

# ORNL Metal Container Specification

## 90 ft<sup>3</sup> Steel Container

Press [QC Check List](#) to see Check List only.

Description	Stores Catalog Number	Packaging Filling Instructions
Container, Enamel Painted Steel, ORNL Waste Disposal, 12 gauge steel, with bolt lid closure, removable skids, 6 ft x 4 ft x 4 ft (nominal), 90 ft <sup>3</sup> , 10,000 pound capacity	02-119-4600	<a href="#">ORNL-PKG-46</a>

Mfg. Details Per: ORNL Packaging Specifications  
No. 900-ORNL-0004  
Issue Date: December 18, 1998  
Revised Date: May 28, 2004

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# OAK RIDGE NATIONAL LABORATORY (ORNL)

## Packaging Specifications

### ORNL Metal Container

Specification No. 900-ORNL-0004

Issued: 12/18/1998

Revised: 5/28/2004

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### REVISION LOG \*

DATE	REVISION NUMBER	REVISION (S) MADE
12/2/2002	-0003	<a href="#">¶3.4.1.1</a> – Corrected total number of bolts from “12” to “16.”
5/28/2004	-0004	<p><a href="#">§A</a> – Changed STC to excepted package, added 49 CFR section references; <a href="#">§B.7</a> – Changed to “Interior / Exterior ...<a href="#">¶3.5</a>”; <a href="#">§D</a> – Updated specification number; <a href="#">¶1.1</a> – Updated wording per <a href="#">§A</a>, clarified what specification covers; Added 49 CFR reference to <a href="#">¶2.1</a>; Added <a href="#">¶2.8</a>; Changed <a href="#">¶3.1.1</a> to show correct reference for body specifications; <a href="#">¶3.3.1</a> – Changed dimensions to match <a href="#">§B.2</a>; <a href="#">¶3.3.2</a> – Reworded last sentence for clarity; Added <a href="#">¶3.3.4</a>; <a href="#">¶3.4.1.1</a> – Changed required number of bolts; <a href="#">¶3.4.1.2</a> – Corrected wording “...maximum ½ inch.” Clarified <a href="#">¶3.4.1.7</a>; <a href="#">¶3.4.4</a> included requirement for gasket inspection and replacement instructions; <a href="#">¶3.5.3</a> – Specified green enamel for paint; <a href="#">¶3.6.2.2</a> – Clarified section; Added <a href="#">¶3.6.3.11</a>, <a href="#">¶3.6.3.12</a> and <a href="#">¶3.6.3.13</a>; <a href="#">¶3.7.1</a> – Reworded and added sentence; <a href="#">¶4.1</a> - Changed STC to excepted and added additional 49 CFR reference; <a href="#">¶5.3</a> – Removed last sentence and moved to <a href="#">¶3.3.4</a>; <a href="#">¶5.7.2.1</a> - Updated specification number and clarified sentence; Revised <a href="#">¶5.7.2.2</a> causing numbering to change to following paragraphs; Added <a href="#">¶5.7.2.5</a>; <a href="#">¶5.7.3 NOTE</a> - Changed number of copies required from 2 to 3; <a href="#">Attachment 1</a> – Added <b>NOTE 2</b>; <a href="#">Attachment 4</a> – Linked “bolts, nuts and washers” to Attachment 6, changed wording on Item 7 to “Welds”, Changed Item 10 to indicate number of copies needed to 3; <a href="#">Attachment 5</a> – Changed ASTM-A509 to A1011.</p>

\* **Revision Log** was initiated November 1, 2002 for ease in identifying revisions made to the specification.

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## A. DESCRIPTION

Rectangular painted metal container with gasket metal lid, secure closures, removable skid runners, 6 x 4 x 4 ft. (nominal) overall dimensions (90 ft<sup>3</sup> internally), meeting Department of Transportation (DOT) excepted package industrial packaging, Type IP-1, in compliance with DOT regulations Title 49 Code of Federal Regulations (49 CFR) ¶173.24, 173.24(a), 173.410, 173.411(a) & (b)(1).

## B. OVERALL SUMMARY

1. Identification: ORNL-1 Metal Container
2. Size: 72 x 48 x 48 inches ID (overall container nominal dimensions)
3. Weight Capacity: 10,000 pounds gross (4,540 kilograms)
4. Waste Volume Capacity: 90 cubic feet (nominal)
5. Material: 12 gauge (minimum) low carbon hot rolled steel
6. Stack Height: Fully loaded boxes capable of being stacked three (3) high
7. Interior / Exterior Surface: Painted see [13.5](#)
8. Stores Catalog No: 02-119-4600

## C. BASIC INFORMATION

1. Skid Runners: Skid runners shall be removable and configured with three (3) skid runners mounted across the short dimension under the container with one runner generally located on either end of the container and the center runner along the container centerline.
2. Lid Gasket: Gaskets are to be securely glued to box lid of each container.
3. Exterior and Interior Surface: Containers are to be painted with primer and finish coat(s) of enamel green paint to achieve 2½ to 3 mils dry film thickness (DFT), interior and exterior.
4. Lid Lifting Handles : Lid lifting devices to be designed to be removable but shall not detach during normal use.

