

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-CPB-005-23
Requested by: Viking Packing Specialist
Performed by: Viking Packing Specialist
Manufactured by: Viking Packing Specialist
Date: 07/14/2023
Retest Date: 07/13/2025

1. Product Tested:

Packaging Nomenclature: Combination Packaging
Outer Package: 4H2 (FOL single wall corrugated plastic box)
Dimensions: 20" x 16" x 16" (I.D)
20" x 16" x 15" (Cavity)
20.5" x 16.5" x 17.25" (O.D)
Inner Package: See appendix B for approved inners
Maximum gross wt. (kg): 65 kg
Viking Part No.: VPS-CPB-005

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	1.2m	PASS
Stacking	49 CFR 178.606	390 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: _____
Special Projects & DG Manager
Eric Curtis



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 1.2 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 390 kg, equivalent to a 3-meter-high stack of identical packages, continuously for 24 hours.

Containers	Actual Load	Result
#1	390 kg	PASS
#2	390 kg	PASS
#3	390 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.

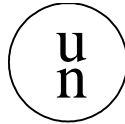
Containers	Vibration	Result
#1	1 HOUR	PASS
#2	1 HOUR	PASS
#3	1 HOUR	PASS

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



4H2/Y65/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 – Selective Testing Requirements
- Appendix D – Closure Instructions
- Appendix E – Testing Photographs

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Appendix A – Outer Package Detail

Designated Packaging Code:	4H2
Dimensions:	20.5” x 16.5” x 17.25” O.D.
Style:	FOL single wall corrugated plastic
Marked max. gross wt. (kg):	65 kg
Maximum net wt. (kg)	61.5 kg
Closure:	Two (2) – 2” nylon straps with side release buckles

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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 (36) mock battery cells.

Style	Battery
Size	3" x 1.25" x 10"
Material Spec.	N/A (solid)
Closure	N/A
Seal	N/A
Qty.	36
Net Wt.	1.7 kg each

Supplemental: 1: 20" x 16" x 1", 1.7 lb. density polyethylene foam bottom pad. Cells are placed within a 3 mil (minimum) thickness poly liner with one (minimum) 17" x 19" absorbent sheet (PN: VPS-A-002). Liner is closed with positive means. Void space is filled with suitable cushioning material.

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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) mock battery.

Style	Battery (simulated in testing)
Size	19.75" x 15.75" x 15"
Material Spec.	N/A (solid)
Closure	N/A
Seal	N/A
Qty.	1
Net Wt.	61.5 kg each

Supplemental: 1: 20" x 16" x 1", 1.7 lb. density polyethylene foam bottom pad. Battery is placed within a 3 mil (minimum) thickness poly liner with one (1) (minimum) 17" x 19" absorbent sheet (PN: VPS-A-002). Liner is closed with positive means. Void space is filled with suitable cushioning material.

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Appendix C – Selective Testing Requirements (Approval CPB-006)

49 CFR 178.601(g)(4)

Variation 4. Variations are permitted in outer packagings of a tested design-type combination packaging, without further testing, provided an equivalent level of performance is maintained, as follows:

- (i) Each external dimension (length, width, and height) is less than or equal to the corresponding dimension of the tested design-type.
- (ii) The structural design of the tested outer packaging (*i.e.*, methods of construction, materials of construction, strength characteristics of materials of construction, method of closure and material thicknesses) is maintained.
- (iii) The inner packaging is identical to the inner packagings used in the tested design type except that their size and mass may be less; and they are oriented within the outer packaging in the same manner as in the tested packaging.
- (iv) The same type or design of absorbent materials, cushioning materials, and any other components necessary to contain and protect inner packagings, as used in the tested design type, are maintained. The thickness of cushioning material between inner packagings and between inner packagings and the outside of the packaging may not be less than the thicknesses in the tested design type packaging; and
- (v) Sufficient additional cushioning material is used to take up void spaces and to prevent significant movement of the inner packagings.

