DOT/UNITED NATIONS
Performance Oriented Packaging Certification

PriorityPlastics

3H1 DESIGN

7947 2.5 Gallon Rectangle 63mm
8728-204-060
NoVent- Group II
HDPE

Test Report #: 2022-06

u
n

3H1/Y1.6/150/**
USA /M5105/1.1MM
****Insert year the packaging is manufactured**

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: January 18, 2022
Re-Certification Date: January 18, 2023

TABLE OF CONTENTS

SECTION I: Certification

Periodic Retest
2.5 Gallon Rectangle HDPE Packaging (HDPE Resin)

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	1.6 m	Windshield Fluid/Antifreeze Coolant 50/50 Diluted (WW?A)	January, 18, 2022	PASS
Leak proof ness	178.604	20 kPa – 5 Min. 3 PSI	Empty	January 5, 2022	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	January 5, 2022	PASS
Stacking/ Dynamic Compression	178.606	534.2 lbs	Water	January 18, 2022	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	January 5, 2022	PASS

TEST REPORT NUMBERS:	
UN MARKING: (CFR 49 – 178.503)	u n 3H1/Y1.6/150/** USA /M5105/1.1MM
PACKAGING IDENTIFICATION CODE:	3H1 (178.509)
PERFORMANCE STANDARD:	Y (Packaging meets Packing Group II test)
MAXIMUM PRODUCT SPECIFIC GRAVITY:	1.6
INTERNAL TEST PRESSURE:	150 kPa
YEAR OF MANUFACTURE:	**Insert year the packaging is manufactured
STATE AUTHORIZING THE MARK:	USA
PACKAGING CERTIFICATION AGENCY:	(M5105) Priority Plastics, Inc.
REUSABLE IDENTIFICATION:	1.1MM
PACKAGE IDENTIFICATION:	M5105 (Portland), M6167 (Iowa)
PERIODIC RETEST DATE	

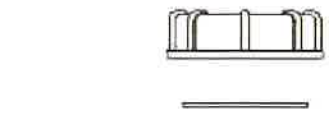
In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

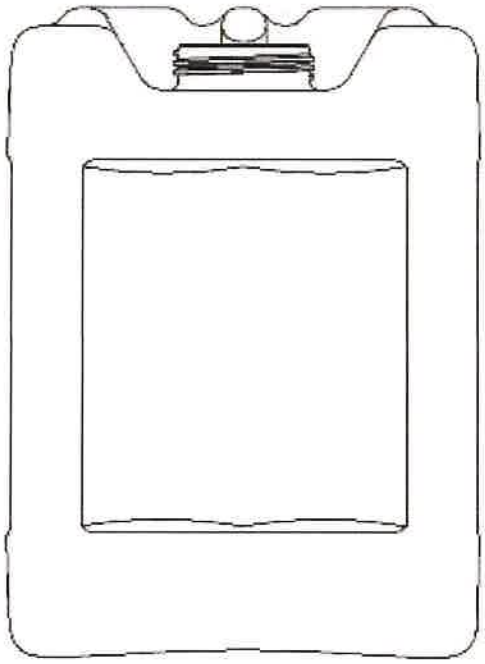
MANUFACTURER:
Priority Plastics, Inc.
500 Industrial Park Road
Portland, IN 47371

Judy Wendel
Quality Manager Assistant
Priority Plastics, Inc.
500 Industrial Park Rd
Portland, IN 47371

SECTION II: PACKAGING DESCRIPTION / COMPONENTS

2.5 Gallon Rectangle, No Vent, HDPE Packaging





Certification Type:	Periodic Retest
Packaging Code Designation:	3H1
Packing Group:	II
Specific Gravity:	1.6
Hydrostatic Pressure:	150 kPa

TEST SAMPLE PREPARATION
(Refer to Section IV)

Overall Package Tare Weight: 1.059 Kg

Fill Capacity (98% Overflow):
- WW/A 9.555 Kg
- Water 10.486 Kg

Package Test Weight:
- WW/A: 9.75 Kg
- Water 10.100Kg

Calculated Package Gross Mass: 16.923 Kg (37.308 Lbs.)

