

Corrugated Fiberboard, Double Wall Box Specification 12 x 12 x 12 Inches

Press  to see Check List only.

Description	Stores Catalog Number	Packaging Filling Instructions	Plant
Box, Shipping, Regular Slotted Carton (RSC), Corrugated Fiberboard, Double Wall, UN 4G /Y 45/S , Size: 12 x 12 x 12 inches	02-114-5884	ORNL-CHK-41	ORNL

Mfg. Details Per: ORNL Packaging Specifications
No. 620-4GO-0004
Issue Date: December 1, 1993
Revised Date: February 7, 2003

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Oak Ridge National Laboratory (ORNL)

Packaging Specifications

Double-Wall Corrugated Boxes

Specification No. 620-4G0-0004

Issued: December 1, 1993

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REVISION LOG *

DATE	REVISION NUMBER	REVISION (S) MADE
2/7/2003	-0004	QC Checklist added closing instruction requirement (made item #4 and re-numbered remaining items); ¶9.0 reworded so closing instructions are included in each shipment and added fax number to distribution information.

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

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1.0 GENERAL DESCRIPTION

Box, Shipping, Regular Slotted Carton (RSC), Fiberboard, Double-Wall 42/26/42/26/42 lbs /MSF (thousand square feet) Basis Weight construction, B/C flute, 350 pound test board, as UN single packagings, for dry solid product/material.

1.1 United Nations Designation – UN 4G /Y **/ S * [per 49 CFR, ¶178.503]

- 4G** = Fiberboard box.
- Y** = Suitable for Packing Group II and III materials.
- **** = Maximum allowable gross weight in kilograms for which the Box was tested.
- S** = Designation indicates packaging is for solid materials [*or combination packaging*].
- *** = The last 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 box, which are the ORNL “minimum” requirements.

1.2 Size:

Inside Dimensions: Length x Width x Height

[as specified in the Catalog Description for the referenced catalog number]

2.0 MATERIAL DETAILS

Box construction must comply with Title 49, Code of Federal Regulations (49 CFR), ¶178.516 (latest edition) for Fiberboard boxes, 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.

2.1 Double-Wall Box:

Corrugated construction, RSC style, 350 pound test board.

2.2 Linerboard:

3-facings, 42/42/42 lbs./ MSF Basis weight (126 lbs. minimum).

2.3 Corrugating Medium:

2-interleaved, 26/26 lbs./ MSF Basis weight, B/C Flute.

2.4 Manufacturer's Joint:

Glued overlap tab joint [metal stitched acceptable].

2.5 Water Resistance:

The outer surface must have a water absorption rate not greater than 155 g/m^2 when tested over a 30 minute period by the Cobb method per UN requirements [49 CFR, ¶178.516(b)(1)]. Upon request, the manufacturer must be capable of providing documentation as to the exterior liner board meeting these requirements. Upon request, the manufacturer must be capable of providing documentation as to the exterior liner board meeting these requirements.

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2.6 Closure:

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 box to which the instructions apply. Ref: [§9.0](#) for distribution.

[NOTE: Packages prepared for hazardous materials shipment must be sealed by the same method to be in compliance with the UN markings/certification.]

2.7 Interior finish:

None; natural fiber interior.

2.8 Exterior finish:

Natural kraft exterior linerboard.

2.9 Printing (See [§5.0, Marking](#)):

Box Size; CATN—(dash) plus last four (4) numbers of catalog number, on bottom panel.

Specific box closure instructions on inside top flap [use of hot melt, glue, tape – size/type, etc.].

The required markings for the UN certification as specified in the Catalog Description/Purchase Order, and as set forth in [§1.1](#) of this specification.

2.10 Cleanliness:

Finished boxes shall be free of ragged edges, loose and/or protruding stitching, dirt, oil stains, or printing smears, and box must be dry.

2.11 Freight Classification:

In addition to the requirements contained in 49 CFR, double-wall boxes must conform to the applicable requirements of Rule 41, of the Uniform Freight Classification (UFC), and Rule 222 of the National Motor Freight Classification (NMFC) and marked with the Manufacturer's "Puncture Test" (Mullen) Certificate (BMC).

3.0 CONTAINER PERFORMANCE CRITERIA

The manufacturer shall successfully test and certify that containers meet or exceed the requirements of 49 CFR, [§178.600 - §178.608](#), for Packing Group II. The container herewith specified is to be qualified as **single packagings**, as authorized under 49 CFR, [§173.212\(c\)](#).

