

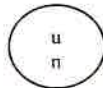
DOT/UNITED NATIONS
Performance Oriented Packaging Certification



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
Half Flap Folded on Outside
Xpedx 50 -70 In-Lb
NOT FOR AIR SHIPMENTS

Test Report #: 2021-63



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

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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.

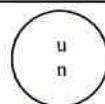
SUMMARY OF PERFORMANCE TESTS

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 14,2021	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

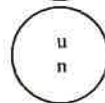
TEST REPORT NUMBERS:

2021-63

UN MARKING:
(CFR 49 – 178.503)



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



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

PACKAGING IDENTIFICATION CODE:

4G (178.502)

PERFORMANCE STANDARD:

Y (Packaging meets Packing Group II test)

MAXIMUM PRODUCT SPECIFIC GRAVITY:

1.84 (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

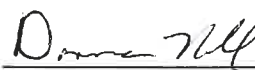
PERIODIC RETEST DATE:

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:

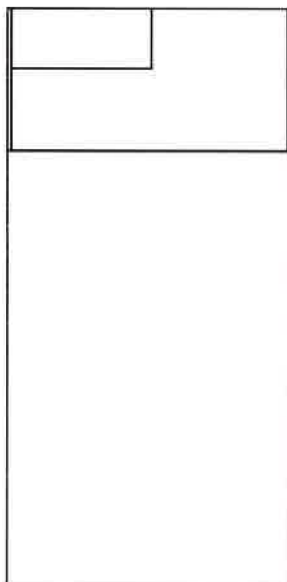
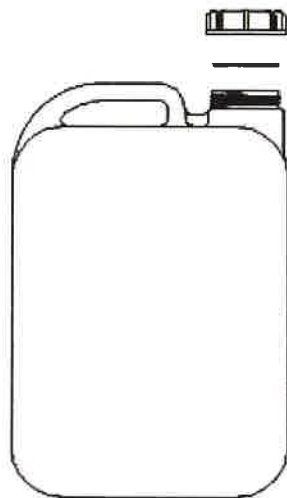
Priority Plastics, Inc.
500 Industrial Park Road
Portland, IN 47371



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: 1.576Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze: 18.404 Kg
- Water 19.012 Kg

Package Test Weight:

- WW/A: 19.980 Kg
- Water 20588 Kg

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 3 ½"-4 ½" inches down on each side.
Top taped half way across on the half flap
3 ½" - 4 ½" inches down.

COMPONENT INFORMATION

CLOSURE (8728-201-060)

Manufacturer: Miami Valley Plastics, Eldorado, OH

Description: 63MM Cap Polypropylene W/ 3/4" NPT and a Sure Seal 222 Gasket

Priority Item Number: 8728-201-060

Tare Weight: 25.39 Grams

Closure Overall Dimensions:

• **Height** 0.864"

• **Diameter** 2.886"

Finish Dimensions:

• **T** 2.434"

• **E** 2.319"

• **Thread Pitch** 6 Threads per inch

Markings (QC Audit): No Markings, 8 Ribs around the outside.

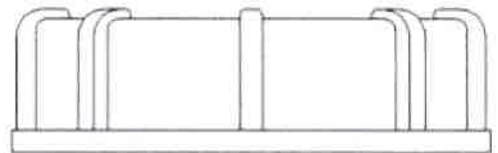
Liner/Gasket Sure Seal 222 Slick on both sides.

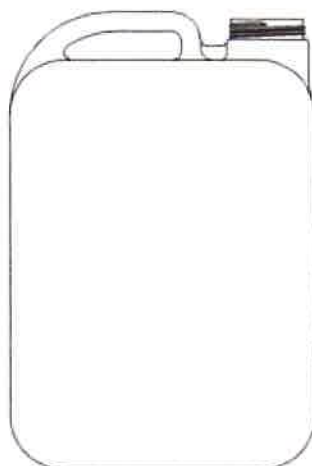
Identification: None

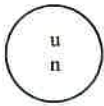
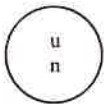


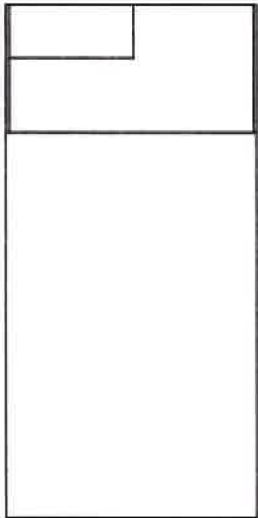
Wall Thickness: 0.550"