**NOTE:** The material certifications for all container steel and gasket material shall be submitted for company approval prior to fabrication.

## D. MANUFACTURING REQUIREMENTS

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## 1.0 SCOPE

- 1.1 This specification covers the requirements for a metal box container that can be utilized for the packaging of solid low specific activity (LSA) material and surface contaminated objects (SCO) in exclusive use transportation, which meets the DOT requirements for a strong tight container (STC) and industrial packaging, Type IP-1. This also covers solid materials of excepted packaging for limited quantity radioactive materials. This package meets the Nevada Test Site Waste Acceptance Criteria (NTSWAC.)
- 1.2 [Attachment #1](#), Offer Data, provides a listing of the items that must be addressed in the Offeror's response. [Attachment #2](#), Preconstruction Data, provides a listing of the documentation that must be provided after subcontract award and prior to fabrication. [Attachment #3](#), Deliverables, provides a listing of the documentation that must be submitted at time of delivery of the containers.

Attachments 1, 2, and 3 provide references to the particular specification section to which a specific documentation requirement applies.

**NOTE:** Prior to subcontract award, the Company will perform an assessment to ensure the Offeror's technical, quality assurance, and production capabilities are such to ensure the Offeror has the ability to supply these containers in compliance with this specification. ISO certificates can be used, at the Company's discretion, to assist in this determination. If available, ISO certificates should be included in the Offer Data.

## 2.0 REFERENCES

- 2.1 DOT 49 CFR ¶173.24, 173.24(a), 173.410, 173.411(a) and (b)(1) for IP-1.
- 2.2 American Society for Testing and Materials (ASTM) A569
- 2.3 American Welding Society (AWS) D1.1, "AWS Structural Welding Code"
- 2.4 American Welding Society (AWS) D1.3, "AWS Sheet Metal Welding Code"
- 2.5 American Society of Mechanical Engineers (ASME) Section IX, "Welding and Brazing Qualifications"
- 2.6 American Society for Nondestructive Testing, Recommended Practice SNT-TC-1A, December, 1988.
- 2.7 American Welding Society, Specification for Qualification and Certification of Welding Inspectors, 1988 Edition.
- 2.8 [Nevada Test Site Waste Acceptance Criteria, DOE/NV-325, Revision 5](#); or latest revision

## 3.0 REQUIREMENTS

- 3.1 Construction Materials
- 3.1.1 Body: 12-gauge (minimum) low carbon hot rolled sheet steel meeting A1011 specifications, or equivalent (i.e., ASTM A-36).
- 3.1.2 Lid: 12-gauge (minimum) low carbon hot rolled sheet steel meeting A1011 specifications, or equivalent (i.e., ASTM A-36).
- 3.1.3 Lid Gasket: Closed cell neoprene foam gasket material, ¼" x 1", ASTM D-1056-67, SAE-J-18-SCE42 medium durometer with self adhesive backing on one side, or Company approved equal gasket material.

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## 3.2 Container Structural Characteristics

3.2.1 Payload Capacity: 10,000 pounds (gross weight).

3.2.2 Stack Height: Boxes loaded to design load capacity must have the capability of being stacked a maximum of three (3) high.

3.2.3 Strength: Boxes shall be capable of supporting a uniformly distributed load of at least 4,000 lb/ft<sup>2</sup>.

**NOTE:** Provide proof, as part of the preconstruction data package, of the container design load capacity and design stack height in the form of engineering structural calculations; or by submission of engineering drawings for an approved container fabrication design that has prior regulatory authority acceptance and meets the stipulated design characteristics and dimensional requirements of this specification. Box strength can be demonstrated by actual physical testing or design engineering calculations.

## 3.3 Container Dimensional Design Characteristics

3.3.1 Inside Container Dimensions (nominal):

Length: 72 inches

Width: 48 inches

Height: 48 inches

**NOTE:** Allowable container fabrication design tolerances shall be within  $\pm 1/4"$  of the container dimensions indicated on the Offeror's container design drawings used in actual container fabrication that have been approved by the Company.

3.3.2 Container Exterior: Shall be designed such that the exterior container side panels do not have any attached support members or protrusions around the exterior circumference either horizontally or vertically. All container structural support members, as applicable, shall be internal to the container. All four (4) container side panels shall be a smooth plane that will allow containers to be placed in a storage or disposal array with the container side panels directly in full contact with one another. Container body surface, where it meets the lid, will be chamfered 45° to meet the same design of container lid, see [13.4.1.7](#).

