

ORNL Stainless Steel Open Head 55-Gallon Drum Specification

Press  to see Check List only.

Description	Stores Catalog Number	Packaging Filling Instructions	Plant
Drum, Stainless steel, open head, 55 gallon, 22 1/2 in. ID UN 1A2/X 320/S; UN 1A2/Y 1.4/200, 1.5189 mm Nominal (16 gauge) <i>NOTE: UN markings (liquid) revised 02/25/2000.</i>	02-112-6085	ORNL-CHK-15 (for Hazmat use) or ORNL-PKG-05 (for Type A use)	ORNL (Also available at Y-12)

Mfg. Details Per: ORNL Packaging Specifications
No. 102-1A2-0007
Issue Date: April 15, 1994
Revised Date: November 25, 2002

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Oak Ridge National Laboratory (ORNL)

Packaging Specifications

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REVISION LOG *

DATE	REVISION NUMBER	REVISION (S) MADE
11/25/2002	-0007	¶12.9 Added "See Attachment #1 ..."; QC Checklist added closing instruction requirement (made item #5 and re-numbered remaining items) ¶5.0 Added "Y-12 Only" indicator to 2 drum sizes.; ¶9.0 reworded so closing instructions are included in each shipment.; Appendix A-2 reworded first NOTE to "...DOE Headmark List..."; Added Attachment #1 , 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

Open Head (OH) Stainless Steel drum with welded seams, 2 or 3 rolling hoops, steel body, steel head, conventional (with seams) construction. Steel gauge and specific variations as specified in the [Appendix A-2](#) for 55, 30, 15 or 16 gallon drums.

1.1 United Nations Designation - UN 1A2 /X **/ S/ * [UN 1A2 /X sg/tp/ *]^{dm} [per 49 CFR, &178.503]

- dm** = Drum dual marked for liquids, as well as solid material.
- 1A2** = Open head steel drum.
- X** = Suitable for Packing Group I, II, and III materials.
- **** = Maximum allowable gross weight in kilograms for which the drum was tested .
- S** = Designation indicates packaging is for solid materials [or combination packaging].
- *** = The last two (2) digits of the calendar year in which the container was manufactured.
- sg** = Specific gravity of material for which drum design type was tested.
- tp** = Hydrostatic test pressure (in kilopascals) for which drum design type was tested.

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 (American National Standards Institute) Standards for Steel Drums and Pails for 16-, 30-, and 55-gallon drums

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 in conformance with APPENDIX TABLE, per [Appendix A-2](#).

2.1 Drum Body:

Stainless steel, Type 304-2B, A-240, or equivalent. Top of body rolled to form ½ inch false wire--see [Appendix A-2](#) for steel size for stated drum capacity.

2.2 Drum Head:

Stainless steel, Type 304-2B, A-240, or equivalent; see [Appendix A-2](#) for steel size.

2.3 Drum Bottom:

Stainless steel, Type 304-2B, A-240, or equivalent; same steel as drum body.

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2.4 Body Seams:

Welded (on-line, continuous welder).

2.5 Chimes:

Mechanically seamed; bottom chime triple or double seamed to meet UN tests.

2.6 Rolling Hoops:

Three (3) each separate rolling hoops formed into the drum body, with one not more than three (3) inches from top drum curl for 55 gallon capacity and larger. Two (2) rolling hoops for under 55 gallon capacity--see [Appendix A-2](#). Rolling hoops to be in accordance with ANSI MH2-1997 Standards.

2.7 Cover/Bung:

For the 55 gallon drum, a 3/4 inch Tri-Sure bung fitting (stainless) is required in the drum head (cover).

2.8 Gasket:

Closed-cell rubber, glued into lid--gasket material and size as necessary to meet UN performance tests. Gasket to have an operating range of -40°F to +158°F. Must be EPDM or approved equivalent.

2.9 Closure:

Twelve (12) gauge bolt type SS locking ring, welded lugs, one lug threaded, and stainless steel bolt. See [Appendix A-2](#) for minimum required bolt sizes. See [Attachment #1](#) for DOE Headmark List for counterfeit bolts.

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.

2.10 Surface:

Stainless steel to be standard mill, 2B, finish, and surfaces shall be free from oil/grease, etc.

2.11 Interior finish:

None; interior surface to be free from oil/grease, etc.

2.12 Exterior finish:

Standard 304-2B

2.13 Seaming Compound:

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

2.14 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](#).

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3.2 Performance Tests:

The specified drums require the **US 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.

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 the markings prescribed in 49 CFR, &178.503.

In addition, this certification marking acknowledges that the drum manufacturer has complied with the specific standards for steel drums specifically listed 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), *UCN 11457*, (items 3-21b), attached to the checklist, and submitted to ORNL's Packaging Operations (PkgOps) for necessary action.

NOTE: Checklist for this specification is on following page.

