Viking Packing Specialist

5505 Bird Creek Ave. • Tulsa, OK 74015
And/or 1828 North 105th East Avenue • Tulsa, OK 74116
Phone: (800) 788-8525 • Fax: (918) 252-5518

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

Test Document No.:	**VPS-F-057-25**
Requested by:	**Viking Packing Specialist**
Performed by:	**Viking Packing Specialist**
Manufactured by:	**Viking Packing Specialist**
Date:	**3/14/2025**
Retest Date:	**3/13/2027**

1. **Product Tested:**

Packaging Nomenclature:	Combination Packaging
Outer Package:	4G Corrugated Box (see Appendix A)
Dimensions:	15” x 15” x 10.5” (I.D.)
Inner Package:	See appendix B for approved inners
Maximum gross wt. (kg):	25 kg
Viking Part No.:	VPS-F-057

2. Object of Test:

Determine performance of package design according to PASS/FAIL criteria set forth by the United States Code of Federal Regulations Title 49 sections 178.603, 178.606, and 178.608 to Packing Group II standards.

3. Tests Performed:

TEST	SPEC	INTENSITY	RESULTS
Drop	49 CFR 178.603	1.2 m	PASS
Stacking	49 CFR 178.606	250 kg	PASS
Vibration	49 CFR 178.608	1 Hour	PASS

Viking Packing Specialist certifies that samples of the package described in this report were tested as described above and met all testing requirements. This package is also certified under IMDG, ICAO, IATA and the UN Recommendations on the Transport of Dangerous Goods. It is the responsibility of the end user to determine authorization of use under these regulations. The use of other packaging methods or components other than those documented in this report may render this certification invalid.

Certified By: Marvin Godfrey

DG Testing Manager

Marvin Godfrey

Approved By:

President

David Weilert

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TEST METHODS & RESULTS

The packages were conditioned at 23° C (±2° C) and 50% (±2%) RH for 24 hours immediately prior to testing, per 49 CFR 178.602(d)(1).

1. DROP TEST- 49 CFR 178.603

Five (5) filled packages, closed as for shipment, were subjected to a free fall drop from 1.2 m (3.9 ft.) as required.

Containers	Point of Impact	Result
#1	Flat onto the bottom panel	PASS
#2	Flat onto the top panel	PASS
#3	Flat onto the long side panel	PASS
#4	Flat onto the short side panel	PASS
#5	Onto a corner	PASS

2. STACKING TEST- 49 CFR 178.606

Three (3) filled containers were closed as for shipment and subjected to a static compression load of 250 kg, equivalent to a 3-meter-high stack of identical packages, continuously for 24 hours.

Containers	Actual Load	Result
#1	250 kg	PASS
#2	250 kg	PASS
#3	250 kg	PASS

3. VIBRATION STANDARD- 49 CFR 178.608

Three (3) filled samples, closed as for shipment, were placed on a vibration platform having 25.4 mm peak-to-peak displacement and vibrated in normal shipping orientation for one (1) hour such that a 1.6 mm thick piece of material could be passed between the bottom of the samples and the platform. Immediately thereafter, the packages were removed from the platform, turned over and examined for leakage.

Containers	Vibration	Result
#1	1 HOUR	PASS
#2	1 HOUR	PASS
#3	1 HOUR	PASS

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4. Packaging tested, certified, and provided by Viking Packing Specialist bear the marking:

4G/Y25/S/**

USA/M4563

**Denotes two-digit year of manufacture

See appendices for additional information regarding this report. Information is included as follows.

- Appendix A – Specific outer package detail.
- Appendix B – Inner and supplementary packaging/configurations tested in this outer package.
- Appendix C – Packing/Closure Instructions.
- Appendix D – Testing Photographs.

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING TEST RESULTS

Appendix A – Outer Package Detail

Designated Packaging Code:	4G
Dimensions:	15” x 15” x 10.5” I.D.
Board Combination:	42 lb. liner 23 lb. medium (double wall)
Seam:	Stitched
Bursting Strength:	275 lb double wall
Marked max. gross wt. (kg):	25 kg
Maximum net wt. (kg)	24.1 kg
Closure:	3” hot-melt tape. Mfg.: Shurtape. Mfg. P/N: HP-200.
Alternative Closure:	2” cellulose tape. Mfg.: Cantech. Mfg. P/N: 206-00 or equivalent

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TEST RESULTS

Appendix B – Inner Package Detail

NOTES

1. Inner packages of equal or smaller size than those listed may be used in this combination package without further testing if:

    - They are of similar design to those originally tested.
    - The material of construction is equivalent to or stronger than the material originally tested.
    - The closures are of similar design and are no larger than those used for testing.
    - Additional cushioning material is used, and the inner packages are secure.
    - Inner packages are oriented in the same way as tested.
    - The gross package weight does not exceed that of the tested package.

