

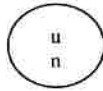
**DOT/UNITED NATIONS**  
**Performance Oriented Packaging Certification**



**3H1 Periodic Retest**

**7940 20 Liter Rectangle 63MM**  
**Rieke FS-10-10-231 Solid Flexspout**  
**Vent- Group II**  
**8241-003 and 8231-000-070**

**Test Report #: 2021-67**



**3H1/Y1.8/100/\*\***  
**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.**

904 Pinder Ave  
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: 11/2/21  
Recertification Date: 11/2/22

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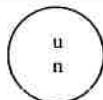
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## SECTION I: Certification

### Periodic Retest

#### 20 Liter 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 2, 2021	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	November 2,2021	PASS
Hydrostatic	178.605	100 kPa – 30 Min.	Water	November 2,2021	PASS
Stacking/Dynamic Compression	178.606	870.26 lbs	Water	November 22,2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	November 1, 2021	PASS
TEST REPORT NUMBERS: 2018-73, 2019-80, 2020-61, 2021-67					
UN MARKING: (CFR 49 – 178.503)				3H1/Y1.8/100/** 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:			100 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:			November 2, 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:

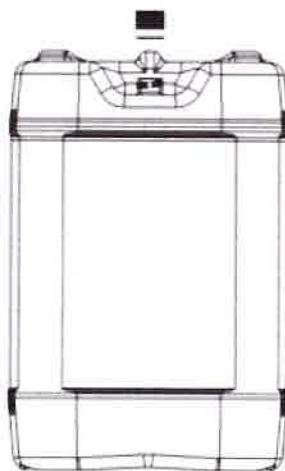
Priority Plastics, Inc.  
500 Industrial Park Road  
Portland, IN 47371



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

## SECTION II: PACKAGING DESCRIPTION / COMPONENTS

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



Certification Type: Periodic Retest

Packaging Code Designation: 3H1

Packing Group: II

Specific Gravity: 1.8

Hydrostatic Pressure: 100 kPa

#### TEST SAMPLE PREPARATION (Refer to Section IV)

Overall Package Tare Weight: 1.205 Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze 20.286 Kg
- Water 20.776 Kg

Package Test Weight:

- WW/A: 21.491 Kg
- Water 21.981 Kg

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

#### CLOSING METHODS

Application Torque Crimp Neck: Manual Crimp On  
Application Torque 22mm Neck: Induction Seal and  
25 -30 In-Lb.

Equipment for Cap Crimp Neck: Rieke FS-600 Crimper  
Equipment : 22MM Cap: Enercon Induction Seal  
In-Line  
GP-055-D, GP-056-C & V-GP-171-A

## COMPONENT INFORMATION

### CLOSURE: 8241-003

**Manufacturer: Rieke Packaging, Auburn Indiana**

**Description:** FS-10-10-231 Self Venting FSII®  
FLEXSPOUT®  
FS-10-C-10 Retainer Zinc Plated Steel or  
Aluminum. FS-10-B-10 Cap H.D. Polyethylene.  
FS-10-A-10 Body L.D. Polyethylene.

**Rieke Item Number:** 03160001

**Priority Item Number:** 8241-003

**Tare Weight:** 27.53 Grams

**Closure Overall Dimensions:**

- **Height** 1.165"
- **O.D. of Retainer** 2.775"
- **O. D. of Body** 2.288"
- **Min. ID of Retainer:** 2.600"
- **Style** Crimp on Finish

**Markings ( QC Audit):** Rieke® FLEXSPOUT®, FSII™  
LIFT BAIL, PULL OUT  
CAVITY 7, Gray Cover—Rieke®,  
Cavity 27



### CLOSURE 8231-000-070

### Drawing

**Manufacturer: Berry Plastics Waterloo Quebec Canada**

**Description:** Polypropylene/White 22/410 Fine Rib Serrated  
Closure Induction Seal

**Material:** Polypropylene

**Tare Weight:** 2.30 Grams

**Overall Dimensions:**

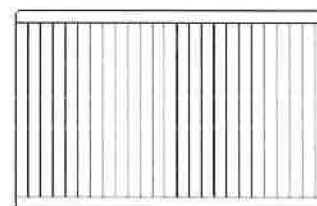
- **Height** 0.656"
- **Diameter** 1.0001"

