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-259E**
Requested by:	**Viking Packing Specialist**
Performed by:	**Viking Packing Specialist**
Manufactured by:	**Viking Packing Specialist**
Date:	**11/30/22**
Retest Date:	**11/30/24**

1. **Product Tested:**

Packaging Nomenclature:	Combination Packaging
Outer Package:	4G corrugated box (see Appendix A)
Dimensions:	27” x 18” x 12” I.D. 27.25” x 18.5” x 13” OUTER
Inner Package:	See appendix B for approved inners
Maximum gross wt. (kg):	24 kg
Viking Part No.:	VPS-259E
Customer Part No.:	N/A

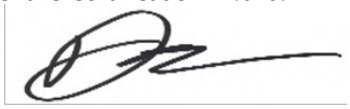
2. Object of Test:

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 I standards.

3. Tests Performed:

TEST	SPEC	INTENSITY	RESULTS
Drop	49 CFR 178.603	1.8 m	PASS
Stacking	49 CFR 178.606	222 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 **President**
Eric Curtis **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 meters (5.9 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 222 kg, equivalent to a 3-meter-high stack of identical packages, continuously for 24 hours.

Containers	Actual Load	Result
#1	222 kg	PASS
#2	222 kg	PASS
#3	222 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

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

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

4G/X24/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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Appendix A – Outer Package Detail

Designated Packaging Code:	4G
Outer Dimensions:	27.25” x 18.5” x 13”
Inner Dimensions:	27” x 18” x 12”
Board Combination:	42 lb. liner 23 lb. medium (double wall)
Seam:	Glued
Bursting Strength:	275 lb. Double wall
Marked max. gross wt. (kg):	24 kg
Maximum net wt. (kg)	22 kg
Inner Closure:	3” Paper Masking Tape. Mfg.: Sherman Williams P/N: 104118
Outer Closure:	3” hot-melt tape. Mfg.: Shurtape. Mfg. P/N: HP-200

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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, and
    - 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, and
    - 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 outer package was tested with configurations of inner package as follows. Please refer to Table 1 (attached) for particular parts allowed in this package. Refer to packing/closure instructions for supplemental packaging requirements. Steel weights were used to achieve test weight.

STYLE	MAX QTY.	Dims (inches)	NET WT. (EA)
PSU containing one oxygen generator	1	18” x 16”x 10”	22 kg

Intermediate Packaging:

Inner packages are placed within an intermediate container constructed out of 1/8” acrylic coated panel board. Container is assembled together using 3” Paper Masking Tape (Mfg.: Sherman Williams. Mfg. P/N: 104118). Inner seams are sealed using white silicone. Container lid is constructed out of double laminated 1/8” acrylic coated panel board creating a friction fit lid which is secured to container using 3” Paper Masking Tape along all seams. Container is coated with a latex fire-retardant paint, (Mfg.: Benjamin Moore Mfg. P/N: 220 White P59 01). Cavity dimensions are 15” x 13” x 9”.

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Packing/Closure Instructions – VPS-259E

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. Remove intermediate package's lid.

3. Place inner package(s) into container. Refer to Table 1 for number of inner packages allowed in each shipping container. When only one inner package is shipped within the outer container, fill all void space with bubble wrap. When shipment is made with more than one inner package. When shipment consists of:

   a. PBEs: Place inner packages into container and fill all void space with bubble wrap.

   b. Generators contained in manufacturer's individual packaging: Evenly space inner packages into container leaving as much space between inner packages as possible. Fill all void space with bubble wrap.

   c. Generators with no supplementary means of containment: Wrap each generator with 1: 24" x 10" piece of Superwool (mfg.) insulation material. Evenly space inner packages into container leaving as much space between inner packages as possible. Fill all void space with bubble wrap.

4. Replace intermediate package's lid.

5. Secure lid using 3" Paper Masking Tape, covering all seams.

6. Fold flaps of container to meet in the center. Place two strips of tape across the seam where the flaps meet, extending down sides 2" minimum.

7. Ensure gross package weight does not exceed that marked on the container.

8. Ensure that all legal requirements for shipment of this material have been met.

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Testing Photos

Bottom Drop	Top Drop
	
End Drop	**Wall Drop**
	
Mfg. Corner	
	

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Stack Weight	Vibration
	

Calculation: 120”/13” = 10-1 = 9 x 12 kg
=222 kg (490 lbs.) Test@ 501 lbs.