CLOSING METHODS

Application Torque for 63mm Cap: 150- 160 In-Lbs.

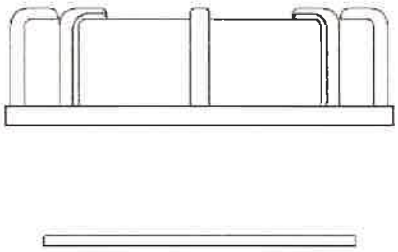
Equipment for 63mm Cap: GP-052 & V-GP-046-C

COMPONENT INFORMATION

CLOSURE (8728-204-060)

Manufacturer: Miami Valley Plastics, Eldorado, OH

Description: 63MM Cap with ¾" NPT and EPDM Gasket	
Priority Item Number:	8728-204-060
Tare Weight:	27.70 Grams
Closure Overall Dimensions:	
• **Height**	0.870"
• **Diameter**	2.900"
Finish Dimensions:	
• **T**	2.438"
• **E**	2.320"
Markings (QC Audit):	2, 8 ribs around the outside
Liner/Gasket	EPDM
Identification:	None
Height Thickness:	0.062"
Diameter:	2.300"



TIGHT HEAD PLASTIC JERRICAN (7947)

Manufacturer: Priority Plastics, Portland, IN

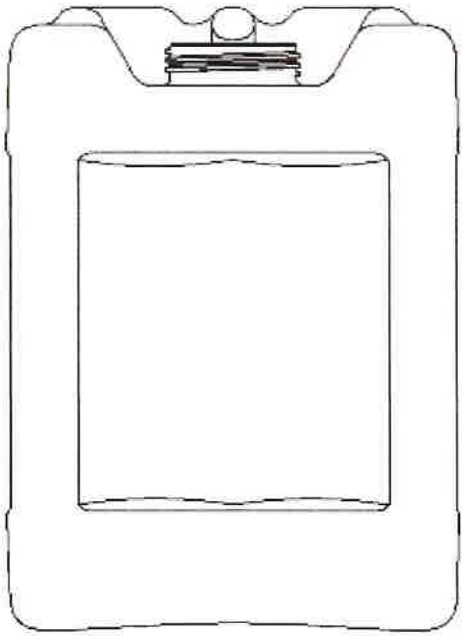
Description: 2.5 Gallon Rectangle with Integrated Handle

Material /Pigment: High Density Polyethylene /Natural

Method of Manufacturer:	Blow Molded
Tare Weight:	0.675 Kg
Capacity:	
• **Rated:**	2.5 Gallons
• **Overflow:**	10.700 Kg (2.665 Gallons)
Overall Dimensions:	
• **Height:**	11.390"
• **Length:**	9.460"
• **Width:**	8.431"
Finish Dimensions:	
• **63mm T**	2.422"
• **63mm E**	2.265"
• **63mm Neck Height**	0.842"

Wall Thickness:	Body	Top Head	Btm Head
• **Minimum**	0.043"	0.043"	0.043"
• **Per 49 CFR Section 173.28 (i) for re-usable containers**	0.0.43"	0.043"	0.043"

• **Material:**	High Density Polyethene
Markings (QC Audit)	u n 3H1/Y1.6/150/22 USA/M5105/1.1MM "2" HDPE Recycling Symbol, Month/ Year Clock, Logo, Cavity 3



SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS

TEST INFORMATION	TEST CRITERIA
TEST CONTENTS: Windshield Washer/Antifreeze(0.980SG) **SAMPLE PREPARATION:** REFER TO Section II **CONDITIONING:** -18°C (0°F), Chamber # **TEST CONTENTS TEMP.:** -18.1°C **DROP HEIGHT:** 1.6 Meters (63") (Refer to Section IV) **TEST EQUIPMENT:** L.A.B. Accu drop	• For packaging containing liquid, each packaging does not leak when equilibrium has been reached between the internal and external pressures. • Any discharge from a closure is slight and ceases immediately after impact with no further leakage. (§ 178.603)

