DOT/UNITED NATIONS
Performance Oriented Packaging Certification

PriorityPlastics

3H1 PERIODIC RETEST

7940 20 Liter Rectangle 70mm RTE
Vent- Group II
HDPE
8224-200-060 and 6043-000-060 Cap

Test Report #: 2020-19

u
n

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: 3/13/20
Re-Certification Date: 3/13/21

TABLE OF CONTENTS

SECTION I: Certification

Periodic Retest
20 Liter 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	1.8 m	Windshield Fluid/Antifreeze Coolant 50/50 Diluted (WW?A)	March 10, 2020	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	March 13, 2020	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	March 13, 2020	PASS
Stacking / Dynamic Compression	178.606	869.6 lbs.	Water	March 13, 2020	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	March 13, 2020	PASS

TEST REPORT NUMBERS: **2018-18**, 2019-15, 2020-19	
UN MARKING: (CFR 49 – 178.503)	u n 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:	(M) Priority Plastics, Inc.
PACKAGE IDENTIFICATION:	M5105 (Portland), M6167 (Grinnell)
PERIODIC RETEST DATE:	March 13, 2021

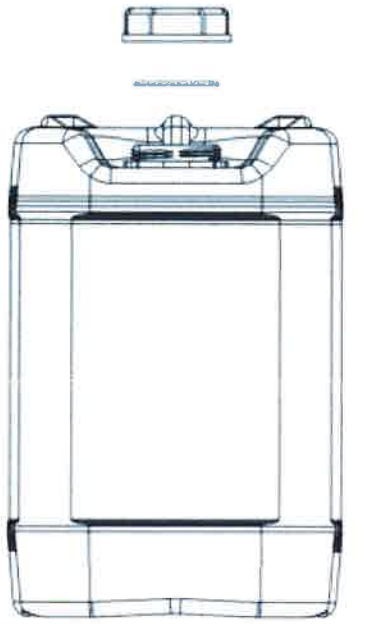
In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

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

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

SECTION II: PACKAGING DESCRIPTION / COMPONENTS

20 Liter Rectangle, 70MM, 22MM Vent, , HDPE Packaging



Certification Type:	Periodic Retest
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: 1.238 Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze 20.384 Kg
- Water 20.776 Kg

Package Test Weight:

- WW/A: 21.622 Kg
- Water 22.014 Kg

Calculated Package Gross Mass:38.6 Kg (85.1 Lbs.)

CLOSING METHODS

Application Torque for 70mm Cap: 175-185 In-Lbs.
Application Torque for 22mm Cap: 25-30 In-Lbs.

Equipment for 70mm Cap: GP-052 & V-GP-198 A
Equipment for 22mm Cap GP-055A & GP-056A & V-GP-171 A

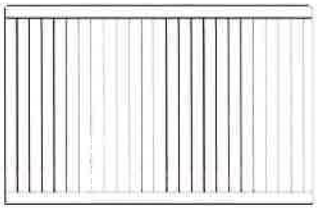
COMPONENT INFORMATION

CLOSURE (8224-200-060)

Manufacturer: Brandt Industries, Palatine, IL 60067

70MM ¾ Natural Cap 6TPI-EPDM – W / Tamper Evident	
Priority Item Number:	8224-200-060
Tare Weight:	28.7 Grams
Closure Overall Dimensions:	
• **Height**	0.975"
• **Diameter**	3.323"
Finish Dimensions:	
• **T**	2.810"
• **E**	2.644"
• **Thread Pitch**	6 Threads per inch
Markings (QC Audit):	No Markings, 6 Ribs Around the outside of the cap, 8
Liner/Gasket	EPDM Gasket
Identification:	None
Wall Thickness:	0.180"
Height Thickness:	0.112" "
Diameter:	2.511"

CLOSURE 6043-000-070	Drawing
Manufacturer: Amcor Rigid Plastics USA, LLC, Millville, NJ	
Description:	22/410 Fine Rib Serrated Closure-Lined
Material:	Polypropylene
Tare Weight:	2.28 Grams
Overall Dimensions:	
• **Height**	0.632"
• **Diameter**	1.001"
Thread Dimensions:	
• **T**	0.871"
• **E**	0.786"
Liner:	
Description:	Tri-Seal F-217 Liner



TIGHT HEAD PLASTIC JERRICAN (7940)

Manufacturer: Priority Plastics, Portland, IN

Description: 20 Liter Rectangle with Integrated Handle 70MM RTE and 22MM Vent Hole			
Material /Pigment: High Density Polyethylene /Natural			
Method of Manufacturer:	Blow Molded		
Tare Weight:	1.207 Kg		
Capacity:			
• **Rated:**	5Gallons (20 Liters)		
• **Overflow:**	21.200 Kg (5.59 Gallons)		
Overall Dimensions:			
• **Height:**	15.200"		
• **Length:**	11.058"		
• **Width:**	10.225"		
Finish Dimensions:			
• **70 mm T**			
• **70 mm E**			
• **70 mm Neck Height**			
Wall Thickness:	Body	Top Head	Btm Head
• **Minimum**	0.044"	0.043"	0.041"
• **Minimum From Design Qualification Report 2018-18**	0.040"	0.039"	0.039"
• **Material:**	High Density Polyethene		
Markings (QC Audit)	u n 3H1/Y1.8/150/20/ USA/M5105 "2" HDPE Recycling Symbol, Month Clock, 11 PRIORITYPLASTICS.COM		

SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS

TEST INFORMATION	TEST CRITERIA
TEST CONTENTS: Windshield Washer/Antifreeze(0.985SG) **SAMPLE PREPARATION:** REFER TO Section II **CONDITIONING:** -18°C (0°F), Chamber # **TEST CONTENTS TEMP.:** -18.3°C (-0.94°F) **DROP HEIGHT:** 1.83 Meters (72") (Refer to Section IV) **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

FLAT ON SIDE-NECK DOWN DROP TEST SET-UP AND RESULTS

Sample #	Results	Comments / Observations
6	PASS	No leakage or Breakage
7	PASS	No leakage or Breakage
8	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
9	PASS	**All three samples maintained the 20.7 kPa test pressure for 5 minutes without leakage.**
10	PASS	
11	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
12	PASS	**All three samples maintained the 150 kPa test pressure for 30 minutes without leakage.**
13	PASS	
14	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:	394.4 Kg (869.6 Lbs.) (Refer to Section IV.)	
TEST EQUIPMENT:	TLS(Tech Lab Systems)	

DYNAMIC COMPRESSION TEST SET-UP & RESULTS

Sample #	Load	Deflection	Results
21	869.6 Lbs.	0.852"	Passed
22	869.6 Lbs.	0.841"	Passed
23	869.6 Lbs.	0.841"	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:	4.3 Hz	
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	Vertical motion using Vibration Tester	

VIBRATION TEST SET-UP & RESULTS

Sample #	Results	Comments / Observations
24	PASS	No leakage or damage.
25	PASS	
26	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: MATEMATICAL CALCULATIONS

INFORMATION USED FOR CALCULATIONS

Overall Packaged Tare Weight (PTW):	**1.238 Kg**	**WW/A SG**
Overflow Capacity (OFC) :		**SG: 0.985**
Windshield Washer/Antifreeze	**20.800 Kg**	
Water	**21.200 Kg**	**5.59 Gallons (GAL)**
Packing Group:	**II**	
Product Specific Gravity (PSG):	**1.8**	
Packing Group Multiplication Factor (MF):	**1.00**	
Nesting Height of one Package (NH):	**15.20 Inches**	
Stack Test # of Samples Tested Simultaneously:	**0**	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

OFC	x	98%		
20.800	x	98% =	**20.384Kg**	**WW/A**
21.200	x	98% =	**20.776 Kg**	**Water**

PACKAGED TEST WEIGHT

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

PTW	+	98% OFC =		
1.238	+	20.384	**21.622 Kg**	**47.668 Lbs. WW/A**
1.238	+	20.776	**22.014 Kg**	**48.532 Lbs. Water**

CALCULATED PACKAGE GROSS MASS (CPGM)

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

PTW	+	(PSG	x	OFC)
1.238	+	1.8	x	20.776

38.6 Kg **85.1 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	
1.8	x	1.00		**Required Drop Height**	**Actual Drop Height**
			1.80 Meter	**70.9 Inches**	**72 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 (120 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**
858.85	6.77		2.73		1.8		5.59		8.3		.98		1.5

389.568 Kg **858.85 Lbs.**

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

Top Load used in Design Qualification Testing: 262.96 Kg x 1.5 = 394.44Kg 869.6 Lbs.
Minimum Required Top Load

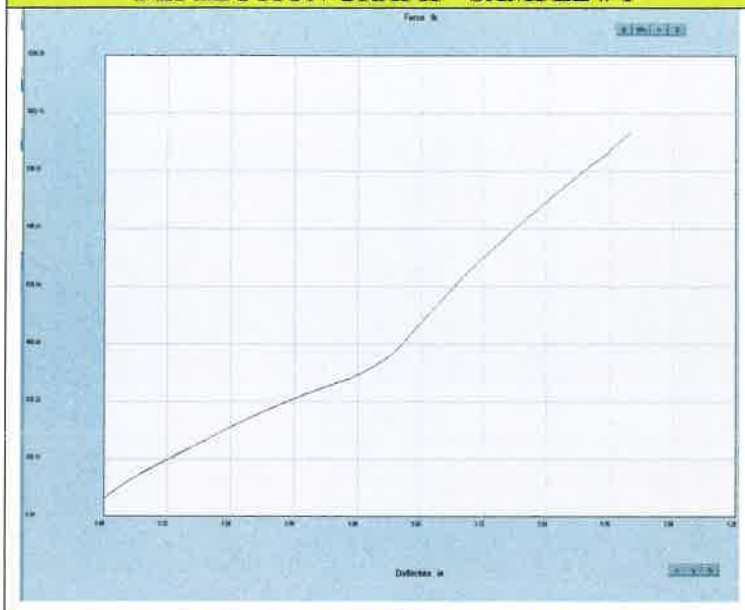
N = Number of Packages in a 3m High Stack (118/Nesting Height (NH)-1)