**Thread Dimensions:**


- **T** 0.867"
- **E** 0.778"


**Liner:**

**Description:** Induction Innerseal



TIGHTHEAD PLASTIC JERRICAN			DRAWING		
Manufacturer: Priority Plastics, Portland, IN					
Description:		20 Liter Rectangle with integrated Handle and 22MM Vent.			
Material / Pigment:		High Density Polyethylene /Purple			
Method of Mfgr:		Blow Molded			
Tare Weight:		1.210 Kg			
Capacity:					
• Rated:		5.3 Gallon			
• Overflow:		21.200 Kg (5.599 Gallons)			
Overall Dimensions:					
• Height:		15.125"			
• Length:		11.079"			
• Width:		10.283"			
Finish Dimensions:					
• O.D. Neck		2.576"			
• I.D. Neck		2.289"			
• Bead Thickness		0.152"			
Thread Pitch					
Wall Thickness:		Body	Top Head	Bottom Head	
• Minimum		0.043"	0.040"	0.039"	
• Minimum From Design Cert 2018-73		0.041"	0.040"	.038"	
• Material:		High Density Polyethene			
Markings (QC Audit)		<div><div><div>u</div><div>n</div></div><div>3H1/Y1.8/100/21 USA/M5105</div></div> <div>“2” HDPE Recycling Symbol, Month Clock, Cavity # 8 PRIORITYPLASTICS.COM</div>			










### SECTION III: TEST PROCEDURES AND RESULTS


#### DROP TESTS

TEST INFORMATION	TEST CRITERIA
<p><b>TEST CONTENTS:</b> Windshield Washer/Antifreeze (0.975 SG)</p> <p><b>SAMPLE PREPARATION:</b> REFER TO Section II</p> <p><b>CONDITIONING:</b> -18°C (0°F)</p> <p><b>TEST CONTENTS TEMP.:</b> -21.63°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</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
	4	PASS	No leakage. No damage.
	5	PASS	No leakage. No damage.
	6	PASS	No leakage. No damage.


#### DIAGONAL BOTTOM CHIME DROP TEST SET-UP AND RESULTS

	Sample #	Results	Comments
	8	PASS	No leakage. No damage.
	9	PASS	No leakage. No damage.
	10	PASS	No leakage. No damage.

## 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(f))</li> </ul>
<b>CLOSURE APPLICATION:</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
	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
<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(e))</li> </ul>
<b>FILL CAPACITY:</b>	Maximum Capacity	
<b>CLOSURE APPLICATION:</b>	Refer to Section II	
<b>CONDITIONING:</b>	Ambient	
<b>WATER TEMPERATURE</b>	75.3°F	
<b>TEST PRESSURE:</b>	100 kPa	
<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
	14	PASS	All three samples maintained the 100 kPa test pressure for 30 minutes without leakage.
	15	PASS	
	16	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>	394.74 Kg (870.25 Lbs.) (Refer to Section IV.)	
<b>TEST EQUIPMENT:</b>	TLS(Tech Lab Systems)	

## DYNAMIC COMPRESSION TEST SET-UP & RESULTS


	Sample #	Load	Deflection	Results
	17	870.25 Lbs.	0.900"	Passed
	18	870.25 Lbs.	0.881"	Passed
	19	870.25 Lbs.	0.789"	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
<b>TEST CONTENTS:</b>	Water	<p>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.</p> <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
	1	PASS	No leakage or damage.
	2	PASS	
	3	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: MATHEMATICAL CALCULATIONS

### INFORMATION USED FOR CALCULATIONS

Overall Packaged Tare Weight (PTW):	1.205 Kg	<u>WW/A SG</u>
Overflow Capacity (OFC) :		<u>SG: 0.975</u>
Windshield Washer/Antifreeze	20.700 Kg	
Water	21.200 Kg	5.599 Gallons (GAL)
Packing Group:	II	
Product Specific Gravity (PSG):	1.8	
Packing Group Multiplication Factor (MF):	1.00	
Nesting Height of one Package (NH):	15.125 Inches	
Stack Test # of Samples Tested Simultaneously:	0	