3.3.3 Skid Runners: To provide for ease of retrievability, each container shall be fabricated with removable metal skid runners to provide sufficient clearance under the container to allow enough room to accommodate the standard-sized forks of a forklift. The container shall be configured with three (3) skid runners mounted across the short dimension under the container with one runner generally located on either end of the container and the center runner along the container centerline.

3.3.4 The Company requires welding be performed externally (creating an outer seam) and along the internal, vertical seams of each corner of the body (creating an internal seam.)

## 3.4 Container Closure and Sealing Design Characteristics

3.4.1 Lid Construction: The container lid shall incorporate a bolted lid closure method. Bolts, 3/8 inch (maximum) x 1 1/2 inch, will close the container by bolting down on the sides of the container with sufficient clearance to compress the gasket without the bolt channels coming into contact with each other. Recommended lid bolt closure mechanism torque specifications shall be specified and included with the boxes upon delivery.

3.4.1.1 Lid will be bolted with a minimum of twelve (12) bolts. Each bolt will have two (2) flat and one (1) lock washer.

3.4.1.2 Container bolt holes to be a minimum of 7/16 inch with obround holes; long axis parallel to the sidewall, and a maximum of 1/2 inch. Lid bolt holes to be a minimum of 7/16 inch.

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- 3.4.1.3 Stainless steel bolts and nuts will be utilized or plated bolts/nuts having stronger torque resistance than the same size SS bolts/nuts. No counterfeit bolt will be accepted; see [Attachment #6](#), DOE Headmark List.
- 3.4.1.4 For delivery, lids will be bolted with two (2) bolts; one (1) at center of each short side; the balance of the required bolts, nuts, and washers will be shipped in a bag inside each container.
- 3.4.1.5 Lid closure flange design shall be such that it will be flush with the vertical plane created by the box side panels.
- 3.4.1.6 Lid closure design shall be such that when the container is closed with the lid bolted shut, the lid bolts will be flush or recessed below the horizontal plane of the lid panel. This will ensure that the upper portion of the lid closure bolts do not interfere with container stacking during storage and disposal operations.
- 3.4.1.7 Lid corners will be chamfered at 45° to ensure safety in movement and closure. If the body of the box protrudes past the chamfered corners, then the box corner must be chamfered to align with the lid.
- 3.4.2 Lid Handles: Shall be incorporated into the lid design to provide a means by which the lid can be easily manipulated during container opening and closure. Lid handle design shall comply with 49 CFR, &173.410 and incorporate the following –
  - 3.4.2.1 Lid handles shall be designed only for the purpose of lifting the lid weight; minimum 3:1 safety factor.
  - 3.4.2.2 Lid handles shall be designed to be removable but shall not be designed in such a manner that the handle detaches from the lid during normal use.
  - 3.4.2.3 Four handles shall be provided on each lid; two on each side of the lid's short dimension.
  - 3.4.2.4 Lid handles shall be ergonomically positioned to avoid undo worker strain during routine lid handling operations.
  - 3.4.2.5 Lid handles shall have a minimum clearance of 3" between the lid and the bottom of the handle to allow sufficient grasping room for a worker's hand.
  - 3.4.2.6 Suggested handle design would consist of an approximately 3/8" bent rod, hinged to fold down along the container side so as not to interfere with container stacking.
- 3.4.3 Lid security devices: Shall be incorporated in the container design characteristics whereby the lid can be locked to the container while in-use to prevent unauthorized waste addition or entry into the container. Locking devices shall be capable of utilizing the available lid closure mechanism bolt holes while the container is in-use and will utilize a minimum of two (2) bolt holes on opposite sides of the lid.
  - 3.4.3.1 Container closure mechanism design shall incorporate a method for the application of Company supplied tamper indicating devices (TIDs) once the container is filled and contents are verified. TIDs shall utilize dedicated through penetrations between the lid and lid closure flange and allow for the application of two (2) TIDs on opposite sides of the lid.
- 3.4.4 Gasket materials: Shall be glued secure to the lid, such that it provides a continuous sealing surface around the entire circumference of the lid/container contact surface, including the corner joints. Instructions for gasket inspection and replacement will be included with the closing instructions for the box.