118.11/Nesting Height of one Pkg (NH)-1

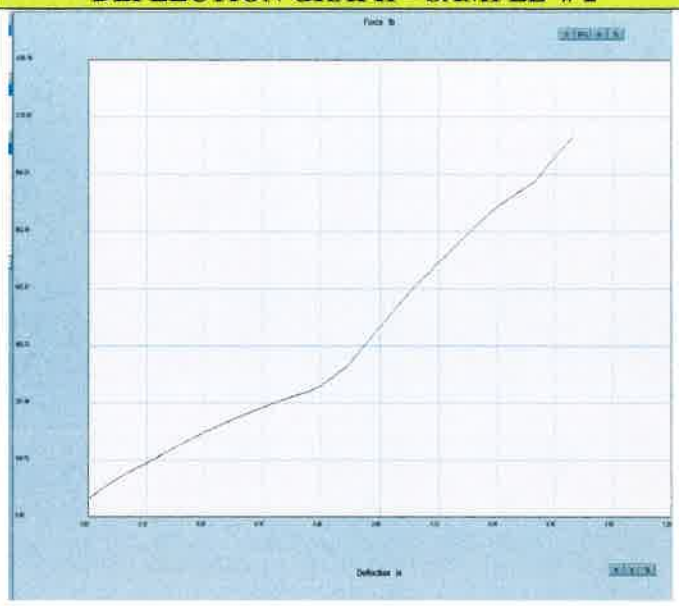
(118.11	/	NH)	-	1	=	n
118.11	/	15.20	-	1	=	6.77

SECTION V: INDIVIDUAL LOAD VS. DEFLECTION GRAPHS AND DATA

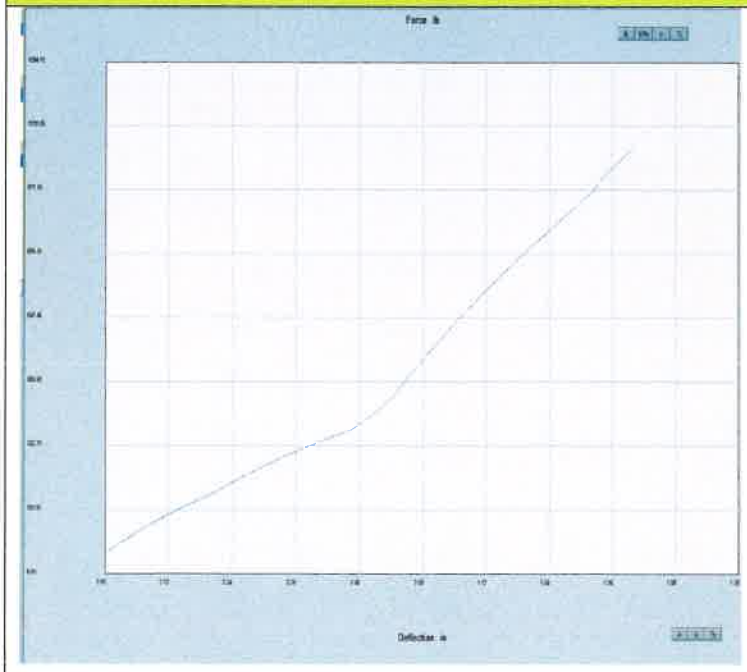
DEFLECTION GRAPH – SAMPLE # 1



DEFLECTION GRAPH – SAMPLE # 2



DEFLECTION GRAPH – SAMPLE # 3



MAXIMUM LOAD VS. DEFLECTION

Sample #	Maximum Load – Lbs.	Deflection – Inch
21	1041.08 Lbs.	1.00”
22	1071.45 Lbs.	1.00”
23	1079.1 Lbs.	1.00”

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

Date Created: May 23, 2019
Updated to New Format: July 31, 2019

Closing Instructions for 20 Liter – 70MM RTE, 22MM

Caps that this closing instruction includes are:
Brandt Cap: 6 TPI, 70MM Tamper Evident with ¾" NPT, Natural (Brandt # CAP7034NAT6TPIEPDMTE, Priority # 8224-200-060)
Cap: Amcor Rigid Plastics USA, Inc: Priority item number 6043-000-060 with F-217 Liner.22mm Cap: Amcor Rigid Plastics USA,

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.

Step 5. Ensure the gasket is in the 22 mm closure.
Note: If using Induction Seal 22MM cap, ensure the foil liner is induction sealed on the 22mm vent.

Step 6. Place an overcap fixture over the 22 mm cap.

Step 7. Torque the cap to 25-30 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.