An outer packaging qualifying for use in transport in accordance with all of the above conditions may also be used without testing to transport inner packagings substituted for the originally tested inner packagings in accordance with the conditions set out in Variation 1 in paragraph (g)(1) of this section.

Viking Packing Specialist certifies the packaging part number CPB-006 is manufactured to the same specifications as the package listed in this report and differs only in external dimensions and is therefore usable per this test document without further testing.

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Appendix D – Packing/Closure Instructions

1. Inspect container, and all components for damage. If the container is found to be free from damage proceed to step 2. If the container is damaged, procure a different container and inspect.
2. Disengage buckles by firmly squeezing the two side tabs and sliding apart.
3. Open both major and minor flaps on top of the box.
4. Place the article(s) into the polyliner specified in this report along with an absorbent sheet as specified, and close by positive means.
5. Place polyliner containing the battery into the outer package.
6. Fill all void space with absorbent/cushioning material.
7. Replace minor and then major flaps of the lid, ensuring the major flap containing the nylon straps is the outermost flap.
8. Reengage buckles by sliding both ends together until the side tabs latch completely.
9. Ensure gross package weight does not exceed that marked on the container.
10. Ensure that all legal requirements for shipment of this material have been met.

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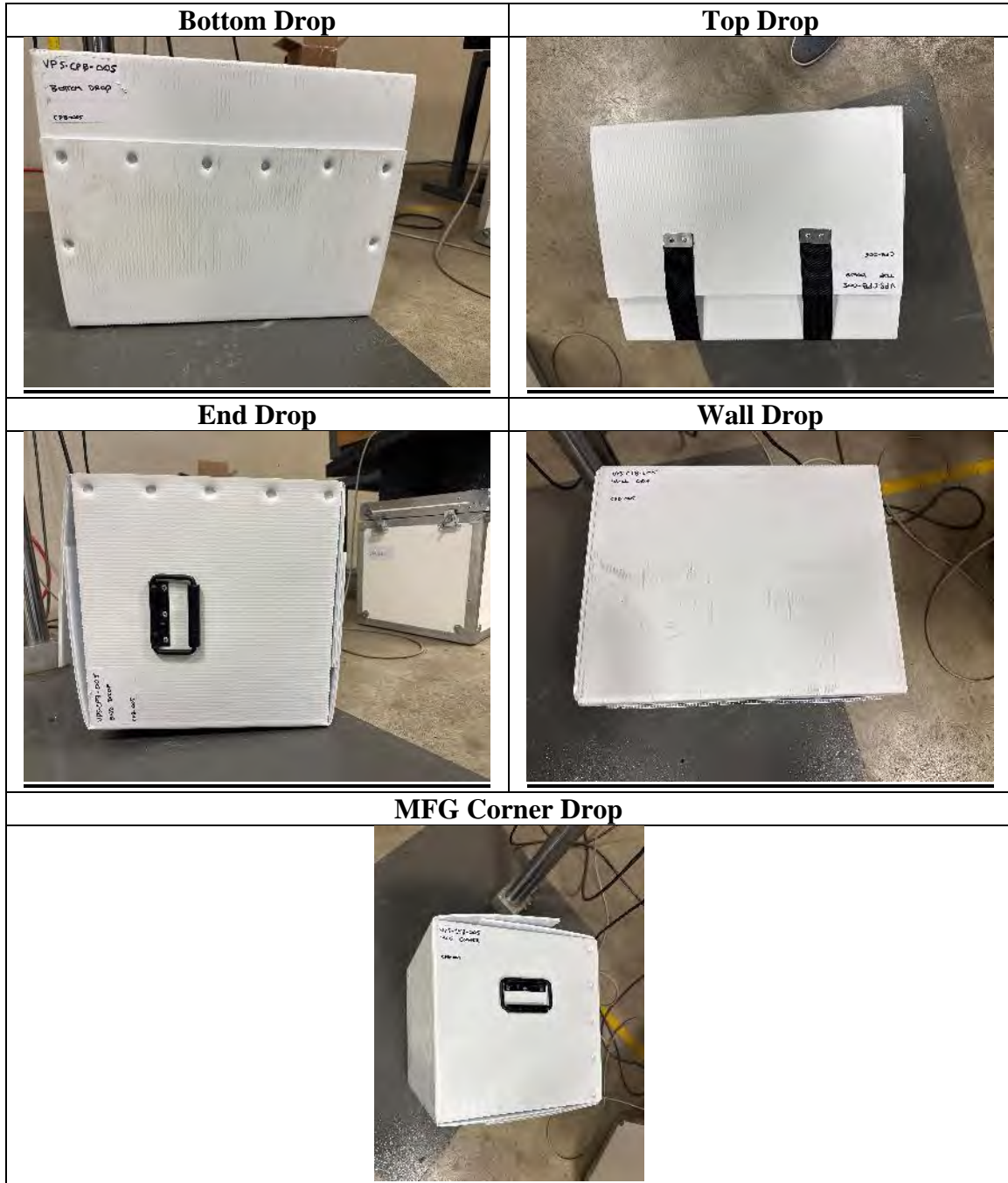
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Appendix E - Testing Photographs



