DOT/UNITED NATIONS
Performance Oriented Packaging Certification

PriorityPlastics

3H1 PERIODIC RETEST

7945 5 Gallon Rectangle 70mm
No Vent- Group I
HDPE

Test Report #: 2022-01

u
n

3H1/X1.9/250/**
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.
741 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: 1/10/22
Re-Certification Date: 1/10/23

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SECTION I: Certification

Periodic Retest
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	1.9 m	Windshield Fluid/Antifreeze Coolant 50/50 Diluted (WW/A) & Lead Shot	January 10, 2021	PASS
Leakproofness	178.604	30 kPa – 5 Min. 4 PSI	Empty	January 10, 2022, 2021	PASS
Hydrostatic	178.605	250 kPa – 30 Min.	Water	January 10, 2021	PASS
Stacking/ Dynamic Compression Test	178.606	904.0 Lbs.	Empty	January 10, 2022, 2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	January 10, 2022, 2021	PASS

TEST REPORT NUMBERS: **2020-07,** 2021-09	
UN MARKING: (CFR 49 – 178.503)	u n 3H1/X1.9/250/** USA /M5105
PACKAGING IDENTIFICATION CODE:	3H1 (178.509)
PERFORMANCE STANDARD:	X (Packaging meets Packing Group I test)
MAXIMUM PRODUCT SPECIFIC GRAVITY:	1.9
INTERNAL TEST PRESSURE:	250 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)
PERIODIC RETEST DATE:	January 10, 2023

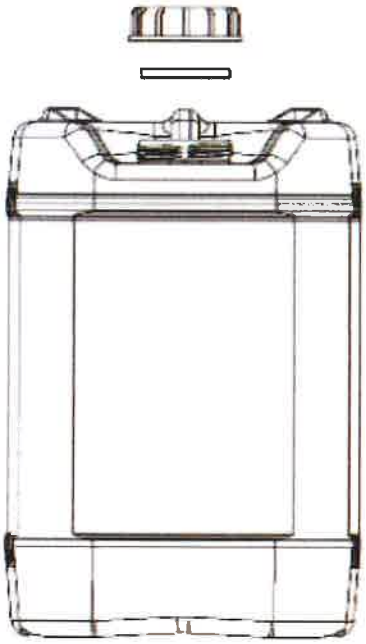
In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

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

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

SECTION II: PACKAGING DESCRIPTION / COMPONENTS

5 Gallon Rectangle No Vent HDPE Packaging



Certification Type:	Periodic Retest
Packaging Code Designation:	3H1
Packing Group:	I
Specific Gravity:	1.9
Hydrostatic Pressure:	250 kPa

TEST SAMPLE PREPARATION
(Refer to Section_IV___)

Overall Package Tare Weight: 1.604 Kg

Fill Capacity (98% Overflow):
- WW/A 18.424 Kg
- Water 18.718 Kg

Package Test Weight:
- WW/A: 20.029 Kg
- Water 20.323 Kg

Calculated Package Gross Mass: 37.54 Kg (82.76 Lbs.)

CLOSING METHODS

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

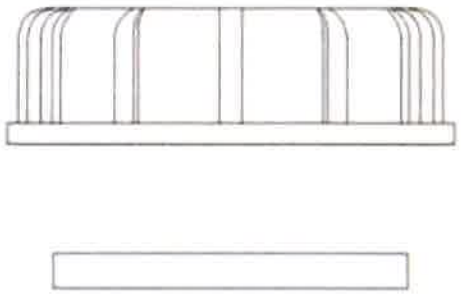
Equipment for 70mm Cap: GP-052 & V-GP-081 B

COMPONENT INFORMATION

CLOSURE (8229-202-060)

Manufacturer: Miami Valley Plastics, Eldorado, OH

Description: 70MM CAP WITH ¾" NPT and EPDM Gasket	
Priority Item Number:	8229-202-060
Tare Weight:	40.3 Grams
Closure Overall Dimensions:	
• **Height**	0.954"
• **Diameter**	3.235"
Finish Dimensions:	
• **T**	2.783"
• **E**	2.615"
Markings (QC Audit):	1, 12 ribs around the outside
Liner/Gasket	EPDM Gasket
Identification:	None
Wall Thickness:	0.165"
Height Thickness:	0.237"
Diameter:	2.573"



TIGHT HEAD PLASTIC JERRICAN (7945)

Manufacturer: Priority Plastics, Portland, IN

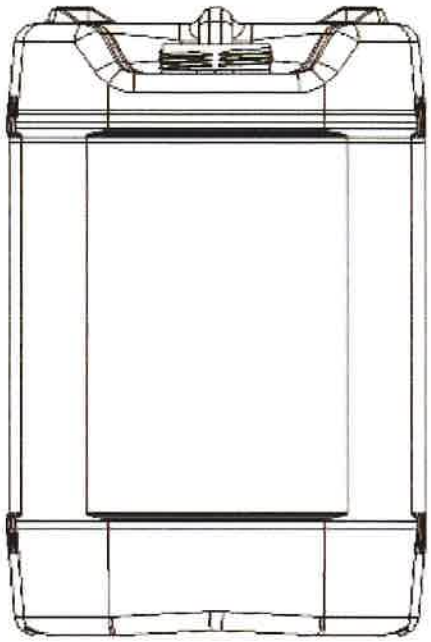
Description: 5 Gallon Rectangle with Integrated Handle 70MM and No Vent