Height Thickness: 0.075"

Diameter: 2.321"



4 Liter Series E		DRAWING	
Manufacturer: Priority Plastics, Inc., 500 Industrial Park Road, Portland, IN			
Description:	5 Gallon Ft. Pack		
Material / Pigment: High Density Polyethylene			
Method of Manufacturer: Blow Molded			
Tare Weight:	.907 Kg		
Capacity:			
• Rated:	5 Gallon		
• Overflow: 19.400 Kg (5.12 Gal)			
Overall Dimensions:			
• Height:	14.776”(Bottle)		
• Length:	10.016”		
• Width:	9.890”		
Finish Dimensions:			
• 70mm T	2.406”		
• 70mm E	2.285”		
Wall Thickness:	Body	Top Head	Btm Head
• Minimum:	0.048”	0.066”	0.035”
• Material: High Density Polyethylene			
Markings (QC Audit)	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	16.000"	
• Length Closed	10.453"	
• Width Closed	10.510"	
Markings (QC Audit)	<p>↑↑</p> <p>5 U.S. GALS.</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	
SAMPLE I.D.:	Corrugated Shipper - 9.87" x 9.87" x 15" PRT UN (E244-000)
TEST DATE:	May 17, 2021
SAMPLE SIZE:	5" x 5" (Minimum)
PRE-CONDITIONING & DURATION:	104°F / 10-35% RH Chamber #201 / 12 Hours (Minimum)
CONDITIONING & DURATION:	73°F / 50% RH Chamber #215 / 4 Hours (Minimum)
WATER APPLIED:	100 mL / Sample
TEST DURATION:	30 Minutes / Sample
TEST CRITERIA:	An increase in mass greater than 155 g/m ² over the 30 minute duration represents an unacceptable level of water resistance. (§178.516)
TEST EQUIPMENT:	Precisa 100A-300M Analytical Balance #108 Vollrath Environmental Chamber #201 Cultech Environmental Chamber #215 Gurley Cobb Water Absorption Fixtures #120
TEST STANDARD:	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 ²
	2	133.0 g/m ²
	3	132.8 g/m ²
	4	130.3 g/m ²
	5	127.4 g/m ²
	AVERAGE:	131.7 g/m²
	RESULT	PASS

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



Test Report # 21-MN10096
Basis Weight
May 17, 2021
Page 1 of 3

BASIS WEIGHT TEST PROCEDURE AND RESULTS

TEST INFORMATION	
SAMPLE I.D.:	Corrugated Shipper - 9.87" x 9.87" x 15" PRT UN (S244-000)
TEST DATE:	May 17, 2021
PRE-CONDITIONING & DURATION:	104°F / 10-35% RH Chamber #201 / 12 Hours (Minimum)
CONDITIONING & DURATION:	73°F / 50% RH Chamber #215 / 4 Hours (Minimum)
TEST SPECIMEN AREA:	80 in. ²
TEST EQUIPMENT:	Precisa 100A-300M Analytical Balance #108 Vollrath Environmental Chamber #201 Colltech Environmental Chamber #215
TEST STANDARD:	ISO 3039 - Corrugated Fiberboard – Determination of the Grammage of the Component Papers After Separation


BASIS WEIGHT DETERMINATION RESULTS	
Liner & Medium Location	Basis Weight (Lbs/MSF)
Liner (Outside)	42.0
Medium (B Flute)	77.7
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 Starnoff
Managing Engineer
TEN-E Packaging Services, Inc.
906 County Road 74
Newport, MN 55055



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.

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



Peter Sarrillo
Packaging Engineer
TEN-E Packaging Services, Inc.
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Newport, NH 06062

SECTION III: TEST PROCEDURES AND RESULTS


DROP TESTS

TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Windshield Washer/Antifreeze (0.972SG)</p> <p>SAMPLE PREPARATION: REFER TO Section II</p> <p>CONDITIONING: -18°C (0°F)</p> <p>TEST CONTENTS TEMP.: -18.46°C (-1.228°F)</p> <p>DROP HEIGHT: 1.88 Meters (74") Dropped @ 75" (Refer to Section IV)</p> <p>TEST EQUIPMENT: L.A.B. Accu drop</p>	<ul style="list-style-type: none"> For packaging containing liquid, each packaging does not leak when equilibrium has been reached between the internal and external pressures. 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. Any discharge from a closure is slight and ceases immediately after impact with no further leakage. (§ 178.603)


