

U.S. DEPARTMENT OF ENERGY
CERTIFICATE OF COMPLIANCE
For Radioactive Materials Packages

1a. Certificate Number 9851	1b. Revision No. 1	1c. Package Identification No. USA/9851/BLF (DOE-ORC)	1d. Page No. 1	1e. Total No. Pages. 2
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2. PREAMBLE

- 2a. This certificate is issued to satisfy Sections 173.393a, 173.394, 173.395, and 173.396 of the Department of Transportation Hazardous Materials Regulations (49 CFR 170-189).
- 2b. The packaging and contents described in item 5 below, meets the safety standards set forth in Subpart C of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."
- 2c. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. This certificate is issued on the basis of a safety analysis report of the package design or application—

(1) Prepared by (Name and address):

Oak Ridge National Laboratory
Post Office Box X
Oak Ridge, TN 37830

(2) Title and Identification of report or application:

Safety Analysis Report for
Packaging for the ORNL Lithium
Hydroxide Fire and Impact Shield

(3) Date:

November 1977

Report No.: ORNL/ENG/TM-8

4. CONDITIONS

This certificate is conditional upon the fulfilling of the requirements of Subpart D of 10 CFR 71, as applicable, and the conditions specified in item 5 below.

5. Description of Packaging and Authorized Contents, Model Number, Fissile Class, Other Conditions, and References:

(a) Packaging:

- (1) Label: Lithium Hydroxide Fire and Impact Shield
- (2) Description:

Packaging for inner Type A and DOT Specification 55 packages to permit transport of Type B and large quantities of radioactive materials and limited quantities of fissile materials, which are contained within inner special form encapsulation or DOT Specification 2R containers. The inner vessels will be blocked to minimize movement during transport.

The inner cavity of the shield is a cylinder 27 in. diameter x 26 in. high. The outer shell is 36 in. diameter x 30-3/4 in. high.

The lid is 4-5/8 in. thick. The shield is fabricated from 1/8 in. thick 304-L stainless steel with the 4-1/4 in. nominal space between inner and outer cladding being filled with LiOH·H₂O crystals. The outer surface of the shield has 92 vertical cooling fins. The flanged closure is held in position by twenty 1-inch alloy steel bolts.

The gross weight of the package is 4,000 lbs.

6a. Date of Issuance: July 10, 1981

6b. Expiration Date:

FOR THE U.S. DEPARTMENT OF ENERGY

7a. Address (of DOE Issuing Office)

U.S. Department of Energy
P.O. Box E
Oak Ridge, Tennessee 37830

7b. Signature, Name, and Title (of DOE Approving Official)

William H. Travis
William H. Travis, Director
Safety & Environmental Control Division

(3) Drawings:

The overpack is described and fabricated in accordance with Union Carbide Corp., Nuclear Division, Oak Ridge National Laboratory drawings:

D-RD-2760-D through D-RD-2764-D and X3D-1091-109

(b) Contents:

(1) Type and form of material:

Any solid, large quantity of radioactive materials, fissile and nonfissile, meeting special form or packaged in DOT Specification 2P inner container and whose decay heat load does not exceed 300 watts.

(2) External radiation levels will be within the levels prescribed in DOT Regulations, Title 49.

(3) Specific limits of contents:

(i) 5 g of:

^{242}Am , ^{244}Cm , ^{245}Cm , ^{247}Cm , ^{249}Cf , or ^{251}Cf

(ii) 100 g of:

^{235}U or ^{233}U .

(c) Fissile Class:

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LiOH Fire and Impact Shield

General

1. Section 1.7 fully describes the inner containers used for normal form shipments. The analysis of the inner container performance under both normal conditions and accident conditions, demonstrate that the inner containers has no detectable leak.
2. Attached is a drawing of the gamma shield.

Containment

- 1,2,3 - The analysis of the inner containers demonstrate that the normal and accident conditions will not cause a detectable leak. If no detectable leak will be present, no specific containment criteria is needed.
- 4 - Plutonium is no longer shipped in this cask. The report will be revised to indicate this.

Testing and Maintenance

1. All special form or DOT or containers are leak tested before shipment. The test is the air bubble, vacuum and glycol described in ANSI standard N14.5-A3.6. Attached is a copy of the procedure used.

Shielding

1. All containers are checked prior to shipment to insure radiation levels are within allowable limits. Due to the presence of LiOH shield, no reduction in gamma shielding is expected as a result of accident conditions.