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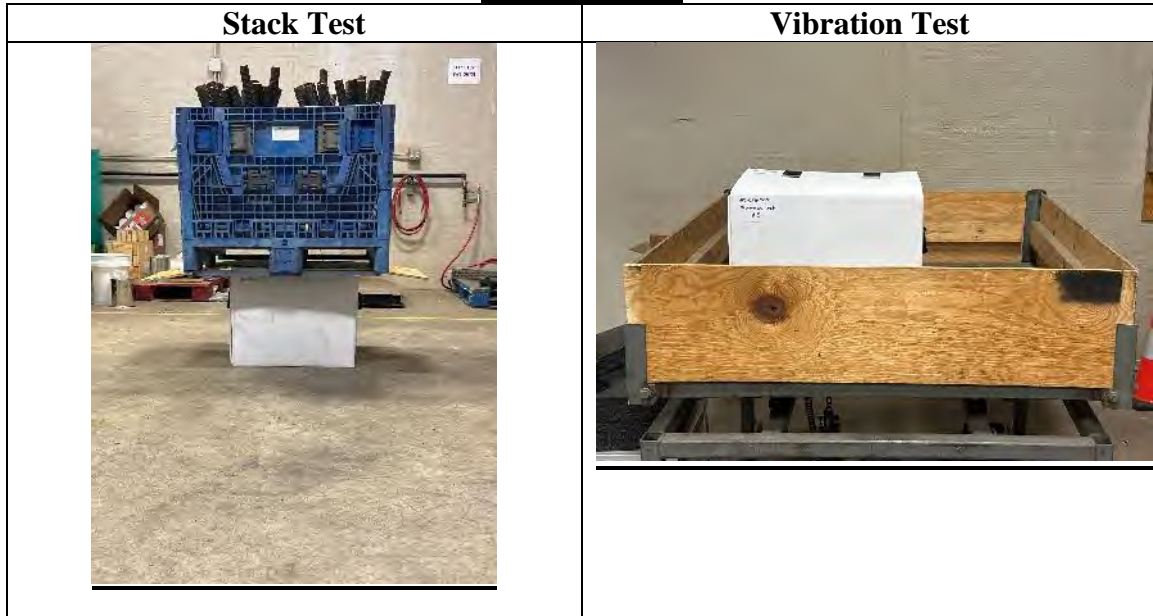
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Testing Photos



Stacking Height = **SH**

Height of Package = **PH**

Number of Packages = ***n***

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

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

390 kg = $[(120/17.25) = n - 1] \times 65$ kg