2. Fewer inner packages than listed may be used in this combination package without further testing if:

    - Additional cushioning is used to fill void space.
    - Movement of inner packages is prevented.

See the following for inner packages and supplementary packages tested in this outer package.

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
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Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Water and lead shot were used to simulate weight.

MPN	30WS1U
Style	1 Gallon Metal Paint Can
Capacity	3.78 Liters
Closure	Multiple friction plug with ringlock
Spec Gravity	1.6
Qty.	4
Net Wt.	6 kg/ea.

Supplemental Each can was placed into a 3mm polybag with 4 absorbent sheets per bag (VPS-A-002), closed with a hand-tied knot. The outer package was lined with a 3mm thickness polyliner, taped/tied closed. Bubble wrap was used to fill void space, and cushion inner packages.

NOTE: The tested package contained (4) 1-gallon cans at 1.6 specific gravity. Inner packaging with a lower specific gravity and/or reduced quantity may be used, provided the total weight does not exceed the marked maximum gross weight.

When shipping via aircraft, these cans must be sealed with a Ringlock Safety Seal.

Spec. sheets on file and available upon request.

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
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Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Water and lead shot were used to simulate weight.

MPN	30WS4U
Style	1 Quart Metal Paint Can
Capacity	0.946 Liters
Closure	Multiple friction plug with ringlock
Spec Gravity	1.8
Qty.	9
Net Wt.	1.84 kg/ea.

Supplemental Each can was placed into a 3mm polybag with (1) absorbent sheet per bag (VPS-A-002), closed with a hand-tied knot. The outer package was lined with a 3mm thickness polyliner, taped/tied closed. Bubble wrap was used to fill void space, and cushion inner packages.

NOTE: The tested package contained (9) 1-quart cans at 1.8 specific gravity. Inner packagings with a lower specific gravity and/or reduced quantity may be used, provided the total weight does not exceed the marked maximum gross weight.

When shipping via aircraft, these cans must be sealed with a Ringlock Safety Seal.

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Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Water and lead shot were used to simulate weight.

MPN	30WS1U
Style	1 Gallon Metal Paint Can
Capacity	3.78 Liters
Closure	Multiple friction plug with ringlock
Spec Gravity	1.2
Qty.	2
Net Wt.	4.87 kg/ea.

MPN	68WUN1
Style	1 Gallon Natural HDPE Plastic Round Jug
Capacity	3.78 Liters
Closure	38-400 Child Resistant Cap
Spec Gravity	1.2
Qty.	2
Net Wt.	4.65 kg/ea.

Supplemental Each can/jug was placed into a 3mm polybag with 4 absorbent sheets per bag (VPS-A-002), closed with a hand-tied knot. The outer package was lined with a 3mm thickness polyliner, taped/tied closed. Bubble wrap was used to fill void space, and cushion inner packages.

When shipping via aircraft, these cans must be sealed with a Ringlock Safety Seal.

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Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Water and lead shot were used to simulate weight.

MPN	30W126
Style	1 Gallon Metal F Style Can
Capacity	3.78 Liters
Closure	1-3/4" Delta Child Resistant Cap (MPN: 30WCDT) and inner seal (MPN: 30WSLX) torqued at 40 in-lbs.
Spec Gravity	1.3
Qty.	4
Net Wt.	5.25 kg/ea.

Supplemental Each can was placed into a 3mm polybag with 4 absorbent sheets per bag (VPS-A-002), closed with a hand-tied knot. The outer package was lined with a 3mm thickness polyliner, taped/tied closed. Bubble wrap was used to fill void space, and cushion inner packages.

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Lead shot was used to simulate weight.

Style	Metal Cylinder
Size	11-9/16" length x 7-5/16" diameter
Closure	N/A
Spec Gravity	N/A
Qty.	1
Net Wt.	8.16 kg

Supplemental Each inner package was placed in a corrugated box (8-3/16" x 8-3/16" x 14-1/2") within the spec package. All void space within each corrugated package was filled with cushioning material during testing.

Style	Metal Cylinder
Size	9-1/16" length x 6-3/8" diameter
Closure	N/A
Spec Gravity	N/A
Qty.	1
Net Wt.	5 kg

Supplemental Each inner package was placed in a corrugated box (7" x 7" x 12") within the spec package. All void space within each corrugated package was filled with cushioning material during testing.

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Water and lead shot were used to simulate weight.

MPN	S-13505
Style	1 Liter F-Style Plastic Bottle
Capacity	1 Liters
Closure	33-400 Neck Finish Screw Top
Spec Gravity	1.2
Qty.	16
Net Wt.	1.3 kg/ea.

