

ORNL Carbon Steel Tight Head 30-Gallon Drum Specification

Press  to see Check List only.

Description	Stores Catalog Number	Packaging Filling Instructions	Plant
Drum, Carbon steel, tight head, 30 gallon, 18 1/4 in. ID, UN 1A1/X 1.4/250 , 1.2141 mm Nominal (18 gauge)	02-112-6095	ORNL-CHK-19	ORNL (Also available at Y-12)

**Mfg. Details Per: ORNL Packaging Specifications
No. 101-1A1-0005
Issue Date: April 15, 1994
Revised Date: November 12, 2002**

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Oak Ridge National Laboratory (ORNL)

Packaging Specifications

Tight Head Carbon Steel Drum

Specification No. 101-1A1-0005

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Revised: November 12, 2002

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REVISION LOG *

(as of November 1, 2002)

DATE	REVISION NUMBER	REVISION (S) MADE
11/12/2002	-0005	QC Checklist added closing instruction requirement (made item #4 and re-numbered remaining items); 17.0 removed "Cullman, Alabama" from Greif Brothers location; 19.0 reworded so closing instructions are included in each shipment.; Appendix A-1 reworded first NOTE to "...DOE Headmark List..."

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

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1.0 GENERAL DESCRIPTION

Tight Head (TH) Carbon Steel drum with welded seams, two (2) rolling hoops, steel body, steel head, conventional (with seams) construction. Steel gauge and specific variations as specified in [Appendix A-1](#) for 55, 30, or 16 gallon drum capacity.

1.1 United Nations Designation - UN 1A1 /X sg/ tp/ * [per 49 CFR, ¶178.503]

- 1A1 = Tight head steel drum.
- X = Suitable for Packing Group I, II and III materials.
- sg = Maximum specific gravity for which drum design type was tested .
- tp = Hydrostatic test pressure (in kilopascals) for which drum design type was tested.
[250 kPa equivalent to 36.3 pounds per square in (psi) pressure - for PG I test.]
- * = The last two (2) digits of the calendar year in which the container was manufactured.

Specific UN Markings are specified in the Catalog Description for the referenced catalog number for each specific drum, which are the ORNL "minimum" UN requirements.

1.2 Size:

Inside diameter (in inches) [as specified in the Catalog Description for the referenced catalog number].

Drum dimensions to be in accordance with ANSI MH2-1997 Standards (American National Standards Institute) for Steel Drums and Pails.

2.0 MATERIAL DETAILS

Drum construction must comply with Title 49, Code of Federal Regulations (49 CFR), ¶178.504 (latest edition) for steel drums, and the following minimum requirements. Manufacturer shall document appropriate quality control on incoming raw material. No significant changes to the manufacturing process or raw material is allowed without prior approval of the Company. Steel thickness dimensions/tolerances to be in conformance with TABLE, per [Appendix A-1](#).

2.1 Drum Body:

Cold rolled steel, ASTM A 366 or equivalent--see [Appendix A-1](#) for steel size for stated drum capacity.

2.2 Drum Head:

Cold rolled steel, ASTM A 366 or equivalent--see [Appendix A-1](#) for steel size.

2.3 Drum Bottom:

Cold rolled steel, ASTM A 366 or equivalent--same steel size as drum body.

2.4 Body Seams:

Welded (on-line, continuous welder).

2.5 Chimes:

Mechanically seamed; bottom chime triple seamed or double seamed, if the double seam drum meets the UN test criteria, as specified.

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2.6 Gasket:

Not applicable.

2.7 Rolling Hoops:

Two (2) each separate rolling hoops formed into the drum body. Rolling Hoops to be in accordance with ANSI MH2-1997 Standards.

2.8 Bung Closure:

Two (2) inches each (*for 16 gallon*) or one 2-inch and one 3/4 inch (*for 16-, 30- and 55-gallon*) bung closures (Tri-Sure or Rieke), painted, with gaskets. See [Appendix A-1](#).

Manufacturer/supplier must furnish ORNL, in writing, closure requirements, as performed for the UN design test; per 49 CFR, ¶178.2(c)(1). It must be identified on the closure instructions specifically as to the ORNL drum to which the instructions apply. Ref. [§9.0](#) for distribution.

2.9 Surface Preparation:

Surfaces shall be prepared to retard rust formation, or be sufficiently cleaned for application of interior and exterior coatings.

2.10 Interior finish:

Must contain a rust preventative lacquer or coating.

2.11 Exterior finish:

Body painted SSCI (Steel Shipping Container Institute) Black, with White head.

2.12 Seaming Compound:

Chimes must be sealed with a seaming compound, and applied in conformance to standard manufacturing quality procedures, to ensure no leakage/seepage.

2.13 Cleanliness:

Finished drums must be free of rust, dirt, oil, solvents, metal shavings, foreign contaminants, and interior moisture.

3.0 CONTAINER PERFORMANCE CRITERIA

Manufacturer shall successfully test and certify that containers meet or exceed the requirements of 49 CFR, ¶178.600-178.608, for the Packing Group I level.