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### 3.5 Container Finish Characteristics

- 3.5.1 All container edges and/or surfaces shall be fabricated to minimize sharp edges and protrusions; any edges that do exist on the container shall be ground to minimize personal hazards.
- 3.5.2 All container interior and exterior surfaces shall be prepared and cleaned of all solvent residue, oil, and other materials prior to initial paint application to ensure adequate paint bonding will occur and to ensure paint will be uniformly applied to the proper mil requirements of this specification without running.
- 3.5.3 Exterior paint (green enamel) shall be lead-free, alkyd enamel paint, to provide a rust-proof finish. All container interior and exterior surfaces shall be painted at a minimum with one coat of a primer and finish coat(s). Primer paint shall be compatible with the finish paint coating. Total exterior/interior paint thickness, which includes both the primer and finish coating(s), will be a minimum of two and a half (2½) mils dry film thickness (DFT) on all surfaces.
- 3.5.4 Finished, painted surfaces, upon visual inspection, shall appear smooth and free of any visible pits or imperfections.
- 3.5.5 Painted surfaces shall be allowed time to completely dry prior to placement of the lid onto the box to prevent the lid from adhering to the box at the time of initial container usage at the Company's facility.

### 3.6 Container Identification

- 3.6.1 Location: Offeror's fabrication data shall be legibly marked, at a minimum, on one of the container long dimensions (front or back) and on one of the container short dimensions (either side).
- 3.6.2 Identification Marking Specifications: Offeror's fabrication data shall be permanently affixed to the container in the two locations in accordance with the following -
  - 3.6.2.1 Identification marking will be affixed either by means of a name plate, stenciling, etching, or comparable means of permanent identification capable of withstanding normal/routine container handling operations without loss of legibility. The marking shall be sharp, durable and easily read.

**NOTE:** *The container identification marking attachment method employed by the Offeror's fabrication facility shall not have any detrimental effects on the container integrity.*
  - 3.6.2.2 Markings shall be capable of being read from a 15 foot distance with the unaided eye. The minimum lettering height to be used in the identification marking shall be approximately one (1) inch (unless otherwise specified.)
- 3.6.3 Container Data Markings: Offeror's fabrication data to be included on each container as specified above should include, at a minimum, the following information -
  - 3.6.3.1 Offeror's Fabrication Facility Name.
  - 3.6.3.2 Company's Purchase Order Number.
  - 3.6.3.3 Year of Manufacture.
  - 3.6.3.4 Container Lot Number.
  - 3.6.3.5 Container Serial Number.
  - 3.6.3.6 Container Tare (Empty) Weight (lbs). Reference [13.7](#).

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- 3.6.3.7 Container Maximum Gross Weight Capacity (lbs)
- 3.6.3.8 Container Design Waste Volume Capacity (ft<sup>3</sup>) (i.e., available internal container volume)
- 3.6.3.9 Container Design Burial Volume (ft<sup>3</sup>) (i.e., container disposal volume takes into consideration the container's maximum outside dimensions)
- 3.6.3.10 Container Full Weight (lbs):   (blank)   (sufficient space available for the Company to provide the full container weight upon completion of container filling)
- 3.6.3.11 USA Type IP-1
- 3.6.3.12 NTS Compliant, in 2" letters
- 3.6.3.13 Drawing revision number, no size requirement

### 3.7 Tare Weight Determinations

- 3.7.1 Scales for determining Tare Weights will be calibrated and certified to be capable of weighing within plus (+) or minus (-) two (2) pounds. Calibration must be traceable to a nationally recognized standard or equivalent means to assure accuracy.
- 3.7.2 The tare weight will be determined on a lot of containers by randomly selecting five (5) percent of the lot, with a minimum of five (5) containers, weighing the containers, then averaging the weight for the lot.

**NOTE:** A lot will be defined as a batch/quantity of containers made all in the same production run, with the same batch of material, and identified on the container by the lot number (with the serial number) for each order of containers purchased by Oak Ridge National Laboratory (ORNL).

- 3.7.3 The tare weight will be marked on the container per [§3.6.3.6](#).
- 3.7.4 The container tare weights will be marked to the nearest one (1) pound.

**NOTE:** Certificate of Compliance requirements stated under Quality Provisions, [§15.7.2.2](#).

## 4.0 CONSTRUCTION SPECIFICS

**NOTE: Preconstruction Data Deliverables** - Prior to beginning fabrication, the Preconstruction Data listed in Attachment 2 shall be submitted for the Company's review and approval.

- 4.1 Container construction shall meet the requirements of 'excepted' as specified by DOT in 49 CFR §§173.24, 173.24(a), and 173.410; and as an industrial packaging, Type IP-1, in 49 CFR §§173.411(a) and (b)(1).
  - 4.1.1 Container fabrication shall be such that no weld seams shall be used to piece together smaller pieces of material to fabricate the main box structural panels. Additionally, no through weld seams will be allowed across any of the main box structural panels on the four (4) container sides, lid, or bottom other than those welds required at the container corners to join interfacing panels.

