

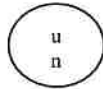
**DOT/UNITED NATIONS  
Performance Oriented Packaging Certification**



**3H1 PERIODIC RETEST**

**7920 20 Liter HDPE Container  
No Vent- Group II  
240 – 270 Torque Range**

**Test Report #: 2023-36**



3H1/Y1.9/150/\*\*  
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: 08/14/23  
Re-Certification Date: 08/14/24

**TABLE OF CONTENTS**

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

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

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

*DROP TESTS.....8*

*LEAKPROOF TEST.....9*

**DYNAMIC COMPRESSION TEST .....10**

**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 HDPE Packaging

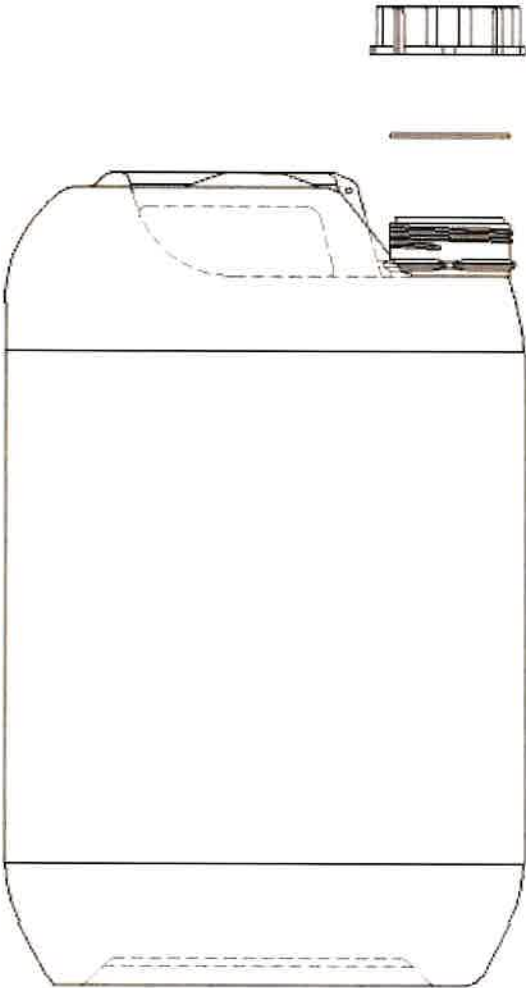
Priority Plastics, Inc. certifies that the packaging referenced above has passed the standards of the DEPARTMENT OF TRANSPORTATION'S TITLE 49 CFR; Performance Oriented Packaging Standards, Section 178. It is the responsibility of the end user to determine authorization for use under these regulations. 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	1.9 m	Windshield Fluid/Antifreeze (WW/A) Coolant 50/50 Diluted	August 14, 2023	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	August 15, 2023	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	August 14, 2023	PASS
Stacking/Dynamic Compression	178.606	898.05 lbs.	Water	August 14, 2023	PASS
TEST REPORT NUMBERS: 2019-49, 2020-31, 2021-34, 2022-27, 2023-36					
UN MARKING: (CFR 49 – 178.503)				3H1/Y1.9/150/** USA/M5105/1.1mm	
PACKAGING IDENTIFICATION CODE:			3H1 (178.509)		
PERFORMANCE STANDARD:			Y (Packaging meets Packing Group II test)		
MAXIMUM PRODUCT SPECIFIC GRAVITY:			1.9		
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		
PERIODIC RETEST DATE:			August 14, 2023		

Note: It is the responsibility of the packaging user to ensure that all items shipped within this package are allowed to be shipped via this package in accordance with USDOT 49CFR and/or modal regulations applicable to the intended mode of transportation. The use of packaging methods other than those provided by Priority Plastics or the use of components other than those documented in this report may render this certification invalid.

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

  
 Heather Smith  
 Quality Supervisor  
 Priority Plastics, Inc.  
 500 Industrial Park Rd  
 Portland, IN 4737

SECTION II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS		
20 Liter, HDPE Packaging		
	Certification Type: Periodic Retest	
	Packaging Code Designation: 3H1	
	Packing Group: II	
	Specific Gravity: 1.9	
	Hydrostatic Pressure: 150 kPa	
	<b>TEST SAMPLE PREPARATION</b> (Refer to Section IV)	
	Overall Package Tare Weight: 1.730 Kg	
	Fill Capacity (98% Overflow):	
	<ul style="list-style-type: none"> <li>• Windshield Washer/Antifreeze 22.785 Kg</li> <li>• Water 22.250 Kg</li> </ul>	
	Package Test Weight:	
	<ul style="list-style-type: none"> <li>• WW/A: 24.515 Kg</li> <li>• Water 23.980 Kg</li> </ul>	
	Calculated Package Gross Mass: 44 Kg (97.00 Lbs.)	
	<b>CLOSING METHODS</b>	
	Application Torque: 240 - 270 In-Lbs.	
	Equipment: : GP-052 & V-GP-085-A	


