

California Environmental Protection Agency



Air Resources Board

Spill-Proof System and Spill-Proof Spout Test Procedure

Test Method 510

**AUTOMATIC SHUT-OFF TEST PROCEDURE FOR
SPILL-PROOF SYSTEMS AND SPILL-PROOF SPOUTS**

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Test Method 510
Automatic Shut-Off Test Procedure For
Spill-Proof Systems and
Spill-Proof Spouts

1. APPLICABILITY

For the purpose of this procedure, the term "ARB" refers to the State of California Air Resources Board, and the term "ARB Executive Officer" refers to the Executive Officer of the ARB or his or her authorized representative or designate. Terms used in this test method are defined in Section 2471, Article 6, Chapter 9, Title 13 of the California Code of Regulations.

This procedure is used to verify the operation of the automatic shut-off feature of spill-proof systems or portable fuel containers and spill-proof spouts. It is applicable in all cases where a spill-proof system or a spill-proof spout is sold, supplied, offered for sale, or manufactured for use in the State of California

2. PRINCIPAL AND SUMMARY OF TEST PROCEDURE

Using water in place of gasoline, the portable fuel container is filled to its nominal capacity and inverted for a period of time to test for leaks. Water is then dispensed through the spill-proof spout into a test fixture. The test fixture is filled to a specified level to verify the performance of the automatic shut-off feature.

3. BIASES AND INTERFERENCES

The spill-proof system must be free of leaks for the correct operation of the automatic shut-off feature.

4. SENSITIVITY, RANGE, AND PRECISION

This section is reserved for future specification.

5. EQUIPMENT

5.1 0.5 gallon test fixture (see Figure 1)

5.2 Twelve inch ruler accurate to within 1/8 inch.

6. CALIBRATION PROCEDURE

This section is reserved for future specification.

7 TEST PROCEDURE

- (1) Fill the portable fuel container of the spill-proof system to its nominal capacity with water and attach the spill-proof spout per manufacturer recommendations. For spill-proof spouts that are not part of a spill-proof system, select the largest portable fuel container specified for use by the spill-proof spout manufacturer for the test procedure. Fill the selected portable fuel container to its nominal capacity with water and attach the spill-proof spout per manufacturer recommendations. This assembly is now considered a spill-proof system.
- (2) Invert the spill-proof system with the spout in a vertical axis position for a period of five minutes to ensure that there are no leaks. If the spill-proof system is observed leaking, place in the upright position and ensure that the spill-proof spout is correctly and firmly attached. Invert the container again for a period of five minutes. If any leakage of water is observed the spill-proof system is not in compliance with the automatic closure requirements of Section 2472, (a), (2), Article 6, Chapter 9, Title 13 of the California Code of Regulations.
- (3) Prepare the spill-proof system for dispensing per manufacturers recommendations. Following the manufacturers recommendations carefully insert the spill-proof spout into the opening on top of the test fixture (see Figure 1) and begin dispensing water into the test fixture.
- (4) Continue dispensing water until the flow stops or until the test fixture overflows. Remove the spill-proof spout from the test fixture and record the outcome on the field data sheet (see figure 2).
- (5) For spill-proof systems with a fuel flow rate of less than two gallons per minute use a ruler to measure the distance between the water height in the test fixture and the top of the test fixture opening. Record this measurement on the field data sheet.
- (6) Repeat steps (3) through (5) three times for each spill-proof system tested. If the spill-proof system is refilled during this test, the leak test procedure specified in step (2) must be completed before continuing with steps (3) through (5).

8 QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

This section is reserved for future specification.

9 RECORDING DATA

Record data on a form similar to the one shown in Figure 2.

10 CALCULATING RESULTS

This section is reserved for future specification.

11 REPORTING RESULTS

Compliance with the automatic shut-off requirements of Section 2472, Article 6, Chapter 9, Title 13 of the California Code of Regulations is achieved if:

- (a) the spill-proof system stops the fuel flow before the test fixture overflows on all three trials.

Compliance with the fill level requirements of Section 2472, Article 6, Chapter 9, Title 13 of the California Code of Regulations is achieved if:

- (a) the spill-proof system fills the test fixture to a level less than or equal to 1 inch below the top of the opening on all three trials for spill-proof systems with fuel flow rates less than one gallon per minute.
- (b) the spill-proof system fills the test fixture to a level less than or equal to 1.25 inches below the top of the opening on all three trials for spill-proof systems with fuel flow rates less than two gallons per minute but not less than one gallon per minute.

