



South Carolina Department of
Health and Environmental Control
Bureau of Land & Waste Management

CERTIFICATE OF COMPLIANCE

High Integrity Container

AMENDMENT **U** TO:

DHEC-HIC-PL-012

ISSUED TO:

EnergySolutions, LLC
140 Stoneridge Drive
Columbia, South Carolina 29210

TO AMEND: Certificate of Compliance DHEC-HIC-PL-012 in its entirety to read:

1. **Application:**

This certificate is applicable to containers specified below for use at Chem-Nuclear Systems, LLC burial facility at Barnwell, South Carolina for containment and disposal of low-level radioactive waste as specified in South Carolina Radioactive Material License No. 097.

2. **General Design:**

The design, materials, manufacture and use of the containers shall conform to the specification and analysis which has received approval of the Department including the latest revision of:

- A. High Integrity Container (HIC) Quality Assurance Plan, FO-QA-PN-001, Rev. 1.
- B. Shipping, Receiving, Handling, Usage and Storage of NUHIC, Radlok and Envirolene Polyethylene HICs, FO-OP-PR-001, Rev. 1.
- C. General Procedure for Compression Test, High Integrity Container, LOT-11-NS.
- D. Drop Test for NUPAC CL-200 Crosslinked Polyethylene High Integrity Container, DT-02-NS.
- E. Drawings:

1) X-20-230D, Rev. 3

High Integrity Container CL-200 Polyethylene EL Series

- 2) X-20-311, Rev. 5 Standard Lift Ring for EL-142
- 3) NN01-03-100, Rev. 4 Naval LPRCT High Integrity Container CL-200 Polyethylene
- 4) NN01-03-101, Rev. 11 Naval LPRCT High Integrity Container Assembly
- 5) NN01-03-102, Rev. 14 Naval LPRCT HIC Enclosure/Internals Fabrication and Assembly
- 6) NN01-03-103, Rev. 8 Naval LPRCT Dewatering Filter Fabrication and Assembly
- 7) NN01-03-105, Rev. 6 Naval LPRCT Modified Lid for Resin Transfer Fabrication and Assembly

F. ES-C-007, Rev. 2, Polyethylene for High Integrity Container Specifications.

3. Applicable Approved Containers:

This certificate shall apply to the following Polyethylene High Integrity Containers:

- 1) EL-50
- 2) EL-142
- 3) EL-190 (INACTIVE)
- 4) EL-210

NOTE: This certificate applies to the above containers with or without optional lift/grapple ring configuration.

4. Quality Assurance:

The containers shall be manufactured, stored and used in accordance with the latest Department approved revision of:

- A. High Integrity Container (HIC) Quality Assurance Plan, FO-QA-PN-001, Rev. 1.
- B. Shipping, Receiving, Handling, Usage and Storage of NUHIC, Radlok and Envirolene Polyethylene HICs, FO-OP-PR-001, Rev. 1.

5. User Requirements:

Use of this container shall be in accordance with the latest Department approved revision of the following:

- A. Shipping, Receiving, Handling, Usage and Storage of NUHIC, Radlok and Envirolene Polyethylene HICs, FO-OP-PR-001, Rev. 1.
- B. Approved Barnwell Disposal Facility (BDF) Cask Handling and Offload Procedures.

6. Specific Limitations:

The following specific limitations for the High Integrity Containers identified in the Certificate shall apply and be strictly adhered to:

- A. Free Standing Liquid: Any free standing liquid must be non-corrosive and less than one-percent (1%) by waste volume.
- B. Radiation: The specific activity of dewatered resins shall not exceed 350 $\mu\text{Ci/cc}$ of isotopes having greater than five year half-lives. Other waste forms shall not exceed 1.0×10^8 rads (β, γ) maximum integrated dose to the container.
- C. Chemicals: Organic solvents, petrochemicals, concentrated acid and other chemicals specified in Attachment 6.1 of the Shipping, Receiving, Handling, Usage and Storage of NUHIC, Radlok and Envirolene Polyethylene HICs, FO-OP-PR-001, Rev. 1, are not allowed to be introduced into the container, nor the container subjected to these materials.
- D. Thermal: The container must not be exposed to temperatures above 170°F or below -40°F.
- E. Ultraviolet: The containers must be stored with black plastic wrapping intact at all times, unless indoor storage is provided. In no case shall a container be exposed to sunlight or other ultraviolet radiation to exceed one (1) year.
- F. Weight: The weight of the container or payloads must not exceed the values in the following table at any time. Payload density must not exceed 92 pounds per cubic feet:

Solidification polyethylene HICs with a minimum 60° horizontal sling lift angle.

Container	Empty Weight (lbs)	Max. Total Weight (lbs)	Lift Apparatus Capacity (lbs)
EL-142	800	11,250	15,837
EL-190 (INACTIVE)	950	14,800	18,429
EL-210	1,050	17,300	18,429

Non-solidification polyethylene HICs with grapple ring lifting configuration.

Container	Empty Weight (lbs)	Max. Total Weight (lbs)	Lift Apparatus Capacity (lbs)
EL-50	600	4,200	4,200
EL-142	1,075	8,250	8,250
EL-190 (INACTIVE)	1,325	11,950	16,500
EL-210	1,465	13,000	16,500

Non-solidification polyethylene HICs with 45° horizontal sling lift angle.

Container	Empty Weight (lbs)	Max. Total Weight (lbs)	Lift Apparatus Capacity (lbs)
EL-50	500	4,200	4,200
EL-142	650	8,250	8,250
EL-190 (INACTIVE)	800	11,950	16,500
EL-210	900	13,000	16,500

- G. Waste such as mechanical or cartridge filters, scrap or other sharp objects placed in the container shall not cause internal damage to the container nor shift about during transportation and handling. All voids shall be filled.
- H. Volumes: The disposal volume for each container shall be as follows for the purpose of burial records. The internal volume shall be for Chem-Nuclear License criteria.

Container	Internal Volume (ft ³)	Disposal Volume (ft ³)
EL-50	41.0	51.2
EL-142	113.6	132.4
EL-190 (INACTIVE)	150.6	174.3
EL-210	176.7	202.1

- I. The high integrity container is limited to the following waste forms (Classes A, B and C):
- (1) Dewatered bead resins, powdered resin, and diatomaceous earth.
 - (2) Compressible and non-compressible solid wastes.
 - (3) Filter elements and cartridges.
 - (4) Solidified resins, sludges, and liquid wastes.
 - (5) Incinerator ash, residuals, or equivalent waste which has been rendered non-dispersable in a binding matrix.
- J: Vent: A passive vent as per applicable drawings and reports of Section 2, General Design, is mandatory.

Any modifications or changes of the container design, materials or usage are subject to prior approval of the Department.

This approval is contingent and does not constitute a final determination by the Department. These containers will be subjected to further evaluations and assessed for their integrity and ability to meet all specified conditions and criteria. Should such an evaluation determine that additional requirements are necessary, appropriate modifications shall be made before their continued use. This Certificate is subject to revocation if warranted.

**For the South Carolina Department of Health and
Environmental Control**

Issue Date: August 4, 2014

By:



David Scaturo, PE, PG, Director
Division of Waste Management
Bureau of Land & Waste Management