### 98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OC</u>	x	<u>98%</u>		
20.700	x	98% =	20.286 Kg	WW/A
21.200	x	98% =	20.776 Kg	Water

### PACKAGED TEST WEIGHT

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

<u>PTW</u>	+	<u>98% OFC =</u>		
1.205	+	20.286	21.491 Kg	47.379 Lbs. WW/A
1.205	+	20.776	21.981 Kg	48.459 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>
1.205	+	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		<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**

**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

$$\frac{A}{863.247} = \frac{n \times (w + (s \times v \times 8.3 \times 0.98)) \times 1.5}{6.80 \times 2.656 \times 1.8 \times 5.599 \times 8.3 \times 0.98 \times 1.5}$$

391.562 Kg

863.247 Lbs.

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

Top Load used in Design Qualification Testing: 263.16 Kg x 1.5 = 394.74 Kg 870.25 Lbs.  
Minimum Required Top Load

**N = Number of Packages in a 3m High Stack (118.11/Nesting Height (NH)-1)**

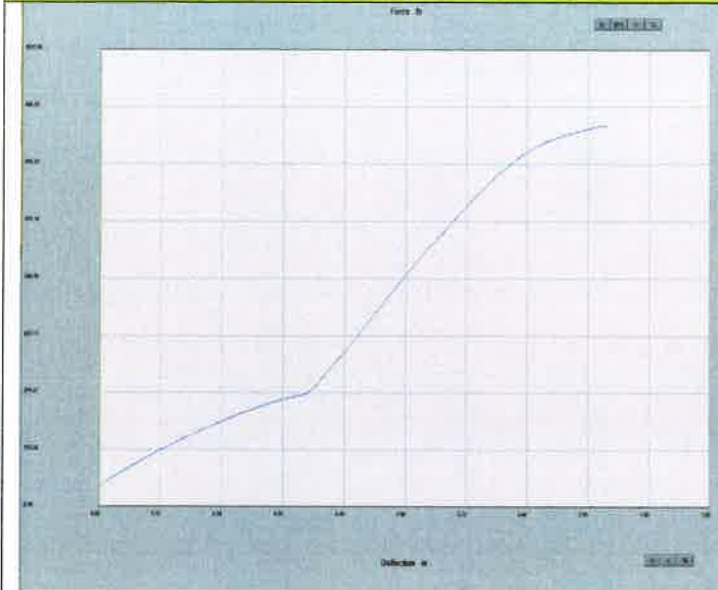
118.11/Nesting Height of one Pkg (NH)-1

$$\frac{(118.11)}{118.11} / \frac{(NH)}{15.125} - \frac{1}{1} = \frac{n}{6.80}$$

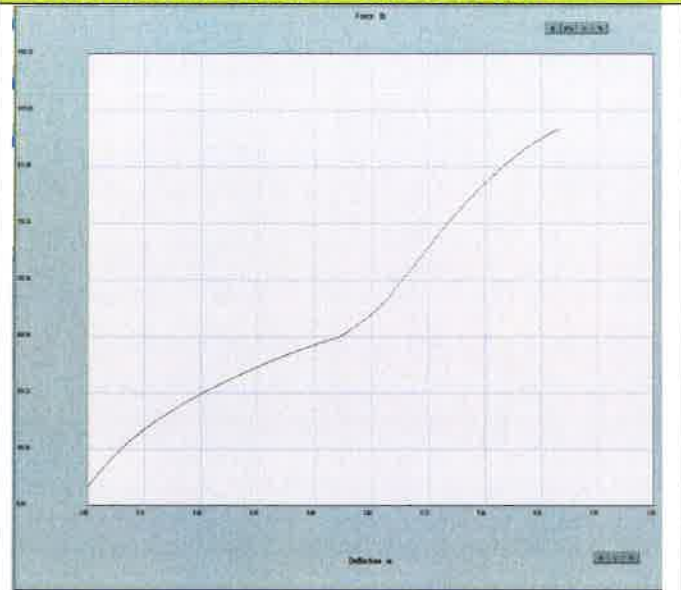


**SECTION V: INDIVIDUAL LOAD VS. DEFLECTION GRