

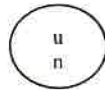
**DOT/UNITED NATIONS  
Performance Oriented Packaging Certification**



**3H1 PERIODIC RETEST**

**7940 20 Liter Rectangle 70mm  
Vent- Group II  
HDPE  
8229-202-060 and 6043-000-070**

**Test Report #: 2021-15**



**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: 03/21/21  
Re-Certification Date: 3/21/2022

**TABLE OF CONTENTS**

**Section I: CERTIFICATION.....3**

**Section II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS.....4**

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

    DROP TESTS.....7

    LEAKPROOFNESS TEST.....8

    HYDROSTATIC PRESSURE TEST.....9

    DYNAMIC COMPRESSION TEST.....10

    REPETITIVE SHOCK VIBRATION TESTS.....11

    REGULATORY AND INDUSTRY STANDARD REFERENCES.....12

**Section IV: MATHEMATICAL CALCULATIONS.....13**

**Section V: INDIVIDUAL LOAD VS. DEFLECTION GRAPHS AND DATA.....15**

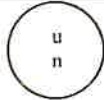
**SECTION I: Certification**

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 8, 2021	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	March 15, 2021	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	March 21, 2021	PASS
Stacking / Dynamic Compression	178.606	870.88 lbs.	Water	March 12, 2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	March 12, 2021	PASS

TEST REPORT NUMBERS:	2018-25, 2019-24, 2020-11, 2021-15
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:	(M) Priority Plastics, Inc.
PACKAGE IDENTIFICATION:	M5105 (Portland) M6167(Grinnell)
PERIODIC RETEST DATE:	March 21, 2022

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.

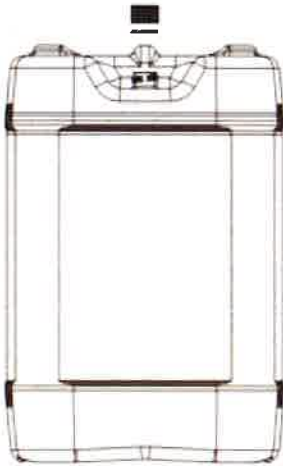
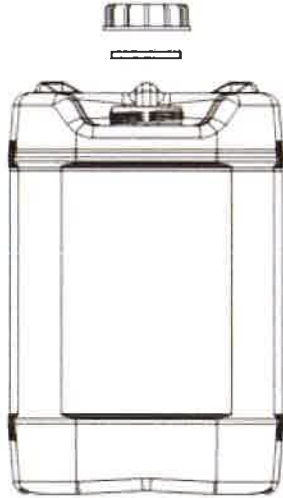
**MANUFACTURER:**

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 / COMPONENT DRAWINGS**

**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: 1.255 Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze 20.531 Kg

- Water 20.482 Kg

Package Test Weight:

- WW/A: 21.786 Kg

- Water 21.737 Kg

Calculated Package Gross Mass: 38.8 Kg (85.5 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-081 B

