

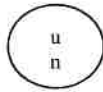
DOT/UNITED NATIONS
Performance Oriented Packaging Certification

PriorityPlastics 

3H1 DESIGN QUALIFICATION

7945 5 GALLON Rectangle 70mm
8229-202-060
1000 Grams

2021-73



3H1/Y1.8/150/**
USA /M5105

****Insert year the packaging is manufactured**

TESTING PERFORMED FOR:

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

And

PRIORITY PLASTICS, INC.
704 Pinder Avenue
Grinnell, IA 50112

TESTING PERFORMED BY:

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

Certification Date: 11/18/21
Re-Certification Date: 11/18/22

TABLE OF CONTENTS

Section I: CERTIFICATION.....3

Section II: PACKAGING DESCRIPTION / COMPONENTS.....4

Section III: TEST PROCEDURES AND RESULTS.....7

 DROP TESTS.....7

 LEAK PROOFNESS TEST8

 HYDROSTATIC PRESSURE TEST.....9

 STACKING TEST AND STACKING STABILITY TEST10

 REPETITIVE SHOCK VIBRATION TESTS.....11


 REGULATORY AND INDUSTRY STANDARD REFERENCES.....12

Section IV: MATHEMATICAL CALCULATIONS.....13

SECTION I: Certification

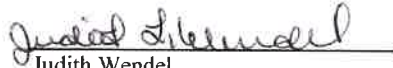
Design Qualification
 5 Gallon Rectangle HDPE Packaging

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	1.8 m	Windshield Fluid/Antifreeze Coolant 50/50 Diluted (WW?A)	November 19, 2021	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	November 18, 2021	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	November 18, 2021	PASS
Stack	178.606	581.0 Lbs.	Water	December 20, 2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	November 18, 2021	PASS
TEST REPORT NUMBERS: 2021-73					
UN MARKING: (CFR 49 – 178.503)				3H1/Y1.8/150/** USA /M5105	
PACKAGING IDENTIFICATION CODE:			3H1 (178.509)		
PERFORMANCE STANDARD:			Y (Packaging meets Packing Group II test)		
MAXIMUM PRODUCT SPECIFIC GRAVITY:			1.8		
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.		
PACKAGE IDENTIFICATION:			M5105 (Portland), M6167 (Grinnell)		

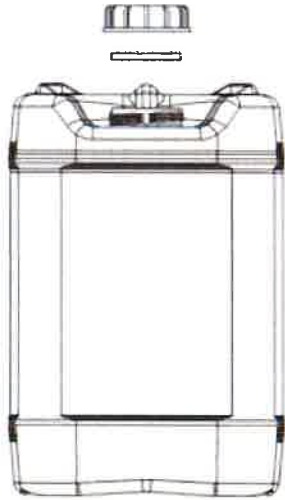
In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

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


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

SECTION II: PACKAGING DESCRIPTION / COMPONENTS

5 Gallon Rectangle, 22MM Vent, Hole, HDPE Packaging



Certification Type: Design Qualifications

Packaging Code Designation: 3H1

Packing Group: II

Specific Gravity: 1.8

Hydrostatic Pressure: 150 kPa

TEST SAMPLE PREPARATION
 (Refer to Section IV)

Overall Package Tare Weight: 1.042 Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze 19.129 Kg
- Water 19.698Kg

Package Test Weight:

- WW/A: 20.171 Kg
- Water 20.740 Kg

Calculated Package Gross Mass: 36.5Kg (80.470 Lbs.)

CLOSING METHODS

Application Torque for 70mm Cap: 175 & 185 In-Lbs.

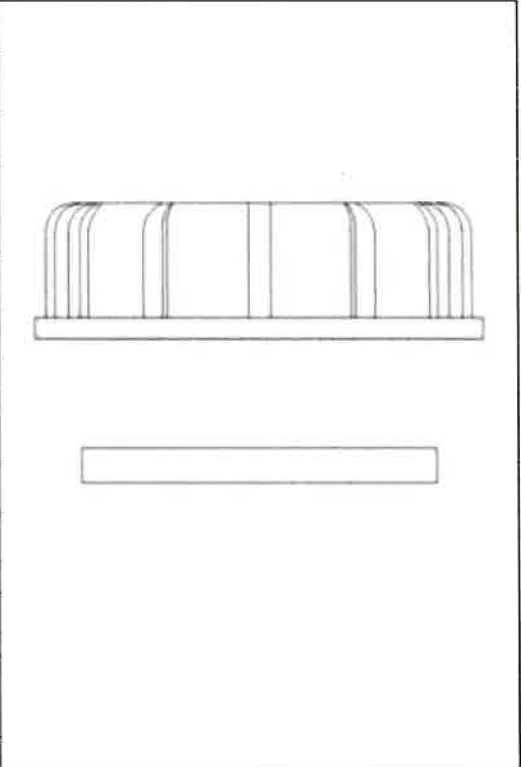
Equipment for 70mm Cap: GP-052 & V-GP081-A

COMPONENT INFORMATION

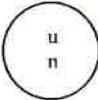
CLOSURE (8229-236-060)

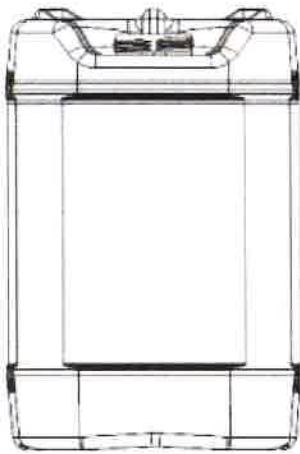
Manufacturer: Miami Valley Plastics, Eldorado, OH