**COMPONENT INFORMATION**

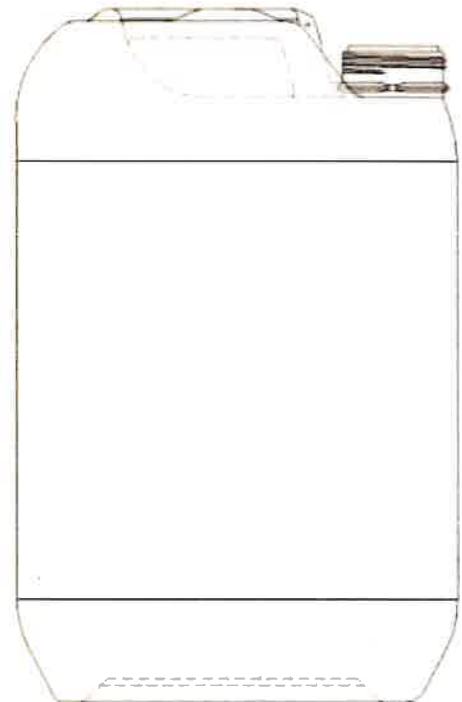
**CLOSURE (8724-205-060)**

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

<b>Description:</b> Assembled -63mm Solid Closure	
<b>Priority Item Number:</b>	8724-205-060
<b>Tare Weight:</b>	33.75 Grams
<b>Closure Overall Dimensions:</b>	
• <b>Height</b>	0.97"
• <b>Diameter</b>	3.2"
<b>Finish Dimensions:</b>	
• <b>T</b>	2.60"
• <b>E</b>	2.389"
• <b>Thread Pitch</b>	6 Threads per inch
<b>Markings ( QC Audit):</b>	12 Ribs around the outside, PE, 1
<b>Liner/Gasket</b>	F-439 Polyfoam Liner
<b>Identification:</b>	None
<b>Height Thickness:</b>	0.07"
<b>Diameter:</b>	2.351"



TIGHT HEAD PLASTIC JERRICAN (7920)			
<b>Manufacturer: Priority Plastics, Portland, IN</b>			
<b>Description: 20 Liter Container with a integrated handle</b>			
<b>Material /Pigment: High Density Polyethylene /Natural</b>			
<b>Method of Manufacturer:</b>	Blow Molded		
<b>Tare Weight:</b>	1.730 Kg		
<b>Capacity:</b>			
• <b>Rated:</b>	20 Liters		
• <b>Overflow:</b>	22.705 Kg (6 Gallons) (22.70 Liters)		
<b>Overall Dimensions:</b>			
• <b>Height:</b>	16.4"		
• <b>Length:</b>	10.6"		
• <b>Width:</b>	10.548"		
<b>Finish Dimensions:</b>			
• <b>T</b>	2.541"		
• <b>E</b>	2.376"		
• <b>Neck Height</b>			
<b>Wall Thickness:</b>	<b>Body</b>	<b>Top Head</b>	<b>Btm Head</b>
• <b>Minimum</b>	0.044"	0.043"	0.052"
• <b>Minimum Per Reusable Packaging CFR 178.23 (4)</b>	0.043"	0.043"	0.043"
• <b>Material:</b>	High Density Polyethylene		
<b>Markings (QC Audit)</b>	 <p>3H1/Y1.9/150/23                  USA/M5105 1.1mm                  "2" HDPE Recycling Symbol                  Month and Day Clock, Cavity 1                  KEEP THIS END                  ↑ UP ↑</p>		




**SECTION III: TEST PROCEDURES AND RESULTS**


**DROP TESTS**

TEST INFORMATION	TEST CRITERIA
<p><b>TEST CONTENTS:</b> Windshield Washer/Antifreeze(0.986SG)</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> -18.11°C (-0.598°F)</p> <p><b>DROP HEIGHT:</b> 1.9 Meters (75") (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>	21 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
	8	PASS	All three samples maintained the 20 kPa test pressure for 5 minutes without leakage.
	9	PASS	
	10	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
	11	PASS	All three samples maintained the 150 kPa test pressure for 30 minutes without leakage.
	12	PASS	
	13	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>	407.34 Kg (898.03 Lbs.) (Refer to Section IV.)	
<b>TEST EQUIPMENT:</b>	TLS(Tech Lab Systems)	

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

	Sample #	Load	Deflection	Results
	14	898.03 Lbs.	0.580"	Passed
	15	898.03 Lbs.	0.540"	Passed
	16	898.03 Lbs.	0.587"	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.