Equipment for 22mm Cap: GP 055 A & 056 A and V-GP-171 A

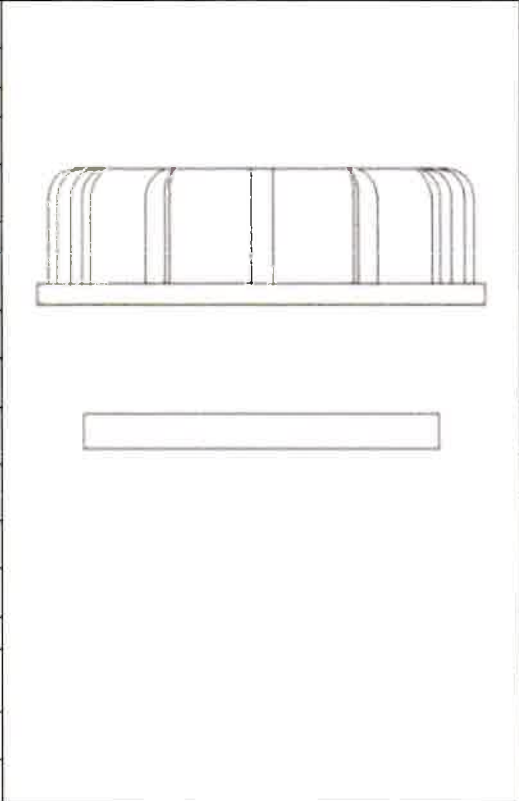
**COMPONENT INFORMATION**

**CLOSURE (8229-202-060)**

**Manufacturer: Miami Valley Plastics, Eldorado, OH**


**Description:** 70MM Cap – Polypropylene – W / ¼ NPT & Square Gasket

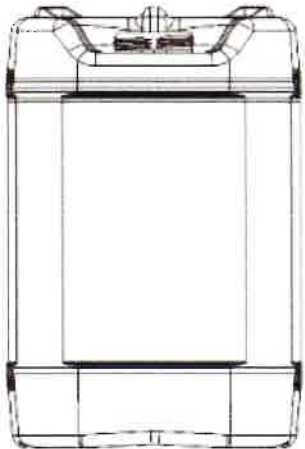
<b>Priority Item Number:</b>	8229-202-060
<b>Tare Weight:</b>	41.32 Grams
<b>Closure Overall Dimensions:</b>	
• <b>Height</b>	0.953”
• <b>Diameter</b>	3.233”
<b>Finish Dimensions:</b>	
• <b>T</b>	2.783”
• <b>E</b>	2.21
• <b>Thread Pitch</b>	8 Threads per inch
<b>Markings ( QC Audit):</b>	No Markings,12 Ribs around the outside
<b>Liner/Gasket</b>	EPDM Gasket
<b>Identification:</b>	None
<b>Wall Thickness:</b>	0.179”
<b>Height Thickness:</b>	0.251”
<b>Diameter:</b>	2.592”



<b>CLOSURE 6043-000-070</b>		<b>Drawing</b>
<b>Manufacturer: Berry Plastics</b>		<p>The drawing shows a perspective view of a cylindrical cap with a foam liner at the base. The cap has fine vertical ribs around its circumference. Below the perspective view is a simple rectangular outline representing the cap's footprint.</p>
<b>Description:</b>	22/410 Fine Rib Serrated Closure-Lined	
<b>Material:</b>	Polypropylene	
<b>Tare Weight:</b>	2.24 Grams	
<b>Overall Dimensions:</b>		
• <b>Height</b>	0.661”	
• <b>Diameter</b>	1.000”	
<b>Thread Dimensions:</b>		
• <b>T</b>	0.875”	
• <b>E</b>	0.786”	
<b>Liner:</b>		
<b>Description:</b>	Foam Liner	

**TIGHT HEAD PLASTIC JERRICAN (7940)**

<b>Manufacturer: Priority Plastics, Portland, IN</b>			
<b>Description:</b> 20 Liter Rectangle with Integrated Handle 70MM and 22MM Vent Hole			
<b>Material /Pigment:</b> High Density Polyethylene /Natural			
<b>Method of Manufacturer:</b>		Blow Molded	
<b>Tare Weight:</b>		1.211 Kg	
<b>Capacity:</b>			
• <b>Rated:</b>		5 Gallons	
• <b>Overflow:</b>		20.900 Kg (5.515Gallons)	
<b>Overall Dimensions:</b>			
• <b>Height:</b>		15.184"	
• <b>Length:</b>		11.026"	
• <b>Width:</b>		10.277"	
<b>Finish Dimensions:</b>			
• <b>70 mm T</b>		2.750"	
• <b>70 mm E</b>		2.584"	
• <b>70 mm Neck Height</b>			
<b>Wall Thickness:</b>			
	Body	Top Head	Btm Head
• <b>Minimum</b>	0.042"	0.038"	0.039"
• <b>Minimum From Design Qualification Report 2018-25</b>	0.037"	0.041"	0.039"
• <b>Material:</b>		High Density Polyethene	
<b>Markings (QC Audit)</b>		 3H1/Y1.8/150/21/ USA/M5105 "2" HDPE Recycling Symbol, PRIORITYPLASTICS.COM, Month Clock, 9	




