

**DOT/UNITED NATIONS**  
**Performance Oriented Packaging Certification**



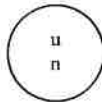
**4G DESIGN QUALIFICATION**

**8813– No Vent Stem**  
**Group II – 37.3 Kilograms**  
**FT PACK – 5 GL – 63MM CP, UN CTN**  
**Taped Bottom and Taped Top**  
**Long Flaps Folded on Outside**  
**Xpedx 50 -70 In-Lb■**  
**NOT FOR AIR SHIPMENTS**

**Test Report #: 2021-62**



**4G/Y25.9/S/\*\***  
**USA/M5105**



**4G/Y37.3/S/\*\***  
**USA /M5105**

**TESTING PERFORMED FOR:**

**PRIORITY PLASTICS, INC.**  
500 Industrial Park Rd.  
Portland, IN 47371

**TESTING PERFORMED BY:**

**Priority Plastics, Inc.**  
500 Industrial Park Rd.  
Portland, IN 47371  
**Phone:** (260) 726-7000  
**Fax:** (260) 726-8111

Certification Date: 5/17/21  
Re-Certification Date: 5/17/23


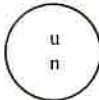
## TABLE OF CONTENTS

<b>Section I: CERTIFICATION.....</b>	<b>3</b>
<b>Section II: PACKAGING DESCRIPTION / COMPONENTS.....</b>	<b>4</b>
<b>Section III: TEST PROCEDURES AND RESULTS.....</b>	<b>10</b>
DROP TESTS.....	10
HYDROSTATIC PRESSURE TEST.....	12
STACKING TEST AND STACKING STABILITY TEST.....	13
REPETITIVE SHOCK VIBRATION TESTS.....	14
REGULATORY AND INDUSTRY STANDARD REFERENCES.....	15
<b>Section IV: MATHEMATICAL CALCULATIONS.....</b>	<b>16</b>

## SECTION I: Certification

### Design Qualification 5 Gallon Ft. Pack HDPE Packaging


Priority Plastics, Inc. certifies that the packaging referenced above has passed the standards of the DEPARTMENT OF TRANSPORTATION'S TITLE 49 CFR; Performance Oriented Packaging Standards, Section 178. It is the responsibility of the end user to determine authorization for use under these regulations. The use of other packaging methods or components other than those documented in this report may render this certification invalid.

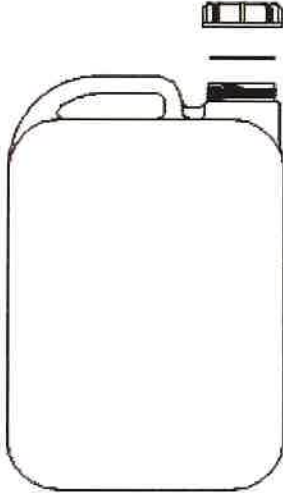

SUMMARY OF PERFORMANCE TESTS					
UN/DOT TEST	CFR REFERENCE	TEST LEVEL	TEST CONTENTS	TEST COMPLETED	TEST RESULTS
Drop	178.603	37.3Kg (1.86 SG)	Windshield Fluid/Antifreeze Coolant 50/50 Diluted (WW?A)	September 15, 2021	PASS
Stack	178.606	520.3 lbs.	Water	September 7, 2021	PASS
Hydro	173.27	100 kpa	Water	N/A	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	September 2, 2021	PASS
Cobb Test Outsourced	178.516	<155 gram per square meter	Water absorption	May 17, 2021 Ten-E	PASS
TEST REPORT NUMBERS: 2021-62					
UN MARKING: (CFR 49 – 178.503) <div>            4G/Y25.9/S/**            USA/M5105         </div> <div>            4G/Y37.3/S/**            USA /M5105         </div>					
PACKAGING IDENTIFICATION CODE:			4G (178.502)		
PERFORMANCE STANDARD:			Y (Packaging meets Packing Group II test)		
MAXIMUM PRODUCT SPECIFIC GRAVITY:			1.83 (37.3 Kg)		
INTERNAL TEST PRESSURE:			Not Applicable to combination packages		
YEAR OF MANUFACTURE:			**Insert year the packaging is manufactured		
STATE AUTHORIZING THE MARK:			USA		
PACKAGING CERTIFICATION AGENCY:			(M5105) Priority Plastics, Inc.		
PACKAGE IDENTIFICATION:			M5105		
PERIODIC RETEST DATE:			May 17, 2023		

