Viking Packing Specialist

1578 A 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-012**

Requested by: **Viking Packing Specialist**

Performed by: **Viking Packing Specialist**

Date: **05-20-23**

1. **Product Tested:**

Packaging Nomenclature:	Combination Packaging
Outer Package:	4G corrugated box (see Appendix A)
Dimensions:	15" x 14" x 14"
Inner Package:	See appendix B for approved inners
Maximum gross wt. (kg):	54
Viking Part No.:	VPS-F-012
Customer Part No.:	N/A

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, 178.608, and 178.516 to Packing Group II standards.

3. Tests Performed:

TEST	SPEC	INTENSITY	RESULTS
Drop	49 CFR 178.603	54 kg	PASS
Stacking	49 CFR 178.606	486 kg	PASS
Vibration	49 CFR 178.608	1 HOUR	PASS
Cobb	49 CFR 178.516	Available upon request	

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: _____ Approved By: _____

Special Projects & DG Manager
Eric Curtis

President
David Weilert

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116

Phone: (800) 788-8525 • Fax: (918) 252-5518

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

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 meters (3.9 feet) 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 bottom manufacturer's joint 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 486 kg (1,071.5 lb), equivalent to a 3 meter high stack of identical packages, continuously for 24 hours.

Containers	Actual Load	Result
#1	487.6 kg (1,075 lb)	PASS
#2	487.6 kg (1,075 lb)	PASS
#3	487.6 kg (1,075 lb)	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

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116

Phone: (800) 788-8525 • Fax: (918) 252-5518

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

4. 4G STANDARD- 49 CFR 178.516

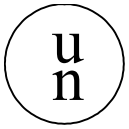
The outer fiberboard box was tested for water resistance at the paper manufacturer's facility, in accordance with ISO International Standard 535. The increase in mass as determined over a thirty (30) minute period by the Cobb method was determined to be less than or equal to (≤) 155 g/sq m as follows:

Container Outer	Water Absorption	Result
Surface	Available upon request	PASS

5. HYDROSTATIC PRESSURE REQUIREMENT- 49 CFR 173.27

Hydrostatic pressure test results for inner packages provided by Viking Packing Specialist are on file, and available upon request. It is the responsibility of the party offering the completed package for shipment to determine whether inner packages meet required specifications otherwise. This requirement affects packages shipped under this report only when liquids are contained in inner packages, and offered for transport via air.

6. Packagings tested, certified, and provided by Viking Packing Specialist bear the marking:



4G/Y54/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.

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116

Phone: (800) 788-8525 • Fax: (918) 252-5518

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING TEST RESULTS

Appendix A – Outer Package Detail

Designated Packaging Code:	4G
Dimensions:	15” x 14” x 14”
Board Combination:	42 lb. liner 23 lb. medium (double wall)
Seam:	Stitched
Bursting Strength:	275 lb. Double wall
Marked max. gross wt. (kg):	54
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

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116
Phone: (800) 788-8525 • Fax: (918) 252-5518

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.

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116
Phone: (800) 788-8525 • Fax: (918) 252-5518

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 (1) simulation battery.

Style	Battery
Size	12”x12”x12”
Material Spec.	N/A
Closure	N/A
Seal	N/A
Qty.	1
Net Wt.	50 kg

Supplemental The battery is placed within a 30”x30” x 4 mil (thickness), poly liner (P/N: VPS-B-009) along with one 19”x 17” absorbent sheet (P/N: VPS-A-001). The liner is then closed using its closure. Bubble wrap and/or Vermiculite is placed on the floor of the outer container before loading and also used to fill all void space within the outer before closure.

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116
Phone: (800) 788-8525 • Fax: (918) 252-5518

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 (2) simulation batteries.

Style	Battery
Size	12”x12”x6”
Material Spec.	N/A
Closure	N/A
Seal	N/A
Qty.	2
Net Wt.	25 kg

Supplemental The batteries are placed within a 30”x30” x 4 mil (thickness), poly liner (P/N: VPS-B-009) along with one 19”x 17” absorbent sheet (P/N: VPS-A-001). The liner is then closed using its closure. Bubble wrap and or Vermiculite is placed on the floor of the outer container before loading and also used to fill all void space within the outer before closure.

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116
Phone: (800) 788-8525 • Fax: (918) 252-5518

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 (4) simulation batteries.

Style	Battery
Size	12”x6”x6”
Material Spec.	N/A
Closure	N/A
Seal	N/A
Qty.	4
Net Wt.	12 kg

Supplemental The batteries are placed within a 30”x30” x 4 mil (thickness), poly liner (P/N: VPS-B-009) along with one 19”x 17” absorbent sheet (P/N: VPS-A-001). The liner is then closed using its closure. Bubble wrap and/or Vermiculite is placed on the floor of the outer container before loading and also used to fill all void space within the outer before closure.

Viking Packing Specialist

1578 A North 105th East Avenue • Tulsa, OK 74116

Phone: (800) 788-8525 • Fax: (918) 252-5518

UNITED NATIONS PERFORMANCE ORIENTED PACKAGING
TEST RESULTS

Appendix C – Packing/Closure Instructions – VPS-F-012

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, extending down the side at least two inches.

3. Place approximately 1.5" of bubble wrap onto the floor of the container.

4. Place the specified polyliner, or equivalent into the outer container leaving the top open for filling.

5. Place each inner package into the polyliner along with one absorbent sheet that conforms to this report, and close each liner as specified.

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

7. Fold top flaps to center of container and double tape seam as specified in step 2.

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