Material /Pigment: High Density Polyethylene /Natural

Method of Manufacturer:	Blow Molded
Tare Weight:	1.565 Kg
Capacity:	
• **Rated:**	5 Gallons
• **Overflow:**	19.100 Kg (5.04 Gallons)
Overall Dimensions:	
• **Height:**	14.274"
• **Length:**	10.925"
• **Width:**	10.280"
Finish Dimensions:	
• **70 mm T**	2.760"
• **70 mm E**	2.857"
• **70 mm Neck Height**	

Wall Thickness:	Body	Top Head	Btm Head
• **Minimum**	0.068"	0.056"	0.063"
• **Minimum From Design Qualification 2007-13**	0.068"	0.049"	0.061"

• **Material:**	High Density Polyethene
Markings (QC Audit)	u n 3H1/X1.9/250/22/ USA/M5105 "2" HDPE Recycling Symbol Month Clock, Logo, 10



SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS

TEST INFORMATION	TEST CRITERIA
TEST CONTENTS: Windshield Washer/Antifreeze(0.983SG) **SAMPLE PREPARATION:** REFER TO Section II **CONDITIONING:** -18°C (0°F) **TEST CONTENTS TEMP.:** -22.5°C **DROP HEIGHT:** 2.85 Meters (112.2") (Refer to Section IV) Dropped at 72"—This was done by adding lead shot weight to the fluid in the container. **TEST EQUIPMENT:** L.A.B. Accu drop 160	• 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
1	PASS	No leakage or Breakage
2	PASS	No leakage or Breakage
3	PASS	No leakage or Breakage

BOTTOM DIAGONAL 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

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:	27.6 kPa (4 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 27.6 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:	250 kPa (36.26 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 250 kPa test pressure for 30 minutes without leakage.**
11	PASS	
12	PASS	

DYNAMIC COMPRESSION TEST RESULTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Empty and Without Closure	• 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:	Ambient	
PRE-LOAD APPLIED:	50 Lbs.	
MINIMUM TEST LOAD REQUIRED:	410.028 Kg (903.96 Lbs.) (Refer to Section IV.)	
TEST EQUIPMENT:	TLS(Tech Lab Systems)	

DYNAMIC COMPRESSION TEST SET-UP & RESULTS

Sample #	Load	Deflection	Results
13	903.96 Lbs.	0.608"	Passed
14	903.96 Lbs.	0.607"	Passed
15	903.96 Lbs.	0.622"	Passed

NOTE: After meeting the minimum to load requirement of 178.606 ©(2)(ii), each container was taken to failure. Refer to Section VI for the Load vs Deflection Graphs and the maximum compression strength of each test sample.

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
16	PASS	No leakage or damage.
17	PASS	
18	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):	**1.605 Kg**	**WW/A SG**
Overflow Capacity (OFC) :		**SG: 0.985**
Windshield Washer/Antifreeze	**18.800 Kg**	
Water	**19.100Kg**	**5.09 Gallons (GAL)**
Packing Group:	**1**	
Product Specific Gravity (PSG):	**1.9**	
Packing Group Multiplication Factor (MF):	**1.00**	
Nesting Height of one Package (NH):	**14.285 Inches**	
Stack Test # of Samples Tested Simultaneously:	**0**	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

OC	x	98%		
18.800	x	98% =	**18.424 Kg**	**WW/A**
19.100	x	98% =	**18.718 Kg**	**Water**

PACKAGED TEST WEIGHT

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

PTW	+	98% OFC =		
1.604	+	18.424	**20.209 Kg**	**44.553 Lbs. WW/A**
1.604	+	18.718	**20.323Kg**	**44.804 Lbs. Water**

CALCULATED PACKAGE GROSS MASS (CPGM)

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

PTW	+	(PSG	x	98%OFC)
1.605	+	1.9	x	18.718
		37.169 Kg		**81.943 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: I	
1.9	x	1.5	**Required Drop Height**	**Actual Drop Height**
			2.85 Meter	**112.2 Inches**	**72 Inches**

NOTE: Drop test was done by adding (lead shot) weight to the fluid in the container and dropping at 72".
Formula = 98% overflow capacity with water multiplied by 1.9 specific gravity.
98% overflow = 18.718 Kg
18.718 x 1.9 = 35.5642 Kg
35.5642 + 1.604 = 37.51692 Kg (81.943 Lbs.)

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

(118.11	/	NH)	-	1	=	n
118.11	/	14.274	-	1	=	7.27

Stack Test Load Calculation (Individual Package)

Calculated Pkg Gross Mass (CPGM) x # of Pkg in a 3m High Stack (#3mHS)

CPGM	x	#3Mhs
37.169	x	7.27

270.218 Kg 595.728 Lbs.

Priority Plastics

Closing Instructions

Corporate Office
500 Industrial Park Dr.
Tel 260.726.7000 Fax 260.726.8111

Date Created:
Updated to New Format: February 10, 2020

Closing Instructions for 5 Gallon – X1.9, 70MM 8TPI, No Vent

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 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.