3.1 Performance Test Documentation:

Upon request, the manufacturer must be capable of providing copies of the performance test documentation for purchased packagings, as required by 49 CFR ¶178.601(1) for the UN certification marked packaging. Periodic audit copies will be requested randomly on purchased UN packagings. Ref: [§9.0](#).

3.2 Performance Tests:

The specified drums require the **U.S. Department of Transportation** UN performance criteria for design qualification testing, periodic retesting, and production tests established in 49 CFR, ¶178.600 - 178.608.

NOTE TO SELLER: The UN test/marketing certifications must be made by the drum manufacturer or a Department of Transportation approved third-party tester.

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4.0 QUALITY ASSURANCE

The Seller shall assure, and be responsible, that the quality of the drums furnished under this document are of good quality, as pursuant to industry standard manufacturing practices for steel drums, including the materials/components used in the manufacturing of the stated steel drums.

The Seller shall meet the requirements stipulated in this document and the specific requirements of the Catalog Description for the specific drum as specified in the Purchase Order.

4.1 Manufacturer's Certification:

By the act of placing the UN performance criteria markings on each drum purchased, the manufacturer acknowledges he has certified, and accepted responsibility, that the stated drum design meets or exceeds the U.S. Department of Transportation's UN performance requirements as stipulated in, [§3.2](#) of this document and in accordance with markings prescribed in 49 CFR, ¶178.503.

In addition, this certification marking acknowledges the drum manufacturer has complied with the specific standards for steel drums specifically noted in 49 CFR, ¶178.504.

4.2 Receiver Inspections:

The following inspections will be performed on the incoming drums by receiver to determine the drums meet quality standards and the requirements of this document. However, the receiver is not limited to the following 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*, (per ORNL Nonconformance Report Instructions), attached to the checklist, and submitted to ORNL's Packaging Operations (PkgOps) for action.

NOTE: Checklist for this specification is on the following page.

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This checklist is to be reproduced for Quality Control (QC) Inspections.

Receiver Inspection Quality Control (QC) Checklist for Incoming Steel Drums

QC Conformance	Y/N	<< "No's" to be documented on form ORNL-311, with checklist
1	Capacity	Drum is the capacity specified in the Order/Catalog Description.
2	Drum Surface	Clean, no significant scratching, dings or dents in drum, no significant corrosion, on exterior or interior surface of drum.
3	Bung Closures	Drum top contains one or two bung closures: 3/4" and/or 2" opening per Appendix A-1 . ["Iron Pipe Size" (IPS) Inside dimensions]. Closures contain gasket rings.
		Bung openings/closures are painted silver, or plated to prevent rust.
4	Closing Instructions	Closing Instructions are included with each shipment per 12.8 .
		Drums are able to be closed according to closing instructions.
5	Drum lids	Lids painted WHITE; shows no significant rusting/corrosion or dents.
6	Drum exterior	Painted BLACK (SSCI standard)
7	Markings	Drums marked (as a minimum) with ORNL specified UN markings, per Catalog Description.
		Drums legibly marked (embossed) on bottom of drum in accordance with 49 CFR requirements, including specified density and test pressure.
		Markings include the manufacturer's identification -- name or registered symbol (initials or M-number), or test agency + code; after USA/. Ref: 49 CFR, ¶178.503(a)(8).
8	Side Markings	The required UN markings are marked legibly and durably on the side.

Catalog Number _____

P.O. Number _____

Total Units Received _____

Inspection Method: Per ORNL PkgOps QC Inspection Plan

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

NCR No. _____

Inspector/Date _____

Additional comments on back: _____ check, if yes.

The above QC inspection check list shall be accomplished for each order based on random samples of incoming carbon steel drums by QC personnel to determine manufacturer's conformance to these specified Packaging Specifications.

Shipments of carbon steel drums not meeting specified requirements will be returned to the seller for credit.

QC inspections resulting in noncompliance with the Packaging Specifications will be cause for rejection of the entire shipment.

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5.0 MARKING

As a minimum, each drum shall be marked in accordance with 49 CFR, ¶178.2, 178.3, and 178.503 in a conspicuous location on exterior surface of the drum. Markings shall have a minimum letter height of 1/2 inch. Markings must include the manufacturer's identification -- company name or registered symbol (initials or M-number), or test agency code, per 49 CFR, ¶178.503(a)(8).

Additionally, drums are to be marked with the UN markings as stipulated in [¶1.1](#) of this specification, and specifically stated in the Catalog Description.

The letters: CATN--(dash) plus the last four (4) numbers of the catalog number must be marked below the UN markings:

55 gallon = CATN--6350
30 gallon = CATN--6095
16 gallon = CATN--6090

6.0 INTENDED USE

Containers are intended for Packing Group I, II and III hazardous materials in liquid form. Maximum fill capacity of the drum shall not exceed the tested hydrostatic pressure or density marked on the drum.

