

AIR SEA CONTAINERS, INCORPORATED  
PACKAGING TESTING

UNITED NATIONS PERFORMANCE CERTIFICATION

1.6 KILOGRAM 1 x 1 CELL

4G/Y1.6/S

M4733-141014

CODE 4G/Y1.6

October 14, 2014

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## OBJECTIVE

To certify the 1.6 Kilogram HAZARDOUS MATERIALS SHIPPER to the performance requirements outlined in UN RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS, TITLE 49 CODE OF FEDERAL REGULATIONS, ICAO TECHNICAL INSTRUCTIONS AND THE IMDG CODE.

PACKING CODE DESIGNATION:           4G - FIBERBOARD BOXES

PACKING GROUP:                        II - MODERATE DANGER HAZARD

GROSS MASS:                            NOT EXCEEDING 1.6 KILOGRAMS (1 SG)

## TEST SAMPLE DESCRIPTION

Type of package: fiberboard boxes

Outer Carton:

Style: RSC

Joint: lapped and glued inside

Tare Mass: 0.2 kgs

Fiberboard: 42/26/26/26/42 275 lb double wall "B/C" flute

Outside Dims:

Inside Dims: 9<sup>3</sup>/<sub>4</sub>" x 4<sup>7</sup>/<sub>8</sub>" x 5<sup>13</sup>/<sub>16</sub>" (24.77 x 12.38 x 14.76) cm.

Closure: 2" plastic self adhesive tape, 3 strips applied in line fashion along center seam & extended 2"

Cushioning: none

Partition: none

Pads: none

Intermediate Container: none

Inner Container: 4 Plastic bottles (PET) x 250 ml filled with water, 1 plastic bag filled with small plastic samples cups.

Net Mass : 1.64 kg

Gross Test Mass:

Gross Tare Mass: 0.19 KG

Net Mass 1.45 KG

Gross Test Mass: 1.64 KG

Plastic bucket: M&M Industires, Inc. Chattanooga, TN

Boxes: Timbar

Partitions: Timbar

Plastic Tape: Prime Tac, NJ

## DROP TEST

SAMPLE SIZE:

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5 packages

GROSS MASS:

1.64

kgs

DROP HEIGHT:

1.2 meters

CONDITIONING:

23° C @ 50% RH

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DROP ORIENTATIONS

flat on bottom

flat on top

flat on long side

flat on short side

on corner (joint)

TEST STANDARD:

United Nations Recommendations on the Transport of Dangerous Goods: Chapter 9 - "General Recommendations on Packing" section 9.7.3, 49 CFR 178.603, IMDG Annex 1, 8.4, ICAO Technical Instructions 4.3

RESULTS:

PACKAGE #	DROP ORIENTATION	RESULT
1	ON CORNER	PASS
2	FLAT ON TOP	PASS
3	FLAT ON BOTTOM	PASS
4	FLAT ON SIDE 1	PASS
5	FLAT ON SIDE 2	PASS

CRITERIA FOR PASSING TEST:

There should be no leakage from the inner packagings. The outer packaging should not exhibit any damage liable to affect safety during transport.

## STACK TEST

SAMPLE SIZE:

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3 Packages

CONDITIONING:  
23° C @ 50% RH

EQUIPMENT:  
guide load stack tester

MINIMUM LOAD REQUIRED:  
69 LB Per Box

ACTUAL LOAD APPLIED:  
220 LBS (3 Boxes Stacked x 3)

TEST DURATION: 24 hours

**TEST STANDARD:**

United Nations Recommendations of the Transport of Dangerous Goods; Chapter 9 - "General Recommendations on Packing" Section 9.7.6, 49 CFR 178.606, IMDG Annex I 8.7, ICAO Technical Instructions 4.6

**RESULTS:**

PACKAGE #	MAXIMUM DEFLECTION (cm)	RESULT
6	-	PASS
7	-	PASS
8	-	PASS

**CRITERIA FOR PASSING TEST:**

No test sample may leak. No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

**VIBRATION TEST**

SAMPLE SIZE:  
3 packages

CONDITIONING:

EQUIPMENT:

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23° C @ 50% RH

Gaynes 250-V Vibration Tester

PACKAGE FILLING MATERIAL:  
Water

TEST DURATION:  
60 minutes

GROSS MASS:  
1.64 KG

TEST STANDARD  
49 CFR 178.608

RESULTS:

PACKAGE	RESULT
9	PASS
10	PASS
11	PASS

CRITERIA FOR PASSING TEST:

A packaging passes the vibration test if there is no rupture or a leakage from any of the packages. No test sample should show any distortions liable to reduce packaging strength.

COBB WATER ABSORPTION TEST

SAMPLE SIZE:  
3 (100 CM<sup>2</sup>) outside container surfaces

CONDITIONING:  
23° C @ 50% RH

TEST DURATION:

30 minutes

**EQUIPMENT:**

Triple beam balance, graduated cylinder, Cobb water absorption apparatus

**TEST STANDARD:**

United Nations Recommendations of the Transport of Dangerous Goods; Chapter 9 - "General Recommendations on Packing" Section 9.6.11, 49 CFR 178.516 (b)(1), IMDG Annex 17.11.1

**RESULTS:**

SAMPLE	WATER ABSORBED (Grams Per Meter Squared)	RESULT
1	150	PASS
2	150	PASS
3	100	PASS

**CRITERIA FOR PASSING TEST:**

An increase in mass greater than 155 grams per square meter over this 30 minute duration represents an unacceptable level of water resistance.

**UN PACKAGING  
CERTIFICATION**

**AIR SEA CONTAINERS** certifies that the previously described testing services have been performed in accordance with good laboratory practices and that the packaging tested has passed that standard of the UN RECOMMENDATIONS ON THE



TRANSPORT OF DANGEROUS GOODS, TITLE 49 CODE OF FEDERAL REGULATIONS, ICAO TECHNICAL INSTRUCTIONS, AND THE IMDG CODE, for code 4G, packing group II medium danger hazard, gross package mass 1.6 kilograms, All other warranties, expressed or implied, including any warranty that the packaging tested are merchantable or fit for a particular purpose is disclaimed. In no event shall Air Sea Container's liability exceed the total amount paid by Air Sea Containers, Inc. customer.

PACKAGING CERTIFICATION AGENCY:  
Air Sea Containers, Inc.

PACKAGING CERTIFICATION #:  
141014

TEST REPORT NUMBER:  
141014

UN MARKING:



4G/Y1.6/S/14\*  
USA/M4733

\* Replace with year actually manufactured.

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ALAN H. BOND  
Laboratory Supervisor