**SECTION III: TEST PROCEDURES AND RESULTS**


**DROP TESTS**

TEST INFORMATION	TEST CRITERIA
<p><b>TEST CONTENTS:</b> Windshield Washer/Antifreeze(0.975SG)</p> <p><b>SAMPLE PREPARATION:</b> REFER TO Section II</p> <p><b>CONDITIONING:</b> -18°C (0°F), Chamber #</p> <p><b>TEST CONTENTS TEMP.:</b> -18.1°C</p> <p><b>DROP HEIGHT:</b> 1.83 Meters (72") (Refer to Section IV)</p> <p><b>TEST EQUIPMENT:</b> L.A.B. Accu drop 160</p>	<ul style="list-style-type: none"> <li>For packaging containing liquid, each packaging does not leak when equilibrium has been reached between the internal and external pressures.</li> <li>Any discharge from a closure is slight and ceases immediately after impact with no further leakage. (§ 178.603)</li> </ul>

**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
	5	PASS	No leakage or Breakage
	6	PASS	No leakage or Breakage
	7	PASS	No leakage or Breakage



**LEAKPROOFNESS TESTS**

TEST INFORMATION		TEST CRITERIA
<b>TEST CONTENTS:</b>	Empty	<ul style="list-style-type: none"> <li>A packaging passes the test if there is no leakage of air from the packaging. (§ 178.604)</li> </ul>
<b>CLOSURE APPLICAAION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	Ambient	
<b>TEST PRESSURE:</b>	20.7 kPa (3 PSI)	
<b>TEST DURATION:</b>	5 Minutes	
<b>AREA OF PRESSURIZATION:</b>	Through the Sidewall	
<b>TEST EQUIPMENT:</b>	Regulated Air Source Pressure Monitoring Gauge	

**LEAKPROOFNESS TEST SET-UP & RESULTS**


	Sample #	Results	Comments / Observations
	14	PASS	<p><b>All three samples maintained the 20.7 kPa test pressure for 5 minutes without leakage.</b></p>
	15	PASS	
	16	PASS	



**HYDROSTATIC PRESSURE TEST**

TEST INFORMATION		TEST CRITERIA
<b>TEST CONTENTS:</b>	Water	<ul style="list-style-type: none"> <li>For each test sample, there is no leakage of liquid from the package. (§ 178.604)</li> </ul>
<b>FILL CAPACITY:</b>	Maximum Capacity	
<b>CLOSURE APPLICATION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	Ambient	
<b>TEST PRESSURE:</b>	150 kPa (21.76 psi)	
<b>TEST DURATION:</b>	30 Minutes	
<b>AREA OF PRESSURATION:</b>	Through the Sidewall	
<b>TEST EQUIPMENT:</b>	Regulated Water Source Pressure Monitoring Gauge	


**HYDROSTATIC PRESSURE TEST SET-UP & RESULTS**

	Sample #	Results	Comments / Observations
		17	PASS
	18	PASS	
	19	PASS	

**DYNAMIC COMPRESSION TEST RESULTS**

TEST INFORMATION		TEST CRITERIA
<b>TEST CONTENTS:</b>	Empty and Without Closure	<ul style="list-style-type: none"> <li>• After application of the required load, there can be no buckling of the sidewalls sufficient to cause damage to its expected contents.</li> <li>• In no case may the maximum deflection exceed one inch. (§ 178.606)</li> </ul>
<b>SAMPLE PREPARATION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	Ambient	
<b>PRE-LOAD APPLIED:</b>	50 Lbs.	
<b>MINIMUM TEST LOAD REQUIRED:</b>	395.025 Kg (870.88 Lbs.) (Refer to Section IV.)	
<b>TEST EQUIPMENT:</b>	TLS(Tech Lab Systems)	


**DYNAMIC COMPRESSION TEST SET-UP & RESULTS**

	Sample #	Load	Deflection	Results
	8	870.88 Lbs.	0.778"	Passed
	9	870.88 Lbs.	0.910"	Passed
	10	870.88 Lbs.	0.869"	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**  
**REPETITIVE SHOCK VIBRATION TESTS**

TEST INFORMATION		TEST CRITERIA
<b>TEST CONTENTS:</b>	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"> <li>• A package passes the vibration test if there is no rupture or leakage from any of the packages.</li> <li>• No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength. (§ 178.608)</li> </ul>
<b>SAMPLE PREPARATION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	Ambient	
<b>TABLE DISPLACEMENT:</b>	1"	
<b>TEST FREQUENCY:</b>	4.0 Hz	
<b>TEST DURATION:</b>	1 Hour	
<b>TEST EQUIPMENT:</b>	Vertical motion using Vibration Tester	