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- 4.2 Container design drawings shall be submitted for Company review as part of the Offeror's Offer Data. See [Attachment #5](#) for conceptual drawing. After the award determination, the awarded Offeror will incorporate Company provided design drawing comments/revisions and issue a final container design drawing that meets the Company's approval as part of the Offeror's fabrication preconstruction data. Container design drawings submitted both for the Offeror's response package (Offer Data) and Preconstruction Data requirements of this specification shall include, at a minimum -
- 4.2.1 Standard engineering drawing dimensioning for manufacturing purposes.
  - 4.2.2 Container engineering drawings shall include, as a separate drawing, a depiction of the sheet steel bending diagrams which will indicate the sheet steel size, required sheet steel cuts, and sheet steel bends which will be utilized in the fabrication process for each of the container panels.
  - 4.2.3 All container welds shall be clearly identified and appropriately annotated to indicate the size and type of weldment used in the container fabrication.
  - 4.2.4 All container design features, such as lid handles, lid closure mechanisms, lid security closure devices, etc. shall be clearly identified and dimensionally annotated to indicate specific design characteristics.
  - 4.2.5 Container design. internal container dimensions, waste volume capacity in cubic feet (ft<sup>3</sup>), container burial volume in cubic feet (ft<sup>3</sup>), design payload capacity (lbs), and maximum design loaded gross weight (lbs).
- 4.3 Container body construction shall meet the requirements as prescribed in this specification under [13.0](#).

### 5.0 QUALITY PROVISIONS

- 5.1 The Company shall have the right of access to witness the manufacturing process involved in the fabrication of the requested containers.
- 5.2 The Company shall be notified within a minimum of ten (10) days in advance of the initial container fabrication to allow for the Company to witness initial container fabrication at a mutually agreeable date and time.
- 5.3 All welding procedures and welder certifications shall be in accordance with requirements of AWS D1.1, "AWS Structural Welding Code," AWS D1.3, "AWS Sheet Metal Welding Code," or ASME Section IX, "Welding and Brazing Qualifications," requirements, as applicable, or other equivalent code which requires mechanical testing of weld coupons.
- 5.3.1 The welding procedures, procedure qualification records (PQR), and welder certifications (including updates) shall be submitted to the Company as part of the Offer Data.
- 5.4 Weld container inspection criteria shall consist of the following -
- 5.4.1 A visual inspection of one hundred percent (100%) of each container's welds (both container and lid) shall be performed in accordance with AWS D1.1, Section 6 or AWS D1.3, Section 7, and documented accordingly. Acceptance criteria is per AWS D1.1, Section 8.15.1 or AWS D1.3, Section 4.5.
  - 5.4.2 Examination Personnel Certification Requirements - Personnel performing visual examination of welds, shall be currently certified either as an AWS Certified Welder Inspector (CWI) or in accordance with the requirements of SNT-TC-1A, or work under direct supervision of an SNT-TC-1A Level II, III, or CWI. If certified to SNT-TC-1A, satisfy the training and experience requirements by time spent in weld examination related work. (Reference: AWS QC- 1, Specification for Qualification and Certification of Welding Inspectors, 1988 edition.)
    - 5.4.2.1 Inspector credentials shall be submitted to the Company as part of Offer Data.

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5.4.3 A container water 'float' test shall be performed and documented on one hundred percent (100%) of the containers fabricated that will submerge all weld seams on the container bottom panel and to the maximum extent practical, all vertical side panel weld seams. The vertical side panel weld seams will be tested by tilting the container during the float test. For practicality purposes (i.e., to prevent water from entering the container during this portion of the float test), the top 1" – 2" of weldment does not require submersion.

5.4.3.1 As part of the Offer Data, responding Offerors shall include a procedure detailing the Offeror's float test which specifies the amount of time the container will be floated.

5.5 A copy of the Offeror's Quality Assurance (QA) manual and associated procedures shall be provided as part of the Offer Data.

5.6 The Offeror shall have established or initiated a mechanism by which each manufactured container is assigned a unique container fabrication serial number that will allow for the tracking of container fabrication through the entire manufacturing process. Upon request, records shall be made available to the company regarding the manufacturing process of a specific container.

5.7 The following documentation shall be provided upon delivery of each container and shall include, at a minimum -

5.7.1 Offeror's inspection records for the following -

5.7.1.1 Visual inspection results of each container's welds (both box and lid) as specified by the Offeror's QA requirements.

5.7.1.2 Container 'float' test results and associated weld seam inspection results of each container as specified by the Offeror's QA requirements.

5.7.1.3 Paint minimum DFT verification results for the container's primer and finish coat (2.5 mil minimum on all interior/exterior surfaces).

5.7.1.4 Inspection results for the condition of the following container components: Container closure mechanism, lid handle attachment to the container lid, and removable skid runner container attachment.

5.7.2 Certificates of Compliance (COC) to this Specification shall be provided by the Supplier on supplier's letterhead paper and signed by employee of the supplier that indicates the following -

5.7.2.1 The Supplier has manufactured the containers in accordance with these ORNL specifications provided to the Supplier. The specification number (900-ORNL-0004) must be included along with the approved drawing with revision number used in manufacturing the containers.