<b>TEST INFORMATION</b>	<b>TEST CRITERIA</b>
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**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: MATEMATICAL CALCULATIONS**

**INFORMATION USED FOR CALCULATIONS**

Overall Packaged Tare Weight (PTW):	1.730 Kg	<u>WW/A SG</u>
Overflow Capacity (OFC) :		SG: 0.980
Windshield Washer/Antifreeze	23.250 Kg	
Water	22.705 Kg	6 Gallons (GAL)
Packing Group:	II	
Product Specific Gravity (PSG):	1.8	
Packing Group Multiplication Factor (MF):	1.00	
Nesting Height of one Package (NH):	16.40 Inches	
Stack Test # of Samples Tested Simultaneously:	0	

**98% OF OVERFLOW**

Overflow Capacity (OFC) x 98%

<u>OC</u>	x	<u>98%</u>		
23.250	x	98% =	22.785 Kg	WW/A
22.705	x	98% =	22.250 Kg	Water

**PACKAGED TEST WEIGHT**

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

<u>PTW</u>	+	<u>98% OFC =</u>		
1.730	+	22.785	24.515 Kg	54.046 Lbs. WW/A
1.730	+	22.250	23.980 Kg	52.866 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>	
1.730	+	1.9	x	22.250	
		44 Kg			97.003 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>		
1.9	x	1.00	<b>Required Drop Height</b>	<b>Actual Drop Height</b>
			<b>1.90 Meter</b>	<b>75 Inches</b>
			<b>74.8 Inches</b>	

**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

$$\frac{A}{897.827} = \frac{n \times (w + (s \times v \times 8.3 \times 0.98)) \times 1.5}{6.20 \times 3.813 + 1.9 \times 6.00 \times 8.3 \times 0.98 \times 1.5}$$

**407.247 Kg                      897.827 Lbs.**

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

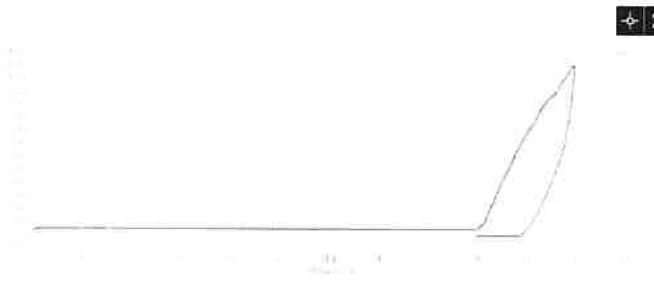
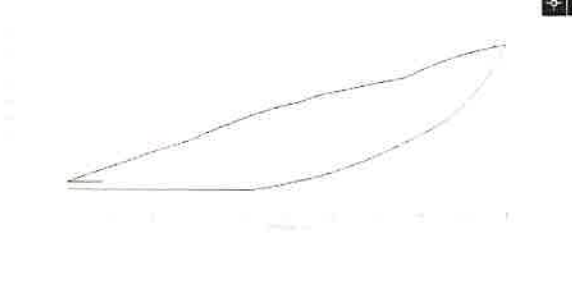
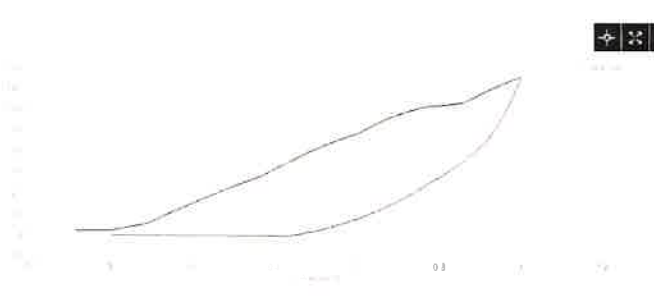
Top Load used in Design Qualification Testing: 272.8 Kg x 1.5 = 409.20 Kg    902.13 Lbs.  
 Minimum Required Top Load

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

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

$$\frac{(118.11)}{118.11} / \frac{NH}{16.4} - \frac{1}{1} = \frac{n}{6.2}$$

**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														
	<table border="1"> <thead> <tr> <th>Sample #</th> <th>Maximum Load – Lbs.</th> <th>Deflection – Inch</th> </tr> </thead> <tbody> <tr> <td>14</td> <td>1319.61 Lbs.</td> <td>0.96"</td> </tr> <tr> <td>15</td> <td>1668.57 Lbs.</td> <td>1.00"</td> </tr> <tr> <td>16</td> <td>1526.65 Lbs.</td> <td>0.96"</td> </tr> </tbody> </table>	Sample #	Maximum Load – Lbs.	Deflection – Inch	14	1319.61 Lbs.	0.96"	15	1668.57 Lbs.	1.00"	16	1526.65 Lbs.	0.96"		
Sample #	Maximum Load – Lbs.	Deflection – Inch													
14	1319.61 Lbs.	0.96"													
15	1668.57 Lbs.	1.00"													
16	1526.65 Lbs.	0.96"													
	14	1319.61 Lbs.	0.96"												
	15	1668.57 Lbs.	1.00"												
	16	1526.65 Lbs.	0.96"												

## Closing Instructions

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

Date Created:  
Updated to New Format: 7.30.2019

### Closing Instructions for 20 Liter Container

Caps that this closing instruction includes are:

Priority Plastics Cap: HDPE 63MM cap with an F-439 Line (Priority Item Number: 8724-205-060).



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 240-270 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.