VIBRATION TEST SET-UP & RESULTS			
	Sample #	Results	Comments / Observations
	11	PASS	No leakage or damage.
	12	PASS	
	13	PASS	

**REGULATORY AND INDUSTRY STANDARD REFERENCES**

<b>REGULATORY REFERENCES</b>	
<b>TEST</b>	<b>49 CFR 2020 EDITION</b>
<b>Drop:</b>	178.603
<b>Leakproofness:</b>	178.604
<b>Hydrostatic Pressure:</b>	178.605
<b>Stack:</b>	178.606
<b>Vibration:</b>	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):	1.255 Kg	<u>WW/A SG</u>
Overflow Capacity (OFC) :		SG: 0.975
Windshield Washer/Antifreeze	20.950 Kg	
Water	20.900 Kg	5.515 Gallons (GAL)
Packing Group:	II	
Product Specific Gravity (PSG):	1.8	
Packing Group Multiplication Factor (MF):	1.00	
Nesting Height of one Package (NH):	15.184 Inches	
Stack Test # of Samples Tested Simultaneously:	0	

**98% OF OVERFLOW**

Overflow Capacity (OFC) x 98%

<u>OFC</u>	x	<u>98%</u>		
20.950	x	98% =	20.531 Kg	WW/A
20.900	x	98% =	20.482 Kg	Water

**PACKAGED TEST WEIGHT**

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

<u>PTW</u>	+	<u>98% OFC =</u>		
1.255	+	20.531	21.786 Kg	47.0298 Lbs. WW/A
1.255	+	20.482	21.737 Kg	47.9218 Lbs. Water