DIAGONAL TOP CHIME DROP TEST SET-UP AND RESULTS

Sample #	Results	Comments / Observations
13	PASS	No leakage or Breakage
14	PASS	No leakage or Breakage
15	PASS	No leakage or Breakage

BOTTOM DIAGONAL CHIME DROP TEST SET-UP AND RESULTS

Sample #	Results	Comments / Observations
17	PASS	No leakage or Breakage
18	PASS	No leakage or Breakage
19	PASS	No leakage or Breakage

LEAKPROOFNESS TESTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Empty	• A packaging passes the test if there is no leakage of air from the packaging. (§ 178.604)
CLOSURE APPLICAATION:	Refer to Section II	
CONDITIONING:	Ambient	
TEST PRESSURE:	20.7 kPa (3 PSI)	
TEST DURATION:	5 Minutes	
AREA OF PRESSURIZATION:	Through the Sidewall	
TEST EQUIPMENT:	Regulated Air Source Pressure Monitoring Gauge	

LEAKPROOFNESS TEST SET-UP & RESULTS

Sample #	Results	Comments / Observations
7	PASS	**All three samples maintained the 20.7 kPa test pressure for 5 minutes without leakage.**
8	PASS	
9	PASS	

HYDROSTATIC PRESSURE TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	• For each test sample, there is no leakage of liquid from the package. (§ 178.604)
FILL CAPACITY:	Maximum Capacity	
CLOSURE APPLICATION:	Refer to Section II	
CONDITIONING:	Ambient	
TEST PRESSURE:	150 kPa (21.76 psi)	
TEST DURATION:	30 Minutes	
AREA OF PRESSURATION:	Through the Sidewall	
TEST EQUIPMENT:	Regulated Water Source Pressure Monitoring Gauge	

HYDROSTATIC PRESSURE TEST SET-UP & RESULTS

Sample #	Results	Comments / Observations
10	PASS	All three samples maintained the 150 kPa test pressure for 30 minutes without leakage.
11	PASS	
12	PASS	

STACKING AND STACKING STABILITY TEST RESULTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	• No test sample may leak • There can be no deterioration that could adversely affect transportation safety or any distortion liable to reduce the package's strength, cause instability in stacks of packages, or cause damage to inner packagings that is likely to reduce safety in transportation.. (§ 178.606)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	40°C (104°F)Stack Room	
TEST LOAD APPLIED:	158.551 Kg (591.58 Lbs.)	
TEST EQUIPMENT:	Stack Room and Weights	

STACKING TEST SET-UP AND RESULTS

Sample #	Maximum Deflection After 28 Days	Results
1	"	PASS
2	"	PASS
3	"	PASS

Comments / Observations: Following the 28 day 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	• 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		TEST CRITERIA
TEST CONTENTS:	Water	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. • 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 liable to reduce packaging strength. (§ 178.608)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
TABLE DISPLACEMETN:	1"	
TEST FREQUENCY:	4.0 Hz	
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	Vertical motion using Vibration Tester	

VIBRATION TEST SET-UP & RESULTS

Sample #	Results	Comments / Observations
4	PASS	No leakage or damage.
5	PASS	
6	PASS	

REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES	
TEST	**49 CFR 2020 EDITION**
Drop:	178.603
Leakproofness:	178.604
Hydrostatic Pressure:	178.605
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):	**1.086 Kg (1.5 Lbs.)**	**WW/A SG**
Overflow Capacity (OFC) :		**SG: 0.985**
Windshield Washer/Antifreeze	**9.75 Kg**	
Water	**10.100Kg**	**2.665 Gallons (GAL)**
Packing Group:	**II**	
Product Specific Gravity (PSG):	**1.6**	
Packing Group Multiplication Factor (MF):	**1.00**	
Nesting Height of one Package (NH):	**11.530 Inches**	
Stack Test # of Samples Tested Simultaneously:	**0**	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

