

STD-P-02-038

Soap Bubble Leak Test for SEG Type A Shipping Casks

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New Procedure
 Title Change
 Minor Revision
 General Revision
 Rewrite

This procedure supersedes LN Technologies Corp. procedure WM-011.

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1. PURPOSE AND SCOPE

This procedure states the requirements for performing a low-pressure soap bubble leak test for Scientific Ecology Group, Inc. (SEG) Type A shipping casks. The fabrication contractor shall submit for approval detailed leak test procedures. The purpose of this test will be to check the integrity of welds, threaded fittings, flanges, and any other joints where pressure tests below 8 psi are adequate to meet contractual/functional requirements.

2. APPLICABILITY

This test shall be performed before painting on all SEG Type A shipping casks prior to acceptance from a fabricator. Additionally, the test shall be performed yearly as a verification of gasket and gasket seating surfaces integrity. This soap bubble leak test is sensitive for leak testing where a sensitivity of no greater than 10^{-3} atm.cm³/sec is required.

3. REFERENCES

- 3.1 ANSI N14.5, 1977, American National Standards for Leakage Tests on Packages for Shipment of Radioactive Materials
- 3.2 Code of Federal Regulations (CFR) Title 10 Part 71

4. RESPONSIBILITIES

The Quality Assurance (QA) Manager or designee shall witness the performance of the applicable leak test and sign the Test Performance Form (Enclosure 10.1).

5. DEFINITIONS

None

6. EQUIPMENT

6.1 Air Supply

A standard shop compressor or bottle compressed air capable of pressurizing the tested cavity to 8 - 10 psig shall be utilized.

6.2 Gauge

A properly calibrated gauge capable of indicating 0 - 15 psi range with an accuracy of $\pm 2\%$ of the indicated reading shall be utilized.

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6.3 Bubble Test Solution

A leak indicating solution equivalent to the following shall be utilized:

Daso-Kleen Leak-Finding Compound #3183
D. A. Stewart Oil Company
2727 S. Gray Street
Chicago, Illinois 60623

6.4 Relief Valve

A relief valve shall be set and checked at 10% over maximum pressurization pressure.

7. PROCEDURE

- 7.1 The test shall be conducted by SEG QA approved personnel.
- 7.2 The item shall be leak tested with all lids, gaskets, plugs, valves, and fasteners in place and in the normal closed position. The only exception shall be the port or valve utilized to pressure the cavity.

CAUTION

If the cask leak test is to be conducted with a liner inside the cask, liner shall be vented during the test to prevent liner implosion.

- 7.3 Pressurize the cavity to 8 psi +1, -0 psi.
- 7.4 Close off or maintain pressure at pressurization location to hold specified pressure in cavity.
- 7.5 Apply the leak detecting solution to all gasketed areas, threads, seal welds, ports, or valves by brush or spray. Inspect for bubbles.
- 7.6 Conduct leak test for 5 minutes.

8. ACCEPTANCE CRITERIA

- 8.1 No bubbles shall be visible to the unaided eye during the 5 minute test.
- 8.2 If bubbles appear during the test, weld integrity, gasket condition, flange or lid tightness, valve position, plug security, etc., shall be checked and the test rerun.

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8.3 The results of the leak test shall be recorded on Enclosure 10.1.

- Gauge Model, P/N & S/N, as applicable
- Leak Test Pressure
- Leak Test Duration
- Date
- Results, including discrepancies and acceptance.

9. RECORDS

Test performance forms shall be maintained by cask maintenance personnel for one year after completed usable life of tested item.

10. ENCLOSURES

10.1 Test Performance Form

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**ENCLOSURE 10.1
Test Performance Form**

Equipment Tested: _____ Date Tested: _____

Leak Test Pressure: _____ psi

Gauge Information:

Model # _____
Range _____
Calibration Date _____

Leak Test Duration: _____ minutes

PASSED _____ FAILED _____

Discrepancies: _____

Next Leak Test Due (\leq 12 months): _____
Date

Signatures:

Test Performer Date

Quality Assurance Date