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 boxes 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 box 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 boxes furnished under this document are of good quality, as pursuant to industry standard manufacturing practices for corrugated boxes, including the materials and/or components used in the manufacturing of the stated boxes.

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

4.1 Manufacturer's Certification:

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

In addition, this certification marking acknowledges that the box manufacturer has complied with the specific standards for fiberboard boxes specifically listed in 49 CFR, §178.516, including the Cobb Water Absorption Test specifically referenced under 49 CFR, §178.516(b)(1).

4.2 Receiver Inspections:

The following inspections will be performed on incoming boxes by receiver to determine the boxes 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 on following page.

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This checklist is to be reproduced for QC Inspections.

Receiver Inspection Quality Control (QC) Checklist for Incoming Corrugated Boxes

	QC Conformance >>	Y/N	<< "No's" to be documented on form UCN-11457 with checklist
1	Dimensions		Stated inside dimensions (from score) are for specified box size.
2	Fiberboard Surface		Clean, no significant scuffing, or breaks/cuts in board; corrugation does not protrude past linerboard surface.
3	Scoring/score lines		Uniform, and sufficient depth to allow clean fold; without distortion.
			No surface breaks in the score lines, when flaps folded.
4	Closing Instructions		Closing instructions are included with each shipment per §9.0
			Boxes are able to be closed according to closing instructions.
5	Corrugating Medium		Medium not crushed within the assembled box.
6	Box Flaps		When folded along score lines, inside flaps meet, and are square - spacing between exterior flaps no greater than 1/4".
7	Manufacturer's joint		Glue tab joints securely glued, in alignment with box sidewalls, and no loose edges. No breaking of linerboard at tab joint fold.
8	Box Alignment		Assembled box and top are square at corners/edges.
9	Markings		Boxes marked (as a minimum) with ORNL specified UN markings, per Catalog Description.
			Boxes legibly marked (printed) in accordance with required UN markings, and with boxmaker's certificate for the specified box strength, and Rule 41/222 markings.
			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) .
10	Printing		Printing on the box is of the specified size, is sharp, contains no smears, and is located according to specifications.
			Closure instructions per §2.6 .
			Length x Width x Height; CATN--last four (4) digits of catalog number on bottom per §2.9 .
			Closing instructions printed on top flap of box, per §2.9 .

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 provided on back: ___ check if yes.

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

Shipments of corrugated boxes not meeting specified requirements will be returned to the seller for credit.

QC inspections resulting in non-compliance with the Packaging Specification will be cause for rejection of the entire shipment.

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5.0 MARKING

As a minimum, each Double-wall box shall be marked in accordance with 49 CFR, ¶178.2, ¶178.3 and ¶178.503 on the exterior surface of the box. 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).

The UN markings shall be in the upper left-hand corner, on two opposing longest sides.

Length x Width x Height , CATN—(dash) plus last four (4) digits of catalog number and manufacturer's compliance markings on bottom panel. [ex., 10x10x10; CATN-1234]

Specific box closing instructions on the inside top flap per [12.9](#) of this specification.

6.0 INTENDED USE

Containers (boxes) are intended as **single packagings** for Packing Group II and III hazardous materials in solid form, per 49CFR, ¶173.212(c). Maximum capacity of the container shall not exceed the tested gross weight, as marked on the box sidewall.

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:

- Greif Brothers, Charlotte, North Carolina
- Industrial Paper & Packaging Corp., Knoxville, Tennessee.
- Viking Packing Specialist, Tulsa, Oklahoma

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

Any Manufacturer that satisfactorily demonstrates to the Company the capability to furnish packaging in compliance with this Packaging Specification, 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 [§13.1](#)) and CLOSURE INSTRUCTIONS (per [§2.6](#))

- 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]**

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

UN Double-Wall Corrugated Fiber Box

ORNL-CHK-41, Rev. 1

Issued: 10/01/1997

Revised: 8/20/2002

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INSTRUCTIONS: Complete the activities below following the instructions in Section A. 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 UN marked double-wall corrugated fiber boxes are authorized for use as single packagings only of solid hazardous materials.

NOTE 2: The maximum allowable gross weight is printed on the side of each corrugated box in kilograms [ex., 125kg (275 lbs)]. Allowable weight applies to Packaging Group II or III solid materials [PG I is not authorized.]

NOTE 3: UN double-wall corrugated fiber boxes are not authorized to be used as a *DOT 7A Type A RAD* packaging.

NOTE 4: Refer to [Appendix A, UN Double-Wall Corrugated Fiber Boxes](#), for sizes, markings, and catalog numbers of double-wall corrugated fiber boxes.