In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

#### MANUFACTURER:

Priority Plastics, Inc.  
500 Industrial Park Road  
Portland, IN 47371

  
 Donna Noll  
 Quality Manager  
 Priority Plastics, Inc.  
 500 Industrial Park Road  
 Portland, IN 47371

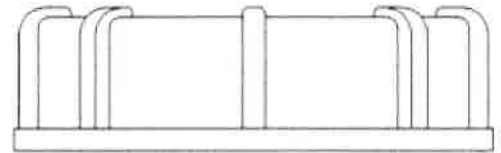
SECTION II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS	
5 GALLON FT. PACK IN A BOX	
  	
	Certification Type: Design Qualification
	Packaging Code Designation: 4G
	Packing Group: II
	Specific Gravity: 1.84
	Hydrostatic Pressure: Not Applicable to combination packages
	TEST SAMPLE PREPARATION (Refer to Section IV)
	Overall Package Tare Weight: 1.552Kg
	Fill Capacity (98% Overflow):
	<ul style="list-style-type: none"> <li>Windshield Washer/Antifreeze: 18.404 Kg</li> <li>Water 19.012 Kg</li> </ul>
	Package Test Weight:
	<ul style="list-style-type: none"> <li>WW/A: 19.956 Kg</li> <li>Water 20.564 Kg</li> </ul>
	Calculated Package Gross Mass: 37.3 Kg (82.2 Lbs.)
	CLOSING METHODS
	Application Torque for 63mm Cap: 50 - 70 In-Lbs.
	Equipment for Cap :Torque Wrench GP-052 & V-GP-163-A
	Box Taped: 3" Clear Bottom taped 5-6 inches down on each side. Top taped 9-10 inches down on each side with the half flap folded in and the full flaps folded on top.


**COMPONENT INFORMATION**

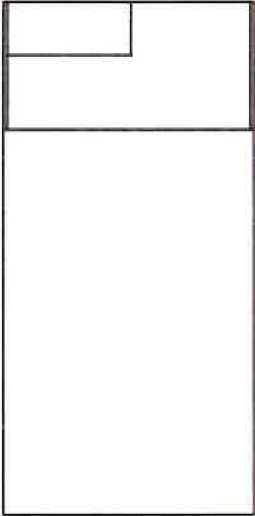




**CLOSURE (8728-201-060)**

**Manufacturer: Miami Valley Plastics, Eldorado, OH**

<b>Description:</b> 63MM Cap Polypropylene W/ 3/4" NPT and a Sure Seal 222 Gasket	
<b>Priority Item Number:</b>	8728-201-060
<b>Tare Weight:</b>	25.25 Grams
<b>Closure Overall Dimensions:</b>	
• <b>Height</b>	0.867"
• <b>Diameter</b>	2.887"
<b>Finish Dimensions:</b>	
• <b>T</b>	2.437"
• <b>E</b>	2.309"
• <b>Thread Pitch</b>	6 Threads per inch
<b>Markings ( QC Audit):</b>	No Markings, 8 Ribs around the outside.
<b>Liner/Gasket</b>	Sure Seal 222 Slick on both sides.
<b>Identification:</b>	None
<b>Wall Thickness:</b>	0.545"
<b>Height Thickness:</b>	0.073"
<b>Diameter:</b>	2.312"



5 Gallon Ft. Pack		DRAWING	
<b>Manufacturer:</b> Priority Plastics, Inc., 500 Industrial Park Road, Portland, IN			
<b>Description:</b>	5 Gallon Ft. Pack		
<b>Material / Pigment:</b> High Density Polyethylene			
<b>Method of Manufacturer:</b> Blow Molded			
<b>Tare Weight:</b>	0.900 Kg		
<b>Capacity:</b>			
• <b>Rated:</b>	5 Gallon		
• <b>Overflow:</b> 19.400 Kg (5.12 Gal)			
<b>Overall Dimensions:</b>			
• <b>Height:</b>	14.790" (Bottle)		
• <b>Length:</b>	10.105"		
• <b>Width:</b>	9.938"		
<b>Finish Dimensions:</b>			
• <b>70mm T</b>	2.406"		
• <b>70mm E</b>	2.288"		
<b>Wall Thickness:</b>	Body	Top Head	Btm Head
• <b>Minimum:</b>	0.039"	0.047"	0.035"
• <b>Material:</b> High Density Polyethylene			
<b>Markings (QC Audit)</b>	2 HDPE Recycling Symbol, Month / Year Clock, 3		