5.7.2.2 The Supplier has manufactured the containers to meet the requirements of 'excepted' as specified by DOT in 49 CFR ¶173.24, 173.24(a), and 173.410; and as an industrial packaging, Type IP-1, in 49 CFR ¶173.411(a) and (b)(1). Reference [¶4.1](#)

5.7.2.3 The Supplier shall certify that the equipment utilized to determine the tare weight is part of a routine calibration system, and that the scale used has been calibrated to be accurate within plus (+) or minus (-) two (2) pounds.

5.7.2.4 The Supplier must provide the "standard deviation" for those containers randomly sampled for the tare weight average.

5.7.2.5 The Supplier shall certify that the containers are NTS compliant.

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5.7.3 All container deviation reports, manufacturing deviations, and non-conformances to the Company specifications must be documented to the Company. A request for waiver or deviation shall be submitted, with specific details, and approved by the Company prior to delivery of the container.

**NOTE:** *The above specified container documentation shall be identified to the unique container serial number(s), be complete, and authenticated by a cognizant representative of the Offeror's quality control section. Three (3) copies of each set of documentation specifically identifying the inspected container(s) shall be submitted as a package with each shipment received by the Company.*

5.8 As part of the Offer Data, Offerors shall provide a copy of their forms/documentation which will be used to satisfy all the container specific documentation requirements described in [§15.7](#).

5.9 The Company may perform shop inspections at the Offeror's fabrication facility for approved drawings, procedures, welder certifications, materials, workmanship, suspect/counterfeit parts, and documentation prior to container shipment. The Offeror will be notified in advance of the shop inspection and the inspection times will be established and mutually agreeable between the Offeror and the Company's representative.

5.10 The Offeror shall notify the Company upon fabrication completion of the first lot of containers prior to painting. The Company shall be afforded the opportunity to perform first article weld fabrication container source inspection prior to container painting. Any identified deficiencies will be corrected prior to painting. The Company will be notified of container deficiency correction and be allowed the opportunity to reinspect the containers prior to container painting.

## 6.0 PACKAGING AND HANDLING

6.1 Container Storage At The Offeror's Facility - Container storage shall be in such a manner as to ensure the inside of the containers will remain dry and no accumulated moisture will be present in the containers prior to shipment to the Company.

6.2 Container Packaging For Shipment - Each container shall be packaged in a manner to ensure safe delivery and comply with all carrier's regulations.

6.2.1 Containers loaded for shipment to the Company's facility will be tied down in such a manner so as to avoid any damage and/or distortion to the container during transportation which would cause design tolerances to be exceeded.

6.2.2 Containers shall be packaged for shipment to the Company's facility in such a manner as to ensure the inside of the containers remain dry during transport.

## 7.0 RECEIPT INSPECTION

7.1 Final acceptance of each shipment received at the Company's site will be upon the Company's verification that the following documentation requirements have been met -

7.1.1 Container Documentation as prescribed in this specification under [§15.7](#).

7.1.2 Container Data Markings; as prescribed in this specification under [§13.6](#).

7.2 Receiving Inspection - The receiving inspection will be performed using [Attachment #4](#) (Receiving Inspections) of this specification. Verification that no shipping damage has been incurred during transport to the Company is included. Minor paint scratches will not be reason for rejection.

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## Attachment 1 Offer Data

<i>Item</i>	<i>Specification Section</i>	<i>Deliverable Description</i>
1	<a href="#">¶1.2</a>	Provide a copy of the current ISO registration, if available.
2	<a href="#">¶4.2</a>	Provide a copy of the container detail design drawings for Company's review that includes the required information specified.
3	<a href="#">¶5.3.1</a>	Provide a copy of all applicable fabrication welding procedures for Company's review.
4	<a href="#">¶5.3.1</a>	Provide a copy of all applicable welder certifications, including PQRs, for the fabrication personnel who will be performing welding operations during container fabrication for Company's review.
5	<a href="#">¶5.4.2.1</a>	Provide a copy of weld inspector credentials.
6	<a href="#">¶5.4.3.1</a>	Provide a description of the Offeror's 'float' test.
7	<a href="#">¶5.5</a>	Provide a copy of the Offeror's fabrication facility QA manual.
8	<a href="#">¶5.8</a>	Provide a copy of the Offeror's forms/documentation which will address each of the container specific documentation requirements

**NOTE 1:** Offers may not be considered if the Offer Data is not provided.

**NOTE 2:** Repeat bidders who have submitted this data and do not have changes, do not need to re-submit.

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### Attachment 2 Preconstruction Data

<i>Item</i>	<i>Specification Section</i>	<i>Deliverable Description</i>
1	<a href="#">§C. NOTE</a>	Provide material certification for steel used for the fabrication of the container body and lid.
2	<a href="#">§C. NOTE</a>	Provide material certification for the container lid gasket material.
3	<a href="#">¶3.2 NOTE</a>	Provide proof of the container design load capacity and design stack height for Company's review and approval.
4	<a href="#">¶3.2.NOTE</a>	Provide proof of the container design strength, at least 4000 lb/ft <sup>2</sup> . Actual physical testing or design engineering calculations shall be provided to demonstrate this requirement.
5	<a href="#">¶4.2</a>	Provide a copy of the finalized container detail design drawings for Company's review and approval.

