately.
- Keep out of reach of children.
- Avoid prolonged breathing of vapors.
- Do not siphon by mouth.
- Do not store anywhere unattended.
- Vapors can be ignited by spark or flame source many feet away.
- Keep away from flame, pilot lights, stoves, heaters, electric motors, and other sources of ignition.
- Keep container closed.

5.4 In addition, the following information shall appear on either the top or two prominent opposing sides of the container. Letters shall be ¾ in. tall or more and included in an ANSI style hazard window with ANSI hazard triangle.

- Emergency One Time Use Only
- Do Not Attempt to Refill

5.5 In addition, the following information shall appear on the top or two prominent opposing sides of the container. Letters shall be ⅜ in. tall or more and included in an ANSI style hazard window with ANSI hazard triangle.

- Warning: It is unlawful to store fuel in this container unattended. Filled container must be in your possession until drained.
- This container is approved for Gasoline, E85 and Diesel (also list any additional specialty fuels approved in 6.6, Exposure Test).

5.6 In addition, the following information shall appear on a removable sticker or cap that must be removed from the fill neck prior to filling:

- Warning: Once filled, it is unlawful to leave the filled container unattended at any time.

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

5.7.1 The manufacturer's name

5.7.2 The private labeler's name

5.8 The container shall be marked with its rated capacity in liters and in gallons.

5.9 The top of the container must also be clearly marked with "Top" or "This side up".

6. Test Methods

6.1 *Stability Test*—Fill the sample container with water to its rated capacity by volume. Secure the closures as for attended transportation. Place the container on an inclined plane forming an angle of 0.35 rad (20°) with the horizontal. Orient the container so that the top is facing up. During the test, rotate the container about its vertical axis so that stability can be checked with the sample facing any direction. The sample must remain stable and not tip over at any point of the rotation.

6.2 *Drop Test*—Fill to the rated capacity with water at 23 ± 2°C (75 ± 5°F) and secure the pour spout to the fill neck. This test will require 5 drops, one on each of five samples. The drop orientations are the bottom, the top, the long side, the short side and a corner from a height of 48 in. onto a flat concrete surface. Also condition one sample by submerging the filled sample in water for 5 min. Then remove from the water and let sit for 1 minute. Also fill one sample with 50 % glycol and 50 % water and condition at –18 ± 1°C (0 ± 2°F) Perform the corner drop test on these two conditioned samples. Perform the closure test below on each sample to determine pass or fail.

6.3 *Vent Test*—Pressurize container with room temperature water to 13 kPa (2 psi). The container must vent to atmosphere either at a pressure lower than 13 kPa (2 psi) or within 5 min of constant pressure of 13 kPa (2 psi).

6.4 *Internal Pressure Test*—Bypass the vent system and pressurize the container to 20 kPa (3 psi) with air. Do this with the entire container submerged under water and maintain the pressurized container under water for 1 minute. There must be no sign of leakage. This can be determined by observation of bubbles escaping the container. In the case of bag-in-box containers or any other composite or combination container, this test should be preformed on the internal container that actually comes in contact with the fuel.

6.5 *Closure Test*—Fill one sample container to its rated capacity with water. Also use the 6 samples from the drop test

6.2. Invert samples with spout installed to observe leakage around spout, spout closure, spout to fill neck interface, or main container for 2 min. Any leakage is considered a failure.

6.6 *Exposure Test*—Fill one container sample each with E85, diesel and gasoline and store for 24 h at 23 ± 2°C (75 ± 3.6°F). Drain the fuel completely then re-perform the test described in 6.4 for each sample. Each fuel type must be tested separately. It is assumed that these fuels will be a representative case of worst case fuels commonly dispensed at a gasoline station. If other specialty fuels wish to be specified that would not normally be dispensed at a car fueling station then additional sample can be tested. Examples of fuels can be high performance fuel additives common at race tracks. This test must be performed with a fresh sample container for each fuel type to be tested.

6.7 *Non-refilling Test*—This test is designed to determine if the constrictor can be removed from the fill neck without the use of tools. It is understood that the pour spout to fill neck interface can be achieved by many different designs and therefore it is impractical to describe a test specific to all potential designs. The constrictor portion of the fill neck must not be removable by hand. Therefore, a sample of 50 young adults aged 18 to 45 and a minimum of 70 % men will individually be placed in a room and given an empty PEFC with the nozzle installed. They will be given the instruction to attempt to remove the nozzle in any way possible so that they could refill the gas can at a standard gasoline pump. Every effort should be made to try to remove the constrictor including but not limited to twisting, prying with finger and or finger nails and pulling. They are given 3 min to work on this. If more than 1 of the 50 (2 %) are able to remove the nozzle and restrictor in a condition such that the container and the nozzle could be reused, the test is a failure.

6.8 *Handle Test*—A suitable fixture to support the handle over 3 in. of the handle weight bearing surface should be fashioned to support the container weighted at 2 times the maximum expected weight (can plus max fill with water) and hung for 5 min. The handle shall support this weight without failure.

7. Keywords

7.1 fuel container; gasoline; gasoline container; portable container; portable emergency fuel container