**CALCULATED PACKAGE GROSS MASS (CPGM)**

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

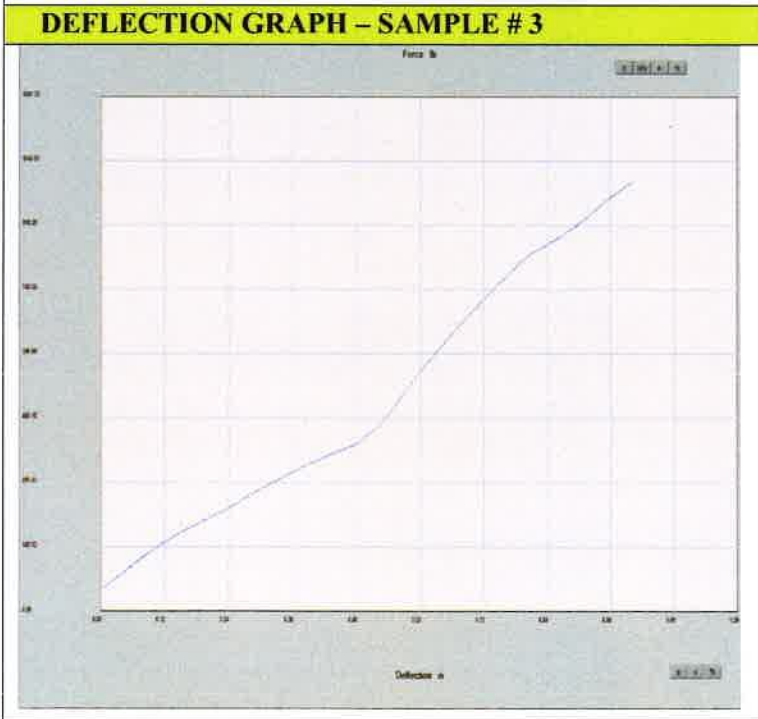
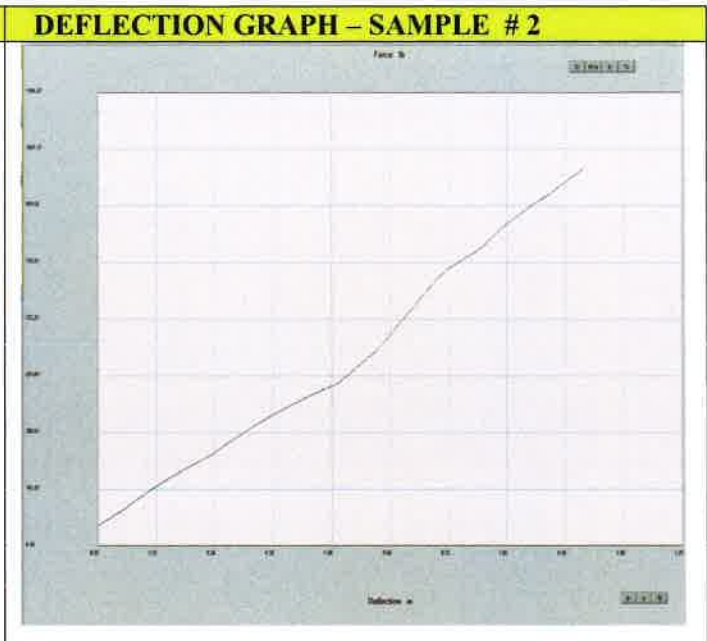
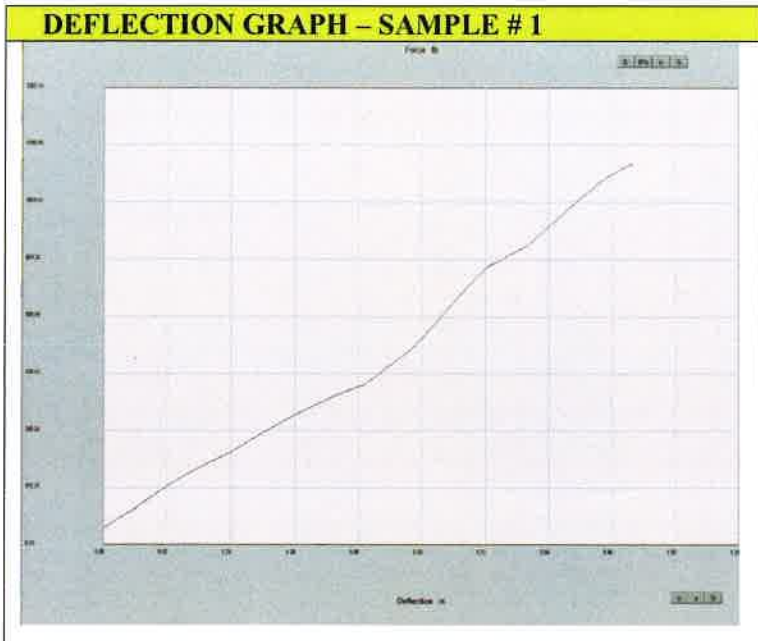
<u>PTW</u>	+	<u>(PSG</u>	x	<u>98% OFC)</u>	
1.255	+	1.8	x	20.482	
		38.12 Kg		84.04 Lbs.	

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

DYNAMIC COMPRESSION TEST LOAD CALCULATIONS	
<b>Dynamic Compression Test Load Calculation</b>	
<b>Where</b>	
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	
$\frac{A}{849.0789} = \frac{n \times (w + (s \times v \times 8.3 \times 0.98)) \times 1.5}{6.778 \times 2.767 \times 1.8 \times 5.515 \times 8.3 \times .98 \times 1.5}$	
385.1357 Kg	849.0789 Lbs.
<b>Minimum Required Top Load Used in Design Qualification Testing x 1.5 Compensation Factor*</b>	
Top Load used in Design Qualification Testing: 263.35 Kg x 1.5 = 395.025 Kg    870.88 Lbs. Minimum Required Top Load	
<b>N = Number of Packages in a 3m High Stack (118.11/Nesting Height (NH)-1)</b>	
118/Nesting Height of one Pkg (NH)-1	
$\frac{(118.11)}{118.11} / \frac{(NH)}{15.184} - 1 = \frac{n}{6.778}$	



**SECTION V: INDIVIDUAL LOAD VS. DEFLECTION GRAPHS AND DATA**



**MAXIMUM LOAD VS. DEFLECTION**

Sample #	Maximum Load – Lbs.	Deflection – Inch
8	1135.13 Lbs.	1.00"
9	955.35 Lbs.	1.00"
10	998.10 Lbs.	1.00"



Corporate Office  
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 Portland IN 47371  
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Date Created: May 23, 2019  
 Updated to New Format: August 16, 2019

## Closing Instructions for 20 Liter – 70MM 8TPI, 22MM

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

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.