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) 739-4327

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

Test Document No.:	**VPS-F-004-25**
Requested by:	**Viking Packing Specialist**
Performed by:	**Viking Packing Specialist**
Manufactured by:	**Viking Packing Specialist**
Date:	**8/5/2025**
Retest Date:	**8/4/2027**

1. **Product Tested:**

Packaging Nomenclature:	Combination Packaging
Outer Package:	4G Corrugated Box (see Appendix A)
Dimensions:	9” x 9” x 12” (I.D.) 9.5” x 9.5” x 13” (O.D.)
Inner Package:	See Appendix B for approved inners
Maximum gross wt. (kg):	13 kg
Viking Part No.:	VPS-F-004

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 I standards.

3. Tests Performed:

TEST	SPEC	INTENSITY	RESULTS
Drop	49 CFR 178.603	1.8 m	PASS
Stacking	49 CFR 178.606	117 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

1. DROP TEST- 49 CFR 178.603

Five (5) filled packages, closed as for shipment, were subjected to a free fall drop from 1.8 m (5.9 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 the 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 117 kg, equivalent to a 3-meter-high stack of identical packages, continuously for 24 hours.

Containers	Actual Load	Result
#1	117 kg	PASS
#2	117 kg	PASS
#3	117 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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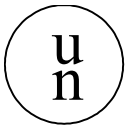
4. Packaging tested, certified, and provided by Viking Packing Specialist bear the marking:



4G/X13/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:	9.5” x 9.5” x 13” O.D 9” x 9” x 12” I.D.
Marked max. gross wt. (kg):	13 kg
Maximum net wt. (kg):	12.5 kg
TARE wt. (kg):	0.5 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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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
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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Appendix B – Inner Package Detail

The package tested is a combination package with outer packages as listed in this report. The package was tested with one (1) five-quart can. Water and lead were used to achieve test weight.

Style	5 Quart Round Metal Paint Type Can
MFG PN	610M908B
Capacity	4.73 Liters
Specific Gravity	1.8
Closure	Multiple friction plug
Quantity	1
Net Wt.	9 kg

Supplemental The outer package was lined with a 2mm thickness poly liner, taped closed. Each inner package was placed into a 3mm polybag with absorbent sheets (VPS-A-002) and closed by positive means. Bubble wrap was used to fill all void space, and cushion inner packages.

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 four (4) one-quart cans. Water and lead were used to simulate product and achieve test weight.

Style	Quart Round Metal Paint Type Can
MFG PN	30WS4U
Capacity	0.946 Liters
Spec Gravity	1.8
Closure	Multiple friction plug
Qty.	4
Net Wt.	1.84 kg

Supplemental The outer package was lined with a 2mm thickness poly liner, taped closed. Each inner package was placed into a 3mm polybag with adequate absorbent sheets (VPS-A-002) and closed by positive means. Bubble wrap was used to fill all 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 two (2) one gallon metal jerricans. Water and sand were used to simulate product and achieve test weight.

Style	Metal One Gallon Jerrican
MFG PN	30W122
Capacity	3.78 Liters
Spec Gravity	1.3
Closure	Screw-top lid with tape
Qty.	2
Net Wt.	5.24 kg/ea.

Supplemental The outer package was lined with a 2mm thickness poly liner, taped closed. Each inner package was placed into a 3mm polybag with adequate absorbent sheets (VPS-A-002) and closed by positive means. Bubble wrap was used to fill all 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 one (1) simulation battery.

Style	Battery
Size	8” x 8” x 10”
Qty.	1
Net Wt.	11.5 kg

Supplemental Bubble wrap was used to fill all 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 five (5) one liter plastic bottles. Water and lead shot were used to simulate product and achieve test weight.

Style	1 Liter round plastic bottles
MFG PN	S-10872
Capacity	1 Liter
Spec Gravity	1.8
Closure	Screw-top lid with tape
Qty.	5
Net Wt.	1.87 kg/ea.

Supplemental The outer package was lined with a 2mm thickness poly liner, taped closed. Each inner package was placed into a 3mm polybag with adequate absorbent sheets (VPS-A-002) and closed by positive means. Bubble wrap was used to fill all 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 two (2) simulation batteries.

Style	Battery
Size	3” x 3” x 9”
Qty.	2
Net Wt.	5.5 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 four (4) aerosol cans. Lead shot was used to achieve test weight.

Style	Aerosol Can
Size	9.5” L x 2.9” D
Qty.	4
Net Wt.	2 kg/ea.

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

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 ten (10) one-pint cans. Water and lead shot were used to simulate product and achieve test weight.

Style	Pint round metal paint type can
MFG. PN	S-15743
Capacity	0.473 Liter
Spec Gravity	1.8
Closure	Friction Fit lid
Qty.	10
Net Wt.	0.94 kg/ea.

Supplemental The outer package was lined with a 2mm thickness poly liner, taped closed. Each inner package was placed into a 3mm polybag with adequate absorbent sheets (VPS-A-002) and closed by positive means. Bubble wrap was used to fill all 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 ten (10) 16 oz. plastic bottles. Inners were placed in two rows of five cans separated with one inch of cushioning material. Water and lead shot were used to simulate product and achieve test weight.

Style	16 oz. round plastic bottle
MFG. PN	S-22899B
Capacity	16 oz.
Spec Gravity	1.8
Closure	Screw Top lid with tape
Qty.	10
Net Wt.	0.88 kg each

Supplemental The outer package was lined with a 2mm thickness poly liner, taped closed. Each inner package was placed into a 3mm polybag with absorbent sheets (VPS-A-002) and closed by positive means. Bubble wrap was used to fill all 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 six (6) simulation battery cells. Lead shot was used to achieve test weight.

Style	Battery Cell
Size	3” x 2” x 10”
Qty.	6
Net Wt.	1.9 kg each

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

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 eight (8) simulation (squib) cartridges. Lead was used to achieve test weight.

Style	Squib
Capacity	1 kg (net hazmat unknown)
Qty.	8
Net Wt.	1 kg/ea.

Supplemental Each squib is individually placed inside a corrugated box secondary package (4" x 4" x 4"). All void space within each secondary package and void space within outer package is filled with cushioning material.

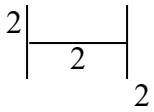
This configuration has also been tested with each squib individually placed within an anti-static, sealable bag. This bag is then wrapped in bubble wrap. All void space must be filled with cushioning material.

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING TEST RESULTS

Appendix C – Packing/Closure Instructions

1. Inspect the outside, and inside, of container for damage. If the container is undamaged, proceed to step 2. Damaged containers must not be loaded with hazardous materials.

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 poly liner 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 by positive means.

5. Place a sufficient amount of absorbent/cushioning material into the poly liner 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 poly liner (when applicable) and seal by positive means.

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

10. Ensure product, and gross package weight does not exceed what is referenced in this report.

11. Ensure that all legal requirements for shipment of this material have been met per 49 CFR.

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UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
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Testing Photos

Bottom Drop	Top Drop
	
Wall Drop	**End 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)

Stacking Load = [(SH/PH) = n – 1] x MGW
117 kg = [(120”/12”) = 10 – 1] x 13 kg