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### Attachment 3 Deliverables

<i>Item</i>	<i>Specification Section</i>	<i>Deliverable Description</i>
1	<a href="#">§3.4.1.1</a>	Provide recommended closure procedure.
2	<a href="#">§5.7.1.1</a>	Provide visual inspection results for each container's welds (box and lid).
3	<a href="#">§5.7.1.2</a>	Provide "float" test results.
4	<a href="#">§5.7.1.3</a>	Provide DFT verification results for the container's primer and finish coat.
5	<a href="#">§5.7.1.4</a>	Provide inspection results for the condition of the container components.
6	<a href="#">§5.7.2</a>	Provide Certificates of Compliance (CoC) as requested in this specification.
7	<a href="#">§5.7.3</a>	Provide deviation reports, manufacturing deviations and NCRs on all containers.

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## Attachment 4 Receiving Inspections

The following inspections will be performed on the incoming containers by the Company to determine whether the containers meet quality standards and the requirements of this specification document and the contract. However, the receiver is not limited to the below inspections to determine quality and specification conformance. Conformance will be indicated by a Y or N in the "Y/N" column, and negative responses documented on the Nonconformance Report (NCR), ORNL-311, and attached to the checklist.

<b>Receiver Inspection Quality Control (QC) Checklist for Incoming Containers</b>			
	QC Conformance	Y/N	<i>&lt;&lt; "No's" are to be documented on form ORNL-311, with checklist.</i>
1	Dimensions		Containers meet dimensions stated in <a href="#">§3.3.1</a> .
2	Container Lids		Lids fit containers without binding sidewalls; easily removable.
3	Lid Closures		Closure <a href="#">bolts, nuts, and washers</a> supplied, if required.
4	Exterior/Interior		Painted green per <a href="#">§3.5</a> .
			No significant scratches, corrosion, dents, bare metal areas, etc.
5	Lid Handles		Four lid handles provided; handles removable per <a href="#">§3.4.2</a> .
6	Lid Gasket		Gasket in good condition, no tears, etc., and securely glued around lid.
7	Welds		Interior and exterior welds performed (no breaks); and no corrosion in seams.
8	Container Identification		Container marked per <a href="#">§3.6</a> .
9	Skid Runners		Removable metal skid runners mounted on bottom of container, per <a href="#">§3.3.3</a> .
10	Container Documentation		Three (3) copies of container documentation for each container (i.e., inspection results, float test data, Certificate of Compliance, etc.), with one (1) complete copy being submitted to TPM, provided in accordance with <a href="#">§5.7</a> .

Catalog Number 02-119-4600

P.O. Number \_\_\_\_\_

Total Units Received \_\_\_\_\_

Sample Size \_\_\_\_\_ [Based on ANSI/ASQC Z1.4-1993]

NCR No. \_\_\_\_\_

Purchaser/WCO notified of the NCR?  Yes  No

Disposition of the NCR \_\_\_\_\_

Additional comments provided on back:  check if yes

Inspection Method: Per ORNL PkgOps\* QC Inspection Plan

Inspector/Date \_\_\_\_\_

This QC inspection check list shall be accomplished for each order, based on random samples of the received containers, by QC personnel to determine manufacturer's conformance to the specified packaging specifications.