UN CARTON,		
Manufacturer: Temple – Inland, Marion, OH		
Description:	Mottled White	Drawing
Board:	350# BC Kraft	
Overall Height Closed	16.120"	
• Length Closed	10.473"	
• Width Closed	10.582"	
Markings (QC Audit)	<p>↑↑</p> <p><b>5 U.S. GALS.</b></p> <div>  <p>4G/Y25.9/S/21 USA/M5105</p> </div> <div>  <p>4G/Y37.3/S/21 USA/M5105</p> </div>  	



**COBB TEST RESULTS—OUTSOURCED**  
**DONE BY TEN-E PACKAGING SERVICES, INC., NEWPORT, MN**




Test Report # 21-MN10098  
Cobb Water Absorption  
May 17, 2021  
Page 2 of 3

**COBB WATER ABSORPTION TEST PROCEDURE AND RESULTS**

TEST INFORMATION	
<b>SAMPLE I.D.:</b>	Corrugated Shipper - 9.87" x 9.87" x 15" PRT UN (6244-000);
<b>TEST DATE:</b>	May 17, 2021
<b>SAMPLE SIZE:</b>	5' x 5' (Minimum)
<b>PRE-CONDITIONING &amp; DURATION:</b>	104°F / 10-35% RH Chamber #201 / 12 Hours (Minimum)
<b>CONDITIONING &amp; DURATION:</b>	73°F / 50% RH Chamber #215 / 4 Hours (Minimum)
<b>WATER APPLIED:</b>	100 mL / Sample
<b>TEST DURATION:</b>	30 Minutes / Sample
<b>TEST CRITERIA:</b>	An increase in mass greater than 155 g/m <sup>2</sup> over the 30 minute duration represents an unacceptable level of water resistance. (§178.516)
<b>TEST EQUIPMENT:</b>	Precisa 100A-300M Analytical Balance #108 Vollrath Environmental Chamber #201 Colltech Environmental Chamber #215 Gurley Cobb Water Absorption Fixtures #120
<b>TEST STANDARD:</b>	Department of Transportation's Title 49 CFR, Parts 100-199; §178.516 ISO 535 - Paper and Board - Determination of Water Absorption - Cobb Method ISO 187 - Paper, Board and Pulps - Standard Atmosphere for Conditioning and Testing and Procedure for Monitoring the Atmosphere and Conditioning of Samples

**COBB WATER ABSORPTION TEST RESULTS**

REPRESENTATIVE SET-UP PHOTO	Sample #	Water Absorbed
	1	134.9 g/m <sup>2</sup>
	2	133.0 g/m <sup>2</sup>
	3	132.8 g/m <sup>2</sup>
	4	130.3 g/m <sup>2</sup>
	5	127.4 g/m <sup>2</sup>
	<b>AVERAGE:</b>	<b>131.7 g/m<sup>2</sup></b>
	<b>RESULT</b>	<b>PASS</b>



**BASIS WEIGHT TEST RESULTS—OUTSOURCED**  
**DONE BY TEN-E PACKAGING SERVICES, INC., NEWPORT, MN**



TEN-E Packaging Services, Inc.

Test Report # 21-MN10098  
Basis Weight  
May 17, 2021  
Page 1 of 3

**BASIS WEIGHT TEST PROCEDURE AND RESULTS**

**TEST INFORMATION**

<b>SAMPLE I.D.:</b>	Corrugated Shipper - 9.87" x 9.87" x 15" PRT UN (6244-000)
<b>TEST DATE:</b>	May 17, 2021
<b>PRE-CONDITIONING &amp; DURATION:</b>	104°F / 10-35% RH Chamber #201 / 12 Hours (Minimum)
<b>CONDITIONING &amp; DURATION:</b>	73°F / 50% RH Chamber #215 / 4 Hours (Minimum)
<b>TEST SPECIMEN AREA:</b>	60 in. <sup>2</sup>
<b>TEST EQUIPMENT:</b>	Precisa 100A-300M Analytical Balance #108 Vollrath Environmental Chamber #201 Colltech Environmental Chamber #215
<b>TEST STANDARD:</b>	ISO 3039 - Corrugated Fiberboard - Determination of the Grammage of the Component Papers After Separation

**BASIS WEIGHT DETERMINATION RESULTS**

Liner & Medium Location	Basis Weight (Lbs/MSP)
Liner (Outside)	42.0
Medium (B Flute)	27.7
Liner	42.5
Medium (C Flute)	25.8
Liner (Inner)	42.1

**DISCLAIMER OF WARRANTIES**

TEN-E PACKAGING SERVICES, INC. certifies that the previously described testing services have been performed in accordance with standard good laboratory practices and the guidelines set forth in ISO 3039. The results included within this test report relate only to the items tested. **ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE, FIT FOR A PARTICULAR PURPOSE OR IN COMPLIANCE WITH ANY FEDERAL OR STATE REGULATIONS, ARE DISCLAIMED.** In no event shall TEN-E PACKAGING SERVICES, INC. Liability exceed the total amount paid by Priority Plastics for services rendered.

In the event of future changes to the referenced test procedures, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging we have tested remains in compliance with those standards.

Manufacturer:  
Priority Plastics  
500 Industrial Park Road  
Portland, IN 47371

  
Peter Skamph  
Packaging Engineer  
TEN-E Packaging Services, Inc.  
1850 County Road 74  
Newport, MN 55355



Test Report # 21-MN10098  
Cobb Water Absorption  
May 17, 2021  
Page 3 of 3

#### DISCLAIMER OF WARRANTIES

TEN-E PACKAGING SERVICES, INC. certifies that the previously described testing services have been performed in accordance with standard good laboratory practices and the guidelines set forth in ISO 535. The results included within this test report relate only to the items tested. **ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE, FIT FOR A PARTICULAR PURPOSE OR IN COMPLIANCE WITH ANY FEDERAL OR STATE REGULATIONS, ARE DISCLAIMED.** In no event shall TEN-E PACKAGING SERVICES, INC. Liability exceed the total amount paid by Priority Plastics for services rendered.

In the event of future changes to the referenced test procedures, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging we have tested remains in compliance with those standards.

**Manufacturer:**  
Priority Plastics  
500 Industrial Park Road  
Portland, IN 47371


  
Peter Barretto  
Packaging Engineer  
TEN-E Packaging Services, Inc.  
1885 County Road 74  
Newport, MN 56068

### SECTION III: TEST PROCEDURES AND RESULTS


#### DROP TESTS

TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p><b>TEST CONTENTS:</b> Windshield Washer/Antifreeze (0.972SG)</p> <p><b>SAMPLE PREPARATION:</b> REFER TO Section II</p> <p><b>CONDITIONING:</b> -18°C (0°F)</p> <p><b>TEST CONTENTS TEMP.:</b> -18.7°C (-1.66°F)</p> <p><b>DROP HEIGHT:</b> 1.85 Meters (73") (Refer to Section IV)</p> <p><b>TEST EQUIPMENT:</b> L.A.B. Accu drop</p>	<ul style="list-style-type: none"> <li>For packaging containing liquid, each packaging does not leak when equilibrium has been reached between the internal and external pressures.</li> <li>For removable head drums for solids, the entire contents are retained by and inner packaging (e.g., a plastic bag) even if the closure on the top head of the drum is no longer sift proof.</li> <li>Any discharge from a closure is slight and ceases immediately after impact with no further leakage. (§ 178.603)</li> </ul>


#### FLAT BOTTOM DROP TEST SET-UP AND RESULTS

	Sample #	Results	Comments / Observations
	7	PASS	No leakage. No damage.


#### FLAT ON TOP DROP TEST SET-UP AND RESULTS

	Sample #	Results	Comments / Observations
	8	PASS	No leakage. No damage.


**FLAT ON VERTICAL(LONG) SIDE DROP TEST SET-UP AND RESULTS**

	Sample #	Results	Comments / Observations
	9	PASS	No leakage. No damage.


**FLAT ON HORIZONTAL (SHORT) SIDE DROP TEST SET-UP AND RESULTS**

	Sample #	Results	Comments / Observations
	10	PASS	No leakage. No damage.

**TOP CORNER DROP TEST SET-UP AND RESULTS**

	Sample #	Results	Comments / Observations
	11	PASS	No leakage. No damage.

**BOTTOM CORNER DROP TEST SET-UP AND RESULTS**

	Sample #	Results	Comments / Observations
	12	PASS	No leakage. No damage.

**LEAKPROOFNESS TESTS**

**NOT APPLICABLE TO COMBINATION PACKAGES.**


**HYDROSTATIC PRESSURE TEST**

**NOT APPLICABLE TO COMBINATION PACKAGES. NOT FOR AIR**


## STACKING TEST RESULTS

TEST INFORMATION		CRITERIA FOR PASSING THE TEST
<b>TEST CONTENTS:</b>	Water	<ul style="list-style-type: none"> <li>After application of the required load, there can be no buckling of the sidewalls sufficient to cause damage to its expected contents.</li> <li>In no case may the maximum deflection exceed one inch. (§ 178.606)</li> </ul>
<b>SAMPLE PREPARATION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	73°F, 50% RH	
<b>TEST LOAD APPLIED:</b>	281.372 Kg (620.32 Lbs.)	
<b>TEST EQUIPMENT:</b>	Stack Room and Weights	

## STACKING TEST SET-UP AND RESULTS

	Sample #	Maximum Deflection After 24 Hours	Results
	4	1/16"	PASS
	5	1/8"	PASS
	6	1/16"	PASS
Comments / Observations: Following the 24 hour stack test there was no leakage from the test samples and no damage likely to affect the performance of the package.			

## STACKING STABILITY TEST SET-UP AND RESULTS


	Results	Criteria For Passing the Test
	PASS	<ul style="list-style-type: none"> <li>In guided load tests, stacking stability must be assessed after test completion.</li> <li>Two filled packages of the same type must be placed on the test sample.</li> <li>The stacked packages must maintain their position for one hour. (178.606)</li> </ul>
	For stack stability Priority Plastics places the filled packages one on top of the other. The bottom sample is rotated to the top until all three samples have been subjected to stacking stability for one hour each.	



## REPETITIVE SHOCK VIBRATION TESTS

TEST INFORMATION		CRITERIA FOR PASSING THE TEST
<b>TEST CONTENTS:</b>	Water	<p>Immediately following the period of vibration, each package must be removed from the platform, turned on its side, and observed for any evidence of leakage.</p> <ul style="list-style-type: none"> <li>A package passes the vibration test if there is no rupture or leakage from any of the packages.</li> <li>No test sample should show any deterioration which could adversely affect transportation safety or any distortion that is liable to reduce packaging strength.</li> </ul> <p style="text-align: right;">(§ 178.608)</p>
<b>SAMPLE PREPARATION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	Ambient	
<b>TABLE DISPLACEMENT:</b>	1"	
<b>TEST FREQUENCY:</b>	4.0 Hz	
<b>TEST DURATION:</b>	1 Hour	
<b>TEST EQUIPMENT:</b>	Vertical motion using Vibration Transportation Simulator	

## VIBRATION TEST SET-UP & RESULTS

	Sample #	Results	Comments / Observations
	1	PASS	No leakage or damage.
	2	PASS	
	3	PASS	



## REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES	
TEST	49 CFR 2020 EDITION
Drop:	178.603
Leakproofness:	178.604
Hydrostatic Pressure:	173.27©(2)
Stack:	178.606
Vibration:	178.608

1. United States Department of Transportation Code of Federal Regulations (CFR) Title 49, Transportation, Parts 100-185

## SECTION IV: MATEMATICAL CALCULATIONS

### INFORMATION USED FOR CALCULATIONS

Overall Packaged Tare Weight (PTW):	1.552Kg	<b>WW/A SG</b>
Overflow Capacity (OFC) :		<b>SG: 0.72</b>
Windshield Washer/Antifreeze	18.780 Kg	
Water	19.400 Kg	<b>5.12 Gallons (GAL)</b>
Packing Group:	II	
Product Specific Gravity (PSG):	1.83	
Packing Group Multiplication Factor (MF):	1.00	
Nesting Height of one Package (NH):	16.120 Inches	

### 98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OC</u>	x	<u>98%</u>		
18.780	x	98% =	<b>18.404 Kg</b>	<b>WW/A</b>
19.400	x	98% =	<b>19.012 Kg</b>	<b>Water</b>

### PACKAGED TEST WEIGHT

Overall Pkg Tare Weight (PTW) + 98% Overflow Capacity (OFC)

<u>PTW</u>	+	<u>98% OFC =</u>		
1.552	+	18.404	<b>19.956 Kg</b>	<b>43.995 Lbs. WW/A</b>
1.552	+	19.012	<b>20.564 Kg</b>	<b>45.336 Lbs. Water</b>

### CALCULATED PACKAGE GROSS MASS (CPGM)








Overall Pkg Tare Weight )PTW + (Product SG(PSG) x 98%Overflow (OFC)

<u>PTW</u>	+	<u>(PSG</u>	x	<u>98%OFC)</u>	
1.552	+	1.88	x	19.012	
		<b>37.29 (37.3) Kg</b>		<b>82.2 Lbs.</b>	

DROP HEIGHT CALCULATION (FOR SPECIFIC GRAVITIES EXCEEDING 1.2)				
Product Specific Gravity (PSG) x Packing Group Multiplication Factor (MF)				
<u>PSG</u>	x	<u>MF</u>		<u>Packing Group: II</u>
1.88	x	1.00	<u>Required Drop Height</u>	<u>Actual Drop Height</u>
		1.88 Meter	74.0 Inches	75.0 Inches

STACKING TEST MINIMUM LOAD CALCULATIONS				
Number of Packages in a 3m High Stack (118/Nesting Height (NH))-1				
118.11/Nesting Height of one Pkg (NH) - 1				
<u>(118.11</u>	/	<u>NH)</u>	-	<u>1</u>
118.11	/	16.120	-	1
			=	<u>n</u>
				6.327
Stack Test Load Calculation (Individual Package)				
Calculated Pkg Gross Mass (CPGM) x # of Pkg in a 3m High Stack (#3mHS)				
<u>CPGM</u>	x	<u>#3Mhs</u>		
37.3	x	6.327		
		235.997 Kg		520.2837 Lbs.

8813 ASSEMBLY – Full flap closed on top  
Assembly/Closing Instructions

<p>#1</p> <div data-bbox="537 1465 586 1591"> <p>8728-201-060 Cap (1) required</p> </div> <div data-bbox="646 1541 781 1646">  </div> <div data-bbox="651 1688 727 1780"> <p>8813 Container (1) Required</p> </div> <p>Apply cap to bottle with a torque of 60 – 70 in-lbs.</p>		<p>#2</p> <div data-bbox="597 1205 792 1352">  </div> <p>Carton – 8244-000</p>	<p>#5</p> <div data-bbox="954 1556 1149 1688">  </div> <p>With 'UN' Number facing forward insert one container that has been prepared according to step one, place the handle on the left side as shown.</p>
<p>#3</p> <div data-bbox="591 848 786 1003">  </div> <p>With the 'UN' Number facing forward and the carton upside down, fold the front and back flaps down.</p>	<p>#6</p> <div data-bbox="954 1205 1149 1360">  </div> <p>With the 'UN' Number facing forward fold the left and right flaps down.</p>	<p>#7</p> <div data-bbox="971 869 1166 1031">  </div> <p>Fold the 2 remaining flaps over the other 2 flaps. Apply 2" clear self- adhesive tape 5-10 inches down on both sides</p>	
<p>#4</p> <div data-bbox="591 562 786 716">  </div> <p>Fold the 2 remaining flaps (left &amp; right ones) over the other 2 flaps. Apply 3" clear self-adhesive tape 5-8 inches down on both sides</p>			