12 ALTERNATIVE TEST PROCEDURES

Test procedures, other than specified above, shall only be used if prior written approval is obtained from the ARB Executive Officer. In order to secure the ARB Executive Officer's approval of an alternative test procedure, the applicant is responsible for demonstrating to the ARB Executive Officer's satisfaction that the alternative test procedure is equivalent to this test procedure.

- (1) Such approval shall be granted on a case-by-case basis only.
- (2) Documentation of any such approvals, demonstrations, and approvals shall be maintained by the ARB Executive Officer and shall be made available upon request.

13 REFERENCES

This section is reserved for future specification.

14 FIGURES

Figure 1. Test Fixture

Figure 2. Field Data Sheet

Figure 1. Test Fixture

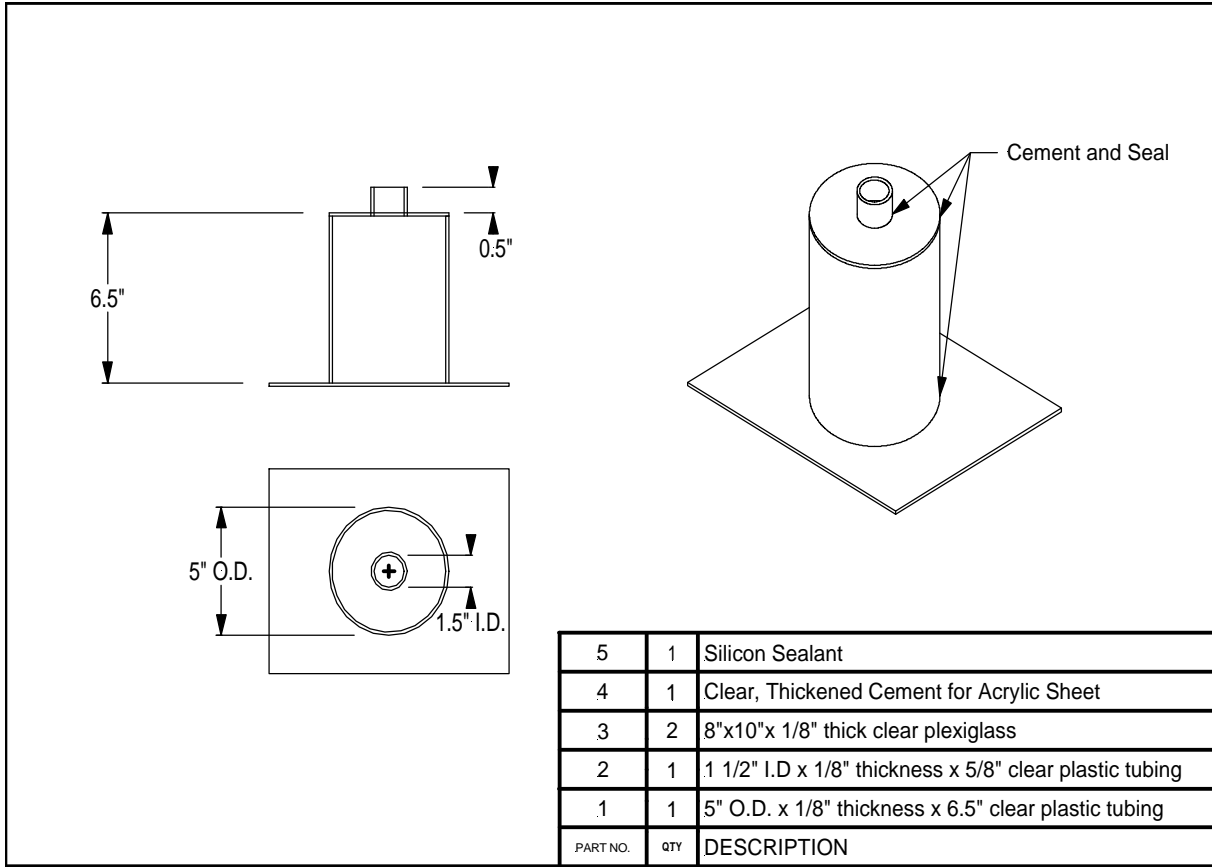


Figure 2. Field Data Sheet

Spill-Proof System Manufacturer: _____

OR

Spill-Proof Spout Manufacturer: _____ **AND**

Portable Fuel Container Manufacturer: _____

Container Volume: _____

Tested By: _____ Date: _____ Time: _____

TEST NUMBER	AUTO SHUT-OFF (yes/no)	FILL HEIGHT (inches)	COMMENTS