

**Oak Ridge National Laboratory (ORNL)  
Transportation and Packaging Management (TPM)  
Container Preparation and Filling Instructions/Checklist**

**UN 110 Gallon Salvage Open Head (OH) Steel Drum**

**ORNL-CHK-29, Rev. 3**

Issued: 5/15/1997

Revised: 2/1/2006

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**INSTRUCTIONS:** Complete the activities requested following the instructions below. Activities should be checked off as performed. The completed checklist should then be signed by the Operating Personnel completing the checklist and submitted to the Operations Supervisor for approval for shipment.

**NOTE 1:** The 110 gallon Salvage open head steel drum is UN marked for containing hazardous materials packagings as solid materials.

**NOTE 2:** The Salvage drum is intended for use in the shipment of damaged, defective, non-conforming, or leaking packages, or packages that have leaked or spilled and is used *only* for purposes of transport for recovery or disposal. The hazardous material must be compatible with the Salvage drum, its internal lining, as well as the internal packagings, and contain sufficient cushioning and absorbent material. The Salvage drum, and its contents, is authorized only for shipment for repackaging or disposal.

**NOTE 3:** The maximum allowable gross weight is embossed (bottom) and marked (side) on each drum in kilograms [ex., 400 kilograms (880 lbs)]. Allowable weight applies to Packaging Groups I, II, or III solid materials.

**NOTE 4:** Salvage drum lids used during in-house storage which contain vents/pressure relief devices must be removed and replaced with the original non-vented lid prior to offering for shipment.

**A. PRE-LOADING INSTRUCTIONS FOR  
UN 1A2/X 110 Gallon Salvage OH Carbon Steel Drum  
Stores Catalog No. 02-112-6100**

*Note: Items marked (#) are solely generator's/filler's responsibility.*

**Operating  
Personnel**

- \_\_\_\_\_ 1. (#) Inspect the drum to be filled to ensure that it is in good physical condition and that no critical dents/damages, severe corrosion, etc. exist that could cause or develop into a leak during normal storage or in transportation.
- \_\_\_\_\_ 2. **WHEN** packaging hazardous materials/wastes in defective packaging as set-forth in [NOTE 2](#) above; **THEN**, ensure that the drum, with contents and internal packagings, meet the requirements/limitations specified in [NOTE 3](#) above.
- \_\_\_\_\_ 3. (#)Ensure there is sufficient and compatible absorbent material in the drum to eliminate any free liquid from the damaged packaging into the Salvage drum at the time of closing.
- \_\_\_\_\_ 4. Ensure there is sufficient and compatible cushioning material to prevent excessive movement of the damaged package within the Salvage drum.

**FOR INTERNAL USE ONLY**

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**A. PRE-LOADING INSTRUCTIONS FOR  
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Operating  
Personnel

- \_\_\_\_\_ 5. (#) Ensure that the material being filled into the drum is compatible with (will not react, corrode, or attack) the inside clear coating and internal steel of the drum.
- \_\_\_\_\_ 6. Ensure that the Salvage drum lid does not contain vents/relief devices when offered for shipment. Refer to [NOTE 4](#) on page one.

**B. CLOSING INSTRUCTIONS FOR  
UN 1A2/X 110 Gallon Salvage OH Carbon Steel Drum  
Stores Catalog No. 02-112-6100**

- \_\_\_\_\_ 1. For drums from *Skolnik Industries* (drums marked **SDCC**) see [Attachment #1](#).

**NOTE:** Drums must be closed in accordance with the specific instructions furnished, and tested, by the manufacturer for each specific type/size drum, in order to be in compliance with **DOT HAZMAT** regulations. [49 CFR, §78.2(c)(1)]

**C. POST-LOADING INSTRUCTIONS FOR  
UN 1A2/X 110 Gallon Salvage OH Carbon Steel Drum  
Stores Catalog No. 02-112-6100**

- \_\_\_\_\_ 1. Label and mark the drum in accordance with the markings on the damaged packagings and the current ORNL/Department of Transportation (DOT) requirements. For off-site shipments, contact the ORNL Transportation and Packaging Management Organization for appropriate DOT marking and labeling.
- \_\_\_\_\_ 2. Sign and date the checklist in the appropriate signature block verifying that the activities have been performed and the checklist completed.
- \_\_\_\_\_ 3. Submit this completed checklist to the Operations Supervisor for approval for shipment.

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**Operations  
Supervisor**


- \_\_\_\_\_ 4. Verify that all defined activities have been successfully completed.
- \_\_\_\_\_ 5. Sign and date the checklist in the appropriate signature block, approving the container for shipment.

