

SINGLE-WALL CORRUGATED BOX

Press **QC Check List** to see Check List only.

Description	Stores Catalog Number	Packaging Filling Instructions	Plant
Box, Shipping, Regular Slotted Carton (RSC), Corrugated, Fiberboard, Single Wall, UN 4G/Y 36/S , Size: to be specified	02-114-xxxx	LMTPM-CHK-xx	N/A

Mfg. Details Per: ORNL Packaging Specifications
No. 610-4GO-0001
Issue Date: October 1, 1998
Revised Date: November 15, 1999



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Oak Ridge National Laboratory (ORNL)

Packaging Specification

Single-Wall Corrugated Box

Specification No. 610-4GO-0001

Issued: October 30, 1998

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1.0 GENERAL DESCRIPTION:

Box, Shipping, Regular Slotted Carton (RSC), fiberboard, single-wall, 42/26/42 lbs/MSF (thousand square feet) basis weight construction, C flute corrugating medium, 250 pound test board, as UN single packagings, for use in packaging dry solid product/material.

NOTE: This specification is written in terminology for United States shipments, and in compliance to the UN hazardous material recommendations (the Orange Book), as published by the U.S. Department of Transportation under Title 49, US Code of Federal Regulation, as the competent authority for the U.S.

1.1 United Nations Designation -- UN 4G /Y 36/ S * [per 49 CFR, &178.503] [UN &9.5.1]

- 4G** = Fiberboard box.
- Y** = Suitable for Packing Group II, & III materials.
- 36** = Maximum allowable gross weight in kilograms for which the Box was tested. (80 pounds)
- 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.
Note: Followed by additional manufacturer's information, etc. as also required by DOT/UN regulations

1.2 Size:

Desired dimensions for box to be ordered to be specified, in inches, by: inside length x inside width x inside height [*for dimensions in centimeters, one (1) inch = 2.54 centimeters*]

NOTE: Heavier UN test (gross weight) single-wall boxes can be specified, stipulating greater strength corrugated test board construction (275 pound, 350 pound, etc.)

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.

NOTE: Reference the "Fibre Box Association Handbook" (Rolling Meadows, Illinois 60008) for box manufacture terminology, linerboard construction and board tests, and freight classification rules.

2.1 Single-Wall Box:

Corrugated construction, RSC style, 250 pound test board.

2.2 Linerboard:

2-facings, 42/42 lbs./ MSF Basis weight (84 lbs. minimum).

2.3 Corrugating Medium:

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

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2.4 Manufacturer's Joint:

Glued overlap tab joint.

2.5 Water Resistance:

The outer surface must have a water absorption rate not greater than 155 g/m² when tested over a 30 minute period by the Cobb Method per UN requirements [49 CFR, &178.516(b)(1)] [UN &9.6.11.1]. Upon request, the manufacturer must be capable of providing documentation as to the exterior liner board meeting these requirements.

2.6 Closure:

Manufacturer/supplier must furnish Company, in writing, closure requirements, as performed for the UN design test; per 49 CFR, &178.2(c)(1) [i.e., method used; such as glue, hot melt, type/size tape, etc.]. {US DOT requirement } Ref: &9.0 for distribution.

NOTE: Packages prepared for hazardous materials shipment must be sealed by the method as tested, to be in compliance with the UN markings/certification.

2.7 Interior Finish:

None - natural fiber interior.

2.8 Exterior Finish:

None - natural kraft exterior linerboard.

2.9 Printing (See &5.0, Marking):

The specific box closure instructions, per &2.6, on inside top flap as required by the Company.

The required markings for the UN certification as specified on the 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, single-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 [UN &9.7.1 - 9.7.8]. The container herewith specified is to be qualified as **single packagings**, as authorized under 49 CFR, &173.212(c). [*Specific US DOT packaging*]

3.1 Performance Test Documentation:

Upon request, the manufacturer must be capable of providing the Company copies of the performance test documentation for purchased packagings, as required by 49 CFR, &178.601(l) [UN &9.7.8] for the UN certification marked packaging. Periodic audit copies will be requested randomly on Company purchased UN packagings.

Reference: &9.0 of this specification.

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3.2 Performance Tests:

The specified box requires 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 [UN &9.3.3, 9.7.1 - 9.7.8].

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

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/components used in the manufacturing of the stated boxes.

The Seller shall meet the requirements stipulated in this document, and any specifics outlined in the Purchase Order for this particular corrugated box.

4.1 Manufacturer's Certification:

By the act of placing the UN performance criteria markings on each box purchased by the Company, 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 specification, and in accordance with the markings prescribed in 49 CFR, &178.503 [UN &9.5.1].

In addition, this certification marking acknowledges to the Company that the box manufacturer has complied with the specific standards for fiberboard boxes specifically listed in 49 CFR, &178.516 [UN &9.6.11], including the Cobb Water Absorption Test specifically referenced under 49 CFR, &178.516(b)(1) [UN &9.6.11.1].

4.2 Receiver Inspections:

The following inspections will be performed on incoming boxes by the receiver to determine as to whether the boxes delivered meet the quality standards and the requirements of this specification. 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/additional details are to be documented on a separate page, 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 an explanatory appendix page.	
1	Dimensions		The inside dimensions (from scores) are correct for the specified 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	Corrugating Medium		Medium not crushed within the assembled box.
5	Box Flaps		Box flaps, when folded along score lines, are square and do not crack. Inner flaps must meet, and outer flaps must show no space between flaps greater than 1/16".
6	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.
7	Box Alignment		Assembled box and top are square at corners/edges.
8	Markings		Boxes legibly marked (printed) in accordance with required UN markings, and with boxmaker's certificate (Puncture/Burst Test) for the specified box strength, and Rule 41/222 markings.
			Boxes marked (as a minimum) with the specified UN markings per &1.1 of this specification.
			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	Printing		Printing on the box is of the specified size, is sharp, contains no smears, and is located according to specifications.
			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]

Report 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 Quality Control personnel, to determine manufacturer's conformance to these specified Company 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 these Packaging Specifications will be cause for rejection of the entire shipment.

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5.0 MARKING:

As a minimum, each single-wall box shall be marked in accordance with 49 CFR, &178.2, 178.3 and 178.503 [UN &9.5.1] on the exterior surface of the box. Markings shall have a minimum letter height of ½ inch (*US DOT requirement*). 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.

Box UN closing instructions will be printed on a top inside panel per &2.9 of this specification.

Boxes to be marked on bottom with the Box Manufacturer's "Puncture Test" Certificate.

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 US 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:

- Viking Packing Specialist, Tulsa, Oklahoma
- Grief Bros. Corp., Charlotte, North Carolina

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 &3.1) and CLOSURE INSTRUCTIONS (per &2. 6)

A) Closure instructions must be furnished for each initial order, and annually (at the minimum) 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**