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This checklist is to be reproduced for QC Inspections

Receiver Inspection Quality Control (QC) Checklist for Incoming Stainless Steel Drums			
QC Conformance	Y/N	<< "No's" to be documented on form UCN-11457 with checklist	
1	Steel gauge size		Meets dimensions/tolerances per attached Gauge Table, Appendix A-2 .
2	Capacity		Drum is the capacity specified in the Order/Catalog Description.
3	Drum Surface		Clean, no significant scratching, dings or dents in drum, no significant corrosion, on exterior surface of drum.
4	Locking rings, chimes		Bolted locking rings are stainless steel, contain 5/8 in. SS bolt for 55 gallon; 3/8 in. for 30- and 15-gallon; see Appendix A-2 and show no rusting/corrosion.
			Bolted locking rings close tightly; not loose on drum lid.
5	Closing Instructions		Closing Instructions are included with each shipment per §12.9 .
			Drums are able to be closed according to closing instructions.
6	Drum lids		Lids are stainless steel, and show no rusting/corrosion or dents.
			55 gallon only; Single 3/4 in. Tri-Sure bung fitting (stainless).
7	Gaskets in lids		Gaskets are securely glued into the drum lids.
8	Markings		Drums marked (as a minimum) with ORNL specified UN markings, per Catalog Description.
			Drums legibly marked (embossed) on bottom in accordance with required 49 CFR markings, and specified gross test weight.
			Markings include the manufacturer's identification -- company name or registered symbol (initials or M-number), or test agency code; after USA/. Ref: 49 CFR, &178.503(a)(8).
9	Side Markings		The required UN markings (including the specified dual UN marks) are durably and legibly marked 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 stainless steel drums, by QC personnel to determine manufacturer's conformance to these specified Packaging Specifications.

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

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

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5.0 INTENDED USE

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 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 including the specified dual markings, as stipulated in [&1.1](#) of this specification.

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

55 gallon = CATN—6085
30 gallon = CATN—6050 (Y-12 only)
15 gallon = CATN—6217 (Y-12 only)

6.0 INTENDED USE

Containers are intended for Packing Group I, II, and III hazardous materials in solid or liquid form. Maximum fill capacity of the drum shall not exceed the tested gross weight 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:

- \$ Skolnik Industries, Inc., Chicago, Illinois
- \$ Container USA, Masury, Ohio
- \$ Packaging Specialties, Cleveland, Ohio

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 [§2.9](#))

- 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 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 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**

**SPECIFIC REQUIREMENTS for
ORNL UN PACKAGING SPECIFICATIONS**

APPENDIX A-2

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Re-issued: November 5, 2002

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STAINLESS STEEL DRUM CONSTRUCTION VARIATIONS

OPEN HEAD (OH) DRUMS [Fully Removable Heads]				TIGHT HEAD DRUMS		
ORNL No. 102-1A2-0007				ORNL No. 103-1A1-0004		
Construction	55 gallon	30 gallon	15/16 gallon	55 gallon	30 gallon	16 gallon
Nominal, mm	1.5189	1.2141	0.9119	1.2141	1.2141	0.9119
** Steel Thickness	.0598 in.	.0478 in.	.0359 in.	.0478 in.	.0478 in.	.0359 in.
Minimum, mm	1.3538	1.0871	0.8230	1.0871	1.0871	0.8230
<i>Drum gauge</i>	.0533 in.	.0428 in.	.0324 in.	.0428 in.	.0428 in.	.0324 in.
	<i>16 ga.</i>	<i>18 ga.</i>	<i>20 ga.</i>	<i>18 ga.</i>	<i>18 ga.</i>	<i>20 ga.</i>
Head Thickness	1.5189	1.2141	0.9119	1.2141	1.2141	0.9119
Same Tolerances	<i>16 ga.</i>	<i>18 ga.</i>	<i>20 ga.</i>	<i>18 ga.</i>	<i>18 ga.</i>	<i>20 ga.</i>
Rolling Hoops	3 each	2 each	2 each	2 each	2 each	2 each
Locking Ring –mm	2.6568	2.6568	1.5189	----	----	----
Nominal	<i>12 ga.</i>	<i>12 ga.</i>	<i>16 ga.</i>			
Bolt Size						
*see note below	5/8 inch	5/8 inch	3/8 inch	----	----	----
Gaskets	Required	Required	Required	----	----	----
Bung Openings	¾ inch Tri-Sure (1)	No	No	2 & ¾ inch	2 & ¾ inch	2 inch

*NOTE: Counterfeit bolts, as stipulated on current DOE Headmark List (see [Attachment #1](#)), 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).

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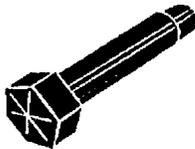
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ATTACHMENT #1

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	 A325 KS	
Type 3	 A325 KS	

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