OFC	x	98%		
9.750	x	98% =	**9.555 Kg**	**WW/A**
10.100	x	98% =	**9.898 Kg**	**Water**

PACKAGED TEST WEIGHT

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

PTW	+	98% OFC =		
.703	+	10.153	**10.856 Kg**	**23.933 Lbs. WW/A**
.703	+	10.486	**11.189 Kg**	**24.667 Lbs. Water**

CALCULATED PACKAGE GROSS MASS (CPGM)

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

PTW	+	(PSG	x	98% OFC)
1.0867	+	1.6	x	9.898

16.923 Kg **37.308 Lbs.**

DROP HEIGHT CALCULATION (FOR SPECIFIC GRAVITIES EXCEEDING 1.2)

Product Specific Gravity (PSG) x Packing Group Multiplication Factor (MF)

PSG	x	MF		Packing Group: II	
1.6	x	1.00		Required Drop Height	Actual Drop Height
		1.60	**Meter**	**62.99 Inches**	**63.0 Inches**

DYNAMIC COMPRESSION TEST LOAD CALUCLATIONS

Dynamic Compression Test Load Calculation

Where

A= Applied Load in Lbs.
n = Minimum number of containers that, when stacked reach a height of 3m(118 inches) **(See Calculation below)**
s = Product Specific Gravity—**(PSG)**
w = Overall package tare weight **(Lbs.)**
v = Maximum Container Capacity **(Gal.)**
8.3 = Weight in pounds of 1 gallon of water
1.5 = Compensation factor that converts the static load of the stacking test into a load Suitable for Dynamic Compression Testing

A	=	n	x	(w	+	(s	x	v	x	8.3	x	0.98))	x	1.5
524.32 Lbs.		9.369		2.39		1.6		2.665		8.3		0.98		1.5

237.8 Kg **524.32 Lbs.**

Minimum Required Top Load Used in Design Qualification Testing x 1.5 Compensation Factor*

Top Load used in Design Qualification Testing: 158.55 Kg x 1.5 = 237.8 Kg 524.32 Lbs.
Minimum Required Top Load

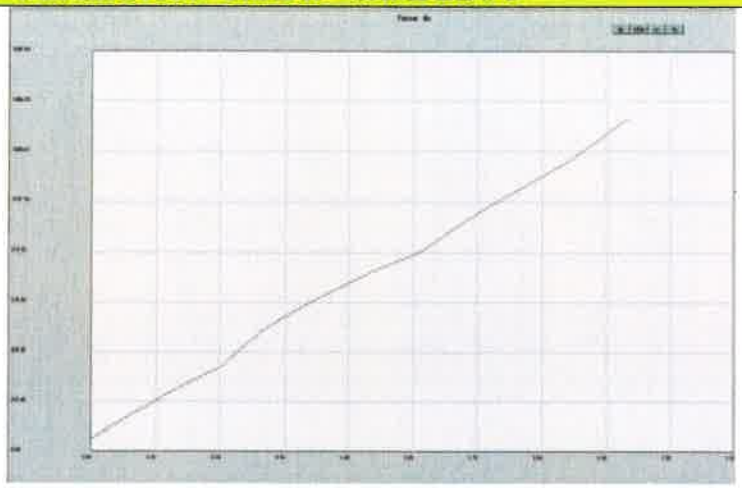
n = Number of Packages in a 3m high Stack (118/Nesting Height (NH) – 1)