**APPROVED FOR SHIPMENT:**

<b>Operating Personnel:</b>	<b>Date:</b>
<b>Operations Supervisor:</b>	<b>Date:</b>

**Prepared by:** ORNL TPM Organization

**Approved by:** \_\_\_\_\_

  
Jeff Shelton, Manager (576-6401)  
ORNL TPM - Packaging Operations

February 1, 2006

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## ATTACHMENT #1



### CLOSING INSTRUCTIONS

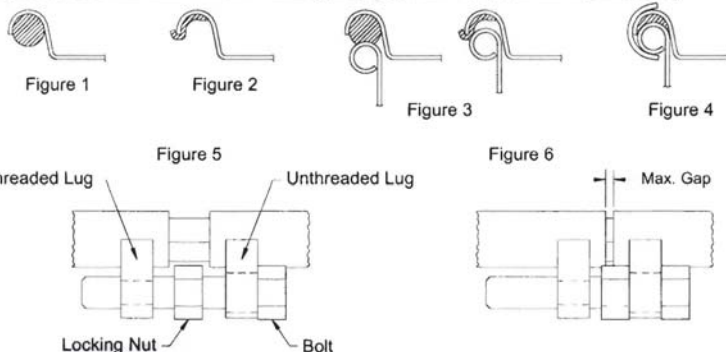
CARBON & STAINLESS STEEL DRUMS with BOLT RING CLOSURES  
 — READ ALL INSTRUCTIONS COMPLETELY —

#### OPEN HEAD DRUM - BOLT RING CLOSURE

- In compliance with **DOT 49 CFR §178.2 (c)**, persons shipping Skolnik drums must comply with the following closure instructions. Failure to do so will invalidate the UN and 7A ratings of Skolnik drums.
- Use of components other than those supplied with the drum (or identical replacement parts from Skolnik) will also invalidate the UN rating.

- STEP 1: CHECK GASKET** – inspect cover gasket is properly fitted in cover groove (fig 1 or 2).
- STEP 2: PLACE COVER ON DRUM** – (fig 3) being careful to properly seat gasket around curl.
- STEP 3: POSITION & SEAT RING** – with lugs downward. Ensure the inner channel of the closure ring engages entire drum curl and cover (fig 4). Apply downward pressure on cover, use a rubber mallet to hammer ring to further seat ring, cover & drum curl into inner channel of ring.
- STEP 4: INSTALL BOLT** – insert bolt through unthreaded lug, screw bolt into locking nut, then into threaded lug (fig 5).
- STEP 5: CLOSE DRUM** – tighten bolt (using downward pressure on the cover and hammering outside of ring with a rubber mallet will assist closing process). Continue tightening and hammering ring until the ends of the ring reaches the maximum gap shown in the chart below.
- NOTE:** Ring ends should not touch and ring must be in a fixed position. The lock nut must be tightened against the un-threaded lug. (fig 6)

RING GAP REQUIREMENTS		
DRUM SIZE	U.N. MARKINGS	MAX GAP
5 – 16 gal	liquid & solid	.500" (12.70 mm)
20 – 110 gal	liquid & solid	.125" (3.175 mm)
5 – 110 gal	solids only	1.00" (25.4 mm)
55 gal composite	liquid	.850 (21.95 mm)
55 gal 7A rating	solids only	OPTION A: close to 1" gap, then torque to 25 ft-lbs OPTION B: close to .125" gap



#### PERFORMANCE NOTICE

Ring gap compliance is critical for the performance of Skolnik drums. Closure is assured by compressing the cover and gasket to the drum body. This is achieved when the final tightened ring gap (therefore final ring diameter) meets the specifications listed.

#### IMPORTANT

Please contact Skolnik Industries for further instructions if encountered with difficulties in meeting the above requirements. Do not ship the drum.

#### OPEN AND CLOSED HEAD DRUMS WITH FITTINGS

- STEP 1: CHECK GASKETS** – inspect plugs for proper gasket seating
- STEP 2: INSTALL PLUG** – do not cross thread
- STEP 3: TIGHTEN** – use specification listed below:

PLUG TYPE	Tri-Sure			Rieke (plastic)	Rieke (steel)		Nuc-Fil filters
	Buna	poly or Teflon	PE/PP (composite drums)	—	poly	all other	
¾" plug	12 ft-lbs	20 ft-lbs	—	9 ft-lbs	20 ft-lbs	15 ft-lbs	8 - 12 ft-lbs
2" plug	20 ft-lbs	30 ft-lbs	10 ft-lbs	20 ft-lbs	40 ft-lbs	30 ft-lbs	—

#### IMPORTANT

- 1 Under the applicable DOT regulations, any changes made to the method of closure or closure components constitute a change in the design type of this packaging, and invalidate the embossed certification.
- 2 After filling and prior to transport, the shipper should check the tightness of closures to determine if the effects of heating, cooling or gasket relaxation have resulted in the need to tighten the closure.
- 3 Drums (other than the composites) are tested at room temperature.
- 4 Skolnik Industries can supply torque wrenches for plugs.

Please contact Skolnik Industries with questions regarding this information.

Revised May 5, 2005 by Skolnik Industries

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