7.0 SUGGESTED MANUFACTURERS

The following list of suggested manufacturers have demonstrated ability to comply to the requirements set forth in this document. However this list does not guarantee current or continued availability as a suggested manufacturer source:

- General Steel Drum, Charlotte, North Carolina
- Greif Bros. Corp.
- All-Pak, Inc., Columbus, Ohio
- Packaging for Industry, Knoxville, Tennessee
- Packaging Specialties, Cleveland, Ohio
- Skolnik Industries, Inc., Chicago, Illinois

The Seller must advise the Company prior to any change in the current source (manufacturer) of packaging materials described in these Packaging Specifications.

Any Manufacturer that satisfactorily demonstrates to the Company the capability to furnish packaging in compliance with these Packaging Specifications, may be added to the above listing.

8.0 AUTHORIZED CHANGES

Changes/revisions in the requirements specified in this document will only be authorized by ORNL PkgOps as coordinated with Oak Ridge facilities packaging operations.

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9.0 DISTRIBUTION OF UN PERFORMANCE TEST REPORTS (per [§3.1](#)) and CLOSURE INSTRUCTIONS (per [§2.8](#))

A) Closure instructions must be furnished with each order for each type/size package purchased by ORNL, directly to the Packaging Operations Manager at the address, or fax number, below.

B) Upon specific request, UN performance test documentation for each specified order/shipment will be submitted directly to the Packaging Operations Manager at the address, or fax number, below.

**Oak Ridge National Laboratory
Packaging Operations Manager
Bldg. 7001, MS 6288
P.O. Box 2008, 1 Bethel Valley Road
Oak Ridge, Tennessee 37831-6288
(865) 574-7098 [fax]**

**SPECIFIC REQUIREMENTS for
ORNL UN PACKAGING SPECIFICATIONS**

APPENDIX A-1

Revised: June 15, 1999

Re-issued: November 5, 2002

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CARBON STEEL DRUM CONSTRUCTION VARIATIONS

OPEN HEAD (OH) DRUMS [Fully Removable Heads]								TIGHT HEAD DRUMS		
ORNL No. 104-1A2-0006			ORNL No. 100-1A2-0006					ORNL No. 101-1A1-0005		
Construction	110 gallon	85 gallon	55 gallon	30 gallon	15/16 gallon	10 gallon	5 gallon	55 gallon	30 gallon	16 gallon
Nominal, mm	1.5189	1.5189	1.5189	1.2141	0.9119	0.9119	0.7595	1.2141	1.2141	0.9119
** Steel Thickness	.0598 in.	.0598 in.	.0598 in.	.0478 in.	.0359 in.	.0359 in.	.0299 in.	.0478 in.	.0478 in.	.0359 in.
Minimum, mm	1.3538	1.3538	1.3538	1.0871	0.8230	0.8230	0.6833	1.0871	1.0871	0.8230
	.0533 in.	.0533 in.	.0533 in.	.0428 in.	.0324 in.	.0324 in.	.0269 in.	.0428 in.	.0428 in.	.0324 in.
<i>Drum gauge</i>	<i>16 ga.</i>	<i>16 ga.</i>	<i>16 ga.</i>	<i>18 ga.</i>	<i>20 ga.</i>	<i>20 ga.</i>	<i>22 ga.</i>	<i>18 ga.</i>	<i>18 ga.</i>	<i>20 ga.</i>
Head Thickness Same Tolerances ■	1.5189 <i>16 ga.</i>	1.5189 <i>16 ga.</i>	1.5189 <i>16 ga.</i>	1.2141 <i>18 ga.</i>	0.9119 <i>20 ga.</i>	0.9119 <i>20 ga.</i>	0.7595 <i>22 ga.</i>	1.2141 <i>18 ga.</i>	1.2141 <i>18 ga.</i>	0.9119 <i>20 ga.</i>
Rolling Hoops	3 each	3 each	3 each	2 each	2 each	2 each	2 beads	2 each	2 each	2 each
Locking Ring –mm Nominal ■	2.6568 <i>12 ga.</i>	2.6568 <i>12 ga.</i>	2.6568 <i>12 ga.</i>	2.6568 <i>12 ga.</i>	1.5189 <i>16 ga.</i>	1.5189 <i>16 ga.</i>	0.9119 <i>20 ga.</i>	----	----	----
Bolt Size *see note below	5/8 inch	5/8 inch	5/8 inch	5/8 inch	3/8 inch	5/16 inch	5/16 inch	----	----	----
Gaskets (glued in lid)	Required	----	----	----						
Bung Openings	No	2 & ¾ inch	2 & ¾ inch	2 inch						
Interior Lining [Ref: ¶2.10]	Clear Phenolic	Epoxy/ Phenolic	Epoxy/ Phenolic	Epoxy/ Phenolic	Clear Phenolic	Clear Phenolic	Clear Phenolic	Clear Phenolic	Clear Phenolic	Clear Phenolic

* NOTE: Counterfeit bolts, as stipulated on current DOE Headmark List will not be accepted. Bolts are of foreign origin.

**NOTE: Steel thickness dimensions/minimum tolerances, in millimeters, are converted from the DOT Gauge Table, CFR 49, ¶173.24, pre-HM-181 docket. [inches x 25.4000 = millimeters; current CFR 49, ¶171.10(c)(2)]

■ NOTE: Minimum gauge thickness tolerances, as shown above, apply (block 1).