**A. UN 4G/Y Double-Wall Corrugated Fiber Box
Stores Catalog No. 02-114-xxxx**

**Operating
Personnel**

- _____ 1. Inspect the corrugated box to be filled to ensure it is in good physical condition and there are no critical damages, fiberboard tears/cuts, etc. that could develop into a leak or cause box failure during normal storage or in transportation.
- _____ 2. Ensure the material to be filled into the corrugated box is compatible with (will not wet, deteriorate, or generate fumes that will attack) the corrugated box's internal fiber surface.
- _____ 3. Assemble the corrugated box by folding all box flaps, top, and bottom along the score line and sealing the bottom flaps of the box securely with tape as specified below:
 - a. The boxes must be sealed with 3-inch wide, reinforced, water reactive-glue tape or tape of an equivalent or greater strength.
 - b. The outer bottom box flaps must touch when folded together (no gaps between flap edges).
 - c. The tape must overlap both ends of the box, at least 2.5-inches (minimum) on the side of the box.

Container Preparation and Filling Instructions/Checklist

UN Double-Wall Corrugated Fiber Box

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A. UN 4G/Y Double-Wall Corrugated Fiber Box Stores Catalog No. 02-114-xxxx (cont'd)

Operating
Personnel

- _____ 4. **IF** the material being filled into the corrugated box has a moisture content such that it could penetrate/wet through the fiber of the box or weaken the box closures, **THEN**
Ensure that a polyethylene bag liner is inserted into the corrugated box prior to filling.
- _____ 5. **IF** the corrugated box is to be filled with solid hazardous materials/wastes, **THEN**
Fill the box according to the requirements/limitations specified in [NOTE 2](#) on page one.
- _____ 6. **IF** the box contains a plastic inside liner, **THEN**
Ensure that the liner (bag) is securely closed (tied off with knot, band, string, etc.--no wire) and is still in good condition (no tears, punctures, etc.) **PRIOR** to closing the top box flaps of the double-wall corrugated box.
- _____ 7. Close and seal the top flaps of the double-wall corrugated fiber box in the same manner as the bottom flaps under [Step A.3](#) on page one.
- _____ 8. Label and mark the corrugated box in accordance with current ORNL/Department of Transportation (DOT) requirements.
- _____ 9. **IF** the corrugated box is scheduled for off-site shipment, **THEN**
Contact the ORNL Transportation and Packaging Management organization for appropriate DOT markings and labeling.
- _____ 10. Sign and date the checklist in the appropriate signature block verifying the activities have been performed and the checklist has been completed.
- _____ 11. Submit this completed checklist to the Operations Supervisor for approval for shipment.

FOR INTERNAL USE ONLY

Container Preparation and Filling Instructions/Checklist

UN Double-Wall Corrugated Fiber Box

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**A. UN 4G/Y Double-Wall Corrugated Fiber Box
Stores Catalog No. 02-114-xxxx (cont'd)**

**Operations
Supervisor**

- _____ 12. Verify that all defined activities have been successfully completed.
- _____ 13. Sign and date the checklist in the appropriate signature block, approving the corrugated fiber box for shipment.

APPROVED FOR SHIPMENT:

Operating Personnel:	Date:
Operations Supervisor:	Date:

Prepared by: ORNL TPM Organization

Approved by: Jeff Shelton August 20, 2002
Jeff Shelton, Manager (576-6401)
ORNL TPM - Packaging Operations

Container Preparation and Filling Instructions/Checklist

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**A. UN 4G/Y Double-Wall Corrugated Fiber Box
Stores Catalog No. 02-114-xxxx (cont'd)**

APPENDIX A

UN Double-Wall Corrugated Fiber Boxes

SIZE	MARKINGS	CATALOG NUMBER
12 X 12 X 8	UN 4G/Y 45/S	02-114-5883
12 X 12 X 12	UN 4G/Y 45/S	02-114-5884
16 X 16 X 16	UN 4G/Y 65/S	02-114-5886
18 X 18 X 12	UN 4G/Y 60/S	02-114-5887
22 X 22 X 20	UN 4G/Y 75/S	02-114-5765
24 X 24 X 24	UN 4G/Y 70/S	02-114-5890
28 X 18 X 16	UN 4G/Y 65/S	02-114-5760
40 X 20 X 18	UN 4G/Y 65/S	02-114-5850
48 X 24 X 24	UN 4G/Y 80/S	02-114-5891

Table updated 8/20/2002 to reflect only those DW Corrugated Fiber Boxes stocked at ORNL.

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