\*Oak Ridge National Laboratory Packaging Operations

# ORNL Metal Container

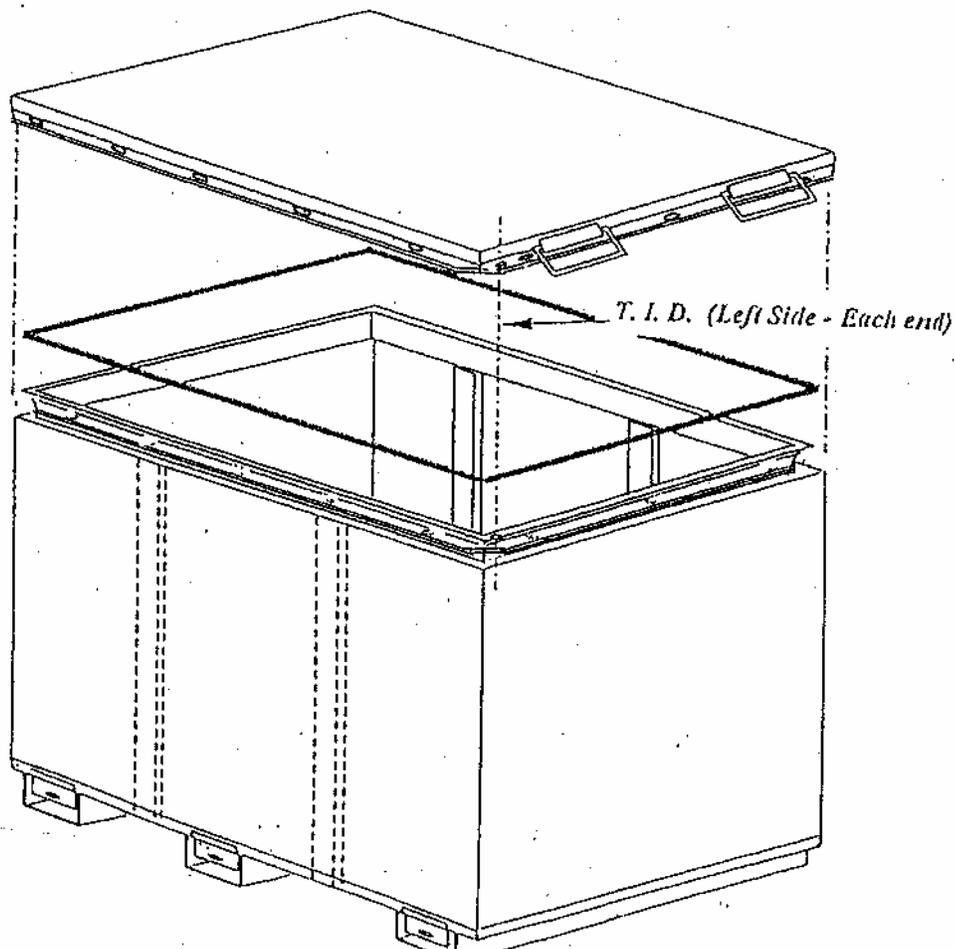
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## Attachment 5 Container Drawing



### Container Description:

**Model:** ORNL, IP-1 (Specialized)  
**Specification:** 900-ORNL  
**Volume Capacity:** 90 ft<sup>3</sup>  
**Container Weight:** 650 lb (approximate)  
**Payload:** 10,000 lb.  
**Max. Gross Weight:** 10,650 lb (approximate)  
**Material:** Low Carbon Hot Rolled Steel – 12 Gauge Sheet (A1011)  
**Dimension:** 72 x 48 x 48 in OD (nominal)

### Additional Information:

Security maintained with lockable closed system (Optional)  
AWS Welding & Inspection performed  
Bolted Closure System (as shown)  
Vertical stiffeners add stability  
Three (3) removable risers

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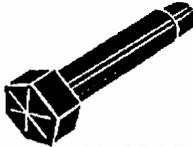
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## Attachment #6 DOE Headmark List

ANY BOLT ON THIS LIST SHOULD BE TREATED AS DEFECTIVE WITHOUT FURTHER TESTING.



ALL GRADE 5 AND GRADE 8 FASTENERS OF FOREIGN ORIGIN WHICH DO NOT BEAR ANY MANUFACTURERS' HEADMARKS:



GRADE 5



GRADE 8

GRADE 5 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

<u>MARK</u>	<u>MANUFACTURER</u>	<u>MARK</u>	<u>MANUFACTURER</u>
	J Jinn Her (TW)		KS Kosaka Kogyo (JP)

GRADE 8 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

<u>MARK</u>	<u>MANUFACTURER</u>	<u>MARK</u>	<u>MANUFACTURER</u>
	A Asahi Mfg (JP)		KS Kosaka Kogyo (JP)
	NF Nippon Fasteners (JP)		RT Takai Ltd (JP)
	H Hinomoto Metal (JP)		FM Fastener Co of Japan (JP)
	M Minamida Sleybo (JP)		KY Kyoel Mfg (JP)
	MS Minato Kogyo (JP)		J Jinn Her (TW)
	Hollow Triangle Infasca (CA TW JP YU) (Greater than 1/2 inch dia.)		
	E Dalai (JP)		UNV Unytite (JP)

GRADE 8.2 FASTENERS WITH THE FOLLOWING HEADMARKS:

<u>MARK</u>	<u>MANUFACTURER</u>
	KS Kosaka Kogyo (JP)

GRADE A325 FASTENERS (BENNETT DENVER TARGET ONLY) WITH THE FOLLOWING HEADMARKS:

	<u>MARK</u>	<u>MANUFACTURER</u>
Type 1		A325 KS Kosaka Kogyo (JP)
Type 2		
Type 3		

Key: CA-Canada, JP-Japan, TW-Taiwan, YU-Yugoslavia