Description: 70MM CAP WITH 3/4" NPT	
Priority Item Number:	8229-202-060
Tare Weight:	42.00Grams
Closure Overall Dimensions:	
• Height	0.953 "
• Diameter	3.223"
Finish Dimensions:	
• T	2.780"
• E	2.214"
Markings (QC Audit):	Cavity # 4
Liner/Gasket	EPDM Gasket
Identification:	None
Wall Thickness:	0.188"
Height Thickness:	0.250"
Diameter:	2.606"



TIGHT HEAD PLASTIC JERRICAN (7945)

Manufacturer: Priority Plastics, Portland, IN			
Description: 5 Gallon Rectangle with Integrated Handle			
Material /Pigment: High Density Polyethylene /Natural			
Method of Manufacturer:	Blow Molded		
Tare Weight:	1.042 Kg		
Capacity:			
• Rated:	5 Gallons		
• Overflow:	20.1000 Kg (5.303 Gallons)		
Overall Dimensions:			
• Height:	14.350"		
• Length:	11.017"		
• Width:	10.050"		
Finish Dimensions:			
• 70mm T	2.735"		
• 70mm E	2.568"		
• 70mm Neck Height	0.730"		
Wall Thickness:	Body	Top Head	Btm Head
• Minimum	0.032"	0.030"	0.034"
• Material:	High Density Polyethene		
Markings (QC Audit)	 3H1/Y1.8/150/21/ USA/M5105 "2" HDPE Recycling Symbol, Month Clock, 16 PRIORITYPLASTICS.COM		




SECTION III: TEST PROCEDURES AND RESULTS


DROP TESTS

TEST INFORMATION	TEST CRITERIA
<p>TEST CONTENTS: Windshield Washer/Antifreeze(0.965SG)</p> <p>SAMPLE PREPARATION: REFER TO Section II</p> <p>CONDITIONING: -18°C (0°F), Chamber #</p> <p>TEST CONTENTS TEMP.: -18.0°C (-0.4°F)</p> <p>DROP HEIGHT: 1.83 Meters (72") (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. 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
	4	PASS	No leakage or Breakage
	5	PASS	No leakage or Breakage
	6	PASS	No leakage or Breakage


DIAGONAL BOTTOM CHIME DROP TEST SET-UP AND RESULTS

	Sample #	Results	Comments / Observations
	8	PASS	No leakage or Breakage
	9	PASS	No leakage or Breakage
	10	PASS	No leakage or Breakage

LEAKPROOFNESS TESTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Empty	<ul style="list-style-type: none"> A packaging passes the test if there is no leakage of air from the packaging. (§ 178.604)
CLOSURE APPLICATION:	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
	11	PASS	All three samples maintained the 20.7 kPa test pressure for 5 minutes without leakage.
	12	PASS	
	13	PASS	

HYDROSTATIC PRESSURE TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	<ul style="list-style-type: none"> 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	
WATER TEMPERATURE:	45.4°F	
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

	17	PASS	<p>All three samples maintained the 150 kPa test pressure for 30 minutes without leakage.</p>
	18	PASS	
	19	PASS	

STACKING AND STACKING STABILITY TEST RESULTS


TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	<ul style="list-style-type: none"> 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:	268.336 Kg (591.58 Lbs.)	
TEST EQUIPMENT:	Stack Room and Weights	

STACKING TEST SET-UP AND RESULTS

	Sample #	Maximum Deflection After 28 Days	Results
	1	11/16"	PASS
2	1/2"	PASS	
3	5/8"	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	<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		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. <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 liable to reduce packaging strength. (§ 178.608)
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 Tester	

VIBRATION TEST SET-UP & RESULTS

	Sample #	Results	Comments / Observations
	23	PASS	No leakage or damage.
	24	PASS	
	25	PASS	

REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES	
TEST	49 CFR 2019 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: MATHEMATICAL CALCULATIONS

INFORMATION USED FOR CALCULATIONS

Overall Packaged Tare Weight (PTW):	1.042 Kg	<u>WW/A SG</u>
Overflow Capacity (OFC) :		<u>SG: 0.965</u>
Windshield Washer/Antifreeze	19.520 Kg	
Water	20.100 Kg	5.304 Gallons (GAL)
Packing Group:	II	
Product Specific Gravity (PSG):	1.8	
Packing Group Multiplication Factor (MF):	1.00	
Nesting Height of one Package (NH):	14.350 Inches	
Stack Test # of Samples Tested Simultaneously:	0	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OC</u>	x	<u>98%</u>		
19.520	x	98% =	19.129Kg	WW/A
20.100	x	98% =	19.698 Kg	Water

PACKAGED TEST WEIGHT

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

<u>PTW</u>	+	<u>98% OFC =</u>		
1.042	+	19.129	20.171 Kg	44.473.342 Lbs. WW/A
1.042	+	19.698	20.740Kg	45.723 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>
1.042	+	1.8	x	19.698
		36.498 Kg		80.464 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>		
1.8	x	1.00	<u>Required Drop Height</u>	<u>Actual Drop Height</u>	
		1.80	Meter	70.9 Inches	72 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	/	14.350	-	1	=
					<u>n</u>
					7.230
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>			
36.498	x	7.230			
			263.904 Kg	581.808 Lbs.	

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Updated to New Format: August 16, 2019

Closing Instructions for 5 Gallon– 70MM 8TPI

Caps that this closing instruction includes are:

Priority Plastics 70mm caps manufactured by Miami Valley Plastics are: 8229-202-060 (70mm Cap W/EPDM Gasket).



Step 1. Ensure the gasket is in the 70mm closure.



Step 2. Turn the 70mm cap to get started over the threads of the 70mm neck.



Step 3. Place an overcap fixture over the 70mm cap.



Step 4. Torque the cap to 175 - 185 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.