118.11/Nesting Height of one Pkg. (NH) – 1

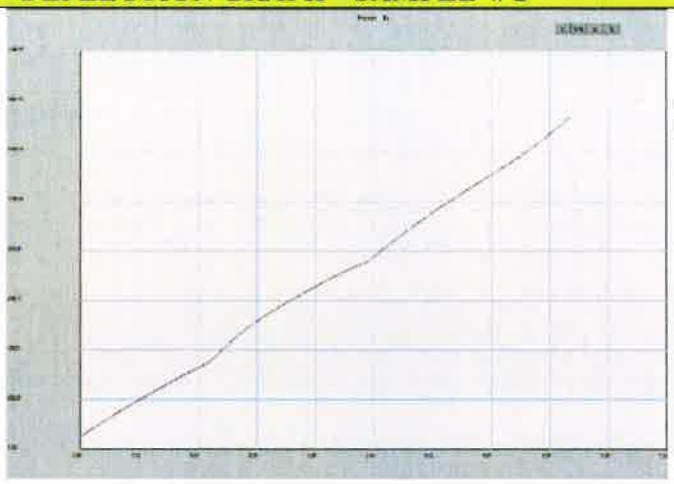
(118.11	/	NH)	-	1	=	n
118.11	/	11.39	-	1	=	9.369

SECTION V: INDIVIDUAL LOAD VS. DEFLECTION GRAPHS AND DATA

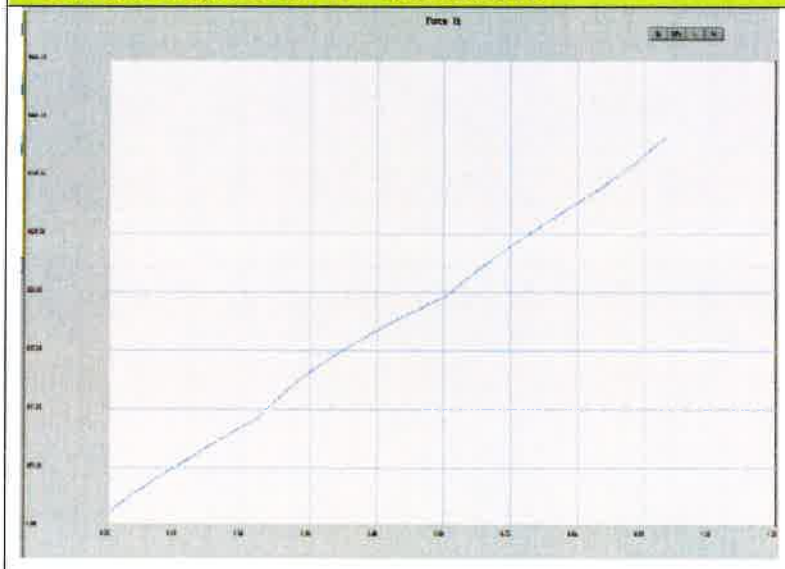
DEFLECTION GRAPH – SAMPLE # 1



DEFLECTION GRAPH – SAMPLE # 2



DEFLECTION GRAPH – SAMPLE # 3



MAXIMUM LOAD VS. DEFLECTION

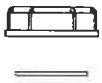
Sample #	Maximum Load – Lbs.	Deflection – Inch
13	**1356.53 Lbs.**	**0.34”**
14	**1369.13 Lbs.**	**0.356”**
15	**1373.17 Lbs.**	**.35”**

Corporate Office
500 Industrial Park Dr
Portland IN 47371
Tel 260.726.7000 Fax 260.726.8111

Closing Instructions for 2.5 Gallon Containers

Caps that this closing instruction includes are:

Priority Plastics 63mm cap manufactured by Miami Valley Plastics is 8728-204-060 (63mm Cap W/EPDM gasket.)



Step 1. Ensure the gasket is in the 63mm closure.

Step 2. Turn the 63mm cap to get started over the threads of the 63mm neck.

Step 3. Place an overcap fixture over the 63mm cap.

Step 4. Torque the cap to 150-160 in-lbs.

NOTE: Priority Plastics, Inc. certifies that these containers have been manufactured and certified in accordance with Performance Requirements of Part 178 Subpart M of title 49CFR. The chemical filler and the shipper may rely upon the marking as certification that the package meets the applicable UN performance standards. The shipper is responsible for ensuring the product is authorized in the package and must consult and General Shipper Requirements, including modal requirements. To meet UN standards, the package must be properly closed for shipment. Failure to follow the closure instructions or substitution of packaging components other than those identified in the closure instructions will render the UN Certification invalid.