

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-028-25
Requested by: Viking Packing Specialist
Performed by: Viking Packing Specialist
Manufactured by: Viking Packing Specialist
Date: 3/26/2025
Retest Date: 3/26/2027

1. Product Tested:

Packaging Nomenclature: Combination Packaging
Outer Package: 4G Corrugated Box (see Appendix A)
Dimensions: 16" x 16" x 18" (I.D.)
Inner Package: See appendix B for approved inners
Maximum gross wt. (kg): 31 kg
Viking Part No.: VPS-F-028

2. Object of Test:

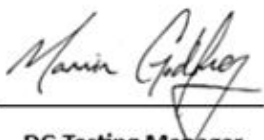
Determine performance of package design according to PASS/FAIL criteria set forth by the United States Code of Federal Regulations Title 49 sections 178.603, 178.606, and 178.608 to Packing Group II standards.

3. Tests Performed:

TEST	SPEC	INTENSITY	RESULTS
Drop	49 CFR 178.603	1.2 m	PASS
Stacking	49 CFR 178.606	186 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:



DG Testing Manager

Marvin Godfrey

Approved By:



President

David Weilert

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TEST METHODS & RESULTS

The packages were conditioned at 23° C ($\pm 2^\circ$ C) and 50% ($\pm 2\%$) 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 186 kg, equivalent to a 3-meter-high stack of identical packages, continuously for 24 hours.

Containers	Actual Load	Result
#1	186 kg	PASS
#2	186 kg	PASS
#3	186 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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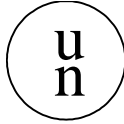
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4. Packaging tested, certified, and provided by Viking Packing Specialist bear the marking:



4G/Y31/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:	16” x 16” x 18” 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):	31 kg
Maximum net wt. (kg)	29.640 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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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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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 listed below.

MFG PN	30WIMP
Style	5 Quart Round Metal Paint Can (Imperial Gallon)
Capacity	4.55 Liters
Closure	Metal Paint Can Lid (PN: 30WIMC)
Spec Gravity	1.2
Qty.	4
Net Wt.	5.5 kg/ea.

Note:

The cans tested are to be utilized as an intermediate package for items that do not meet the pressure testing requirements of 49 CFR 173.27(c) and must not exceed either the specific gravity nor the net weight listed above.

Supplemental The outer package was lined with a 3mm thickness polyliner, taped closed. Each can was placed into a 3mm polybag, absorbent sheets, closed with a hand-tied knot. Bubble wrap was used to fill void space, and cushion inner packages. A total of 17 absorbent sheets were used. VPS-A-002 are rated at absorbing 37.25 oz/per pad.

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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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 listed below.

Style	5.5 Liter Metal Paint Can
Capacity	5.5 Liters
Closure	Metal Paint Can Lid
Spec Gravity	1.2
Qty.	4
Net Wt.	6.96 kg/ea.

Note:

The cans tested are to be utilized as an intermediate package for items that do not meet the pressure testing requirements of 49 CFR 173.27(c) and must not exceed either the specific gravity or the net weight listed above.

Supplemental The outer package was lined with a 3mm thickness polyliner, taped closed. Each can was placed into a 3mm polybag, absorbent sheets, closed with a hand-tied knot. Bubble wrap was used to fill void space, and cushion inner packages. A total of 20 absorbent sheets were used. VPS-A-002 are rated at absorbing 37.25 oz/per pad.

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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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 listed below.

Style	Quart Round Metal Paint Can
Capacity	0.946 Liters
Closure	Metal Paint Can Lid
Spec Gravity	1.2
Qty.	20
Net Wt.	1.2 kg/ea.

Supplemental The outer package was lined with a 3mm thickness polyliner, taped closed. Each can was placed into a 3mm polybag, absorbent sheets, closed with a hand-tied knot. Bubble wrap was used to fill void space, and cushion inner packages. A total of 20 absorbent sheets were used. VPS-A-002 are rated at absorbing 37.25 oz/per pad.

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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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 listed below.

Style	1 Liter Round Plastic Bottle
Capacity	1 Liter
Closure	Screw On Lid with tape
Spec Gravity	1.4
Qty.	16
Net Wt.	1.4 kg/ea.

Supplemental The outer package was lined with a 3mm thickness polyliner, taped closed. Each can was placed into a 3mm polybag, absorbent sheets, closed with a hand-tied knot. Bubble wrap was used to fill void space, and cushion inner packages. A total of 16 absorbent sheets were used. VPS-A-002 are rated at absorbing 37.25 oz/per pad.

Spec. sheets on file and available upon request.

Conditioning Note:

This configuration was conditioned to -20°C (-4°F) 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 listed below.

Style	1 Gallon Plastic Jug (bleach type jug)
Capacity	3.78 Liter
Closure	Screw On Lid with tape
Spec Gravity	1.45
Qty.	4
Net Wt.	5.5 kg/ea.

Supplemental The outer package was lined with a 3mm thickness polyliner, taped closed. Each can was placed into a 3mm polybag, absorbent sheets, closed with a hand-tied knot. Bubble wrap was used to fill void space, and cushion inner packages. A total of 14 absorbent sheets were used. VPS-A-002 are rated at absorbing 37.25 oz/per pad.

Spec. sheets on file and available upon request.

Conditioning Note:

This configuration was conditioned to -20°C (-4°F) 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 listed below.

Style	Bagged Granular (Solid)
Size	12" x 12" x 14"
Closure	N/A
Spec Gravity	N/A
Qty.	5
Net Wt.	5 kg/ea.

Supplemental Bubble wrap was used to fill void space, and cushion inner packages.

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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 listed below.

Style	Air Bag Inflators (Solid)
Size	13" L x 1.5" D
Closure	N/A
Spec Gravity	N/A
Qty.	16
Net Wt.	1 kg/ea.

Supplemental Each airbag was secured inside a RSC fiberboard box with two (2) fiberboard inserts (one placed on bottom to position inflators and one on top to secure the inflators) or eight (8) foam inserts containing sixteen (16) holes for individual placement of inflators.

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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 listed below.

Style	Half Pint Round Metal Utility Can with Screw and Brush Lid
Capacity	0.237 Liters
Closure	Screw cap with attached brush and tape placed on screw top lid
Spec Gravity	1.2
Qty.	80
Net Wt.	0.3 kg/ea.

Supplemental The outer package was lined with a 3mm thickness polyliner, taped closed. Each can was placed into a 3mm polybag, absorbent sheets, closed with a hand-tied knot. Bubble wrap was used to fill void space, and cushion inner packages. A total of 18 absorbent sheets were used. VPS-A-002 are rated at absorbing 37.25 oz/per pad.

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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 listed below.

Style	Metal Cylinder
Size	11-11/16" length x 10-5/16" diameter
Closure	N/A
Spec Gravity	N/A
Qty.	1
Net Wt.	20 kg/ea.

Supplemental Inner Package was placed inside corrugated box
(14-3/8" x 11" x 11") within the spec package. Bubble wrap was used to fill void space,
and cushion inner packages.

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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 listed below.

Style	Solid Box (Simulated First Aid Kit)
Size	11.5" x 11.5" x 6"
Closure	N/A
Spec Gravity	N/A
Qty.	2
Net Wt.	3 kg/ea.

Supplemental	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 listed below.

Style	Solid Box (Simulated First Aid Kit)
Size	10" x 7" x 6"
Closure	N/A
Spec Gravity	N/A
Qty.	4
Net Wt.	1.2 kg/ea.

Supplemental	Bubble wrap was used to fill void space, and cushion inner packages.
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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 listed below.

MPN	M-HP-2
Style	5 Gallon Plastic Bottle
Capacity	18.92 Liters
Closure	Screw on lid with tape
Spec Gravity	1.1
Qty.	1
Net Wt.	20.83 kg

Supplemental Bubble wrap was used to fill void space, and cushion inner packages.

Specs. Tested as a Class 8, PG III but at PG II standards, UN1760, MFG is The ArmaKleen Company

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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 listed below.

Style	Metal Cylinder
Size	10-3/4" length x 2-3/4" diameter
Closure	N/A
Spec Gravity	N/A
Qty.	9
Net Wt.	0.815 kg/ea.

Supplemental	Bubble wrap was used to fill void space, and cushion inner packages.
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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 listed below.

Style	5 Liter Metal Paint Can
Capacity	5 Liter
Closure	Metal Paint Can Lid
Spec Gravity	1.8
Qty.	1
Net Wt.	9 kg

Style	1 Gallon Metal Paint Can
Capacity	3.78 Liter
Closure	Metal Paint Can Lid
Spec Gravity	1.6
Qty.	1
Net Wt.	5 kg

Style	1 Gallon Plastic Jug
Capacity	3.78 Liter
Closure	Screw on cap with tape
Spec Gravity	1.3
Qty.	1
Net Wt.	2 kg

Note:

The 1-gallon metal paint was tested as an intermediate package for items that do not meet the pressure testing requirements of 49 CFR 173.27(c) and must not exceed either the specific gravity nor the net weight listed above.

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

Spec. sheets on file and available upon request.

Conditioning Note:

This configuration was conditioned to -20°C (-4°F) prior to testing.

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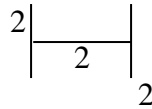
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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING TEST RESULTS

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 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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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING TEST RESULTS

Testing Photos

Bottom Drop	Top Drop
	
End Drop	Wall Drop
	
Corner Drop	
	

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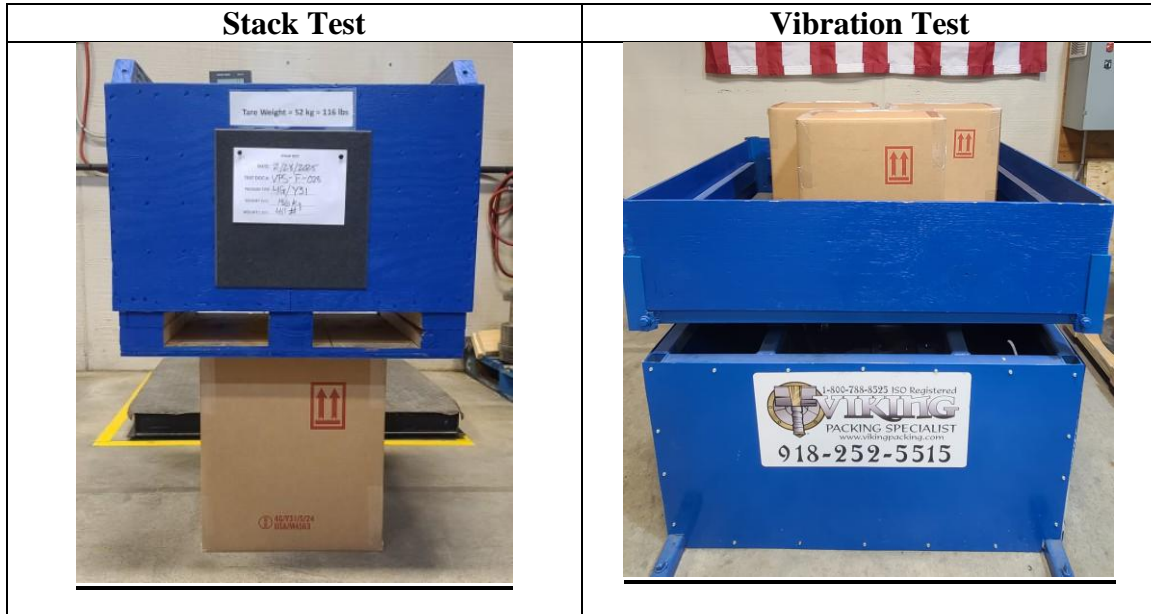
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Testing Photos



Stacking Height = **SH**

Height of Package = **PH**

Number of Packages = ***n***

Max. Gross weight of package = **MGW** (kg)

Stacking Load = $[(SH/PH) \approx n - 1] \times MGW$

186 kg = $[(120/19) \approx 7 - 1] \times 31$ kg