Supplemental Each bottle was placed into a 3mm polybag with an absorbent sheet (VPS-A-002), closed with a hand-tied knot. The outer package was lined with a 2mm thickness polyliner, taped/tied closed. Bubble wrap was used to fill void space, and cushion inner packages.

Conditioning Note: This configuration was conditioned to -20ºC (-4ºF) prior to testing

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Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Lead shot was used to simulate weight.

MPN	150-02-2000 (Savillex)
Style	2 Liter Plastic Bottle
Capacity	2 Liters
Closure	Savillex Screw on cap for 150-02-2000
Spec Gravity	N/A
Qty.	5
Net Wt.	2.7 kg/ea.

Supplemental Each bottle was placed into a 3mm polybag with an absorbent sheet (VPS-A-002), closed with a hand-tied knot. The outer package was lined with a 2mm thickness polyliner, taped/tied closed. Bubble wrap was used to fill void space, and cushion inner packages.

Conditioning Note: This configuration was conditioned to -20ºC (-4ºF) prior to testing

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Appendix B – Inner Package Detail (continued)

The package tested is a combination package with outer packages as listed in this report. The package was tested with inner packages below. Lead shot was used to simulate weight.

MPN	30WS1U
Style	1 Gallon Metal Paint Can
Capacity	3.78 Liters
Closure	1 Gallon Metal Paint Can Lid
Spec Gravity	1.6
Qty.	1
Net Wt.	6.3 kg

MPN	S-23396
Style	8oz. Amber Boston Round Glass Bottle 11/16” opening
Capacity	0.23 Liters
Closure	Phenolic screw-on black cap
Spec Gravity	1.6
Qty.	2
Net Wt.	0.63 kg/ea.

MPN	30W113
Style	1 Gallon F-Style Can with 1-1/4” alpha opening
Capacity	3.78 Liters
Closure	1-1/4” alpha metal cap with liner (PN: 30WFAF)
Spec Gravity	1.6
Qty.	1
Net Wt.	6.3 kg.

MPN	30WC4U
Style	1 Quart Metal Paint Can with lid, unlined.
Capacity	0.94 Liters
Closure	1 Quart Metal Pain Can lid
Spec Gravity	1.6
Qty.	1
Net Wt.	3.4 kg

See Next Page

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

Cont'd

MPN	S-22899
Style	16 oz. White Plastic Bottle
Capacity	0.47 Liters
Closure	Screw on cap 1-3/4"
Spec Gravity	1.6
Qty.	1
Net Wt.	2.1 kg

Supplemental The outer package was lined with a 3mm thickness polyliner, Each inner package was placed into a 3mm polybag closed with a hand-tied knot. The two (2) 8oz glass bottles were placed inside a 1-gallon metal paint can with cushioning/absorbent. Nine absorbent sheets (VPS-A-002) were used to fill void space and cushion inner packages.

A minimum of 9 absorbent sheets (VPS-A-002) are needed to absorb the amount of liquid in this outer package. Each VPS-A-002 is rated for absorbing 37.25 oz of liquid. The total liquid in this outer package is 320 oz.

When shipping via aircraft, these cans must be sealed with a Ringlock Safety Seal.

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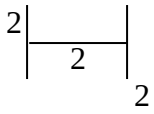
TEST RESULTS

Appendix C – Packing/Closure Instructions

1. Inspect container, and all components for damage. If container is found to be free from damage proceed to step 2. If container is damaged; procure a different container and inspect.

2. Fold bottom flaps of container to meet in the center. Place two strips of tape across the seam where the flaps meet. Place two strips of tape across seam created between the vertical and horizontal sides of the container, creating a "H". Tape must be extended down vertical sides of box a minimum of 2" on each end.



3. Place a polyliner which conforms to this report (when required in appendix B) into the box with the top left open for filling.

4. Place each inner package and absorbent into a polybag which conforms to this report (when required in appendix B) and close each bag with a hand-tied knot.

5. Place a sufficient amount of absorbent/cushioning material into the polyliner within the container. (1-2 inches)

6. Place inner packages into container spacing all inner packages as evenly as possible from one another, and upright sides of container.

7. Fill all void space with absorbent/cushioning material.

8. Close polyliner (when applicable) and seal with tape, hand tied knot or a zip tie may be used to seal polyliner.

9. Fold top flaps to center of container and double tape all seams as specified in step 2.

10. Ensure gross package weight does not exceed that marked on the package and in this report.

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Testing Photos

Bottom Drop	Top Drop
	
End Drop	**Wall Drop**
	
Corner Drop	

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Testing Photos

Stack Test	Vibration Test
	

Stacking Height = **SH**
Height of Package = **PH**
Number of Packages = ***n***
Max. Gross weight of package = **MGW** (kg)

250 kg = [(120/11.5) ≈ 11 – 1] x 25 kg