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
TEST CONTENTS:	Water	<ul style="list-style-type: none"> After application of the required load, there can be no buckling of the sidewalls sufficient to cause damage to its expected contents. In no case may the maximum deflection exceed one inch. (§ 178.606)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	73°F, 50% RH	
TEST LOAD APPLIED:	279.1498 Kg (615.42 Lbs.)	
TEST EQUIPMENT:	Stack Room and Weights	

STACKING TEST SET-UP AND RESULTS



Sample #	Maximum Deflection After 24 Hours	Results
4	1/8"	PASS
5	1/8"	PASS
6	1/8"	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"> In guided load tests, stacking stability must be assessed after test completion. Two filled packages of the same type must be placed on the test sample. The stacked packages must maintain their position for one hour. (178.606)

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
TEST CONTENTS:	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"> A package passes the vibration test if there is no rupture or leakage from any of the packages. No test sample should show any deterioration which could adversely affect transportation safety or any distortion that is liable to reduce packaging strength. <p>(§ 178.608)</p>
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
TABLE DISPLACEMENT:	1"	
TEST FREQUENCY:	4.0 Hz	
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	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):	1.576Kg	<u>WW/A SG</u>
Overflow Capacity (OFC) :		SG: 0.972
Windshield Washer/Antifreeze	18.780 Kg	
Water	19.400 Kg	5.12 Gallons (GAL)
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% =	18.404 Kg	WW/A
19.400	x	98% =	19.012 Kg	Water

PACKAGED TEST WEIGHT

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

<u>PTW</u>	+	<u>98% OFC =</u>		
1.576	+	18.404	19.980 Kg	44.048 Lbs. WW/A
1.576	+	19.012	20.588 Kg	45.389 Lbs. Water

CALCULATED PACKAGE GROSS MASS (CPGM)

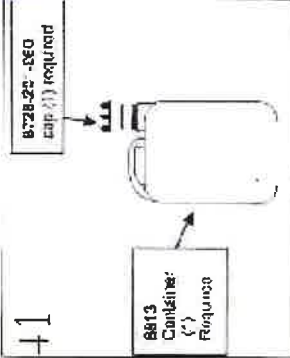
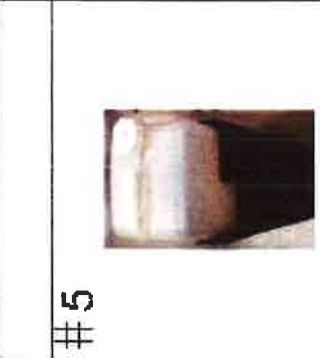
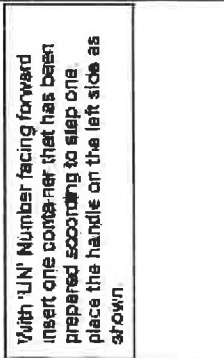
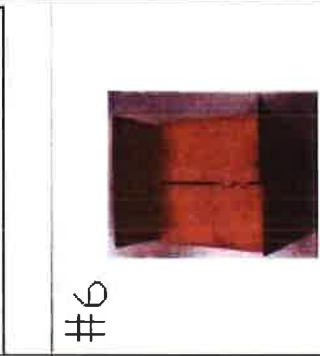



Overall Pkg Tare Weight)PTW + (Product SG(PSG) x 98%Overflow (OFC)

<u>PTW</u>	+	<u>(PSG</u>	x	<u>98%OFC)</u>	
1.576	+	1.88	x	19.012	
		37.3 Kg		82.2 Lbs.	

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	/	16.12	-	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 – Half flap closed on top
Assembly/Closing Instructions

<p>#1</p>  <p>8813 Container (") Required</p> <p>6728-20 -XEO Cap (") required</p> <p>Apply cap to bottle with a torque of 50 – 70 in-lbs.</p>		<p>#2</p>  <p>Carton – 6244-000</p>	<p>#5</p>  <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>#6</p>  <p>With the 'UN' Number facing forward fold the left and right flaps down.</p>	
<p>#3</p>  <p>With the 'UN' Number facing forward and the carton upside down, fold the front and back flaps down.</p>		<p>#7</p>  <p>Fold the 2 remaining flaps over the other 2 flaps. Apply 3" clear self-adhesive tape 9-12 inches down</p>	
<p>#4</p>  <p>Fold the 2 remaining flaps (left & right ones) over the other 2 flaps. Apply 3" clear self-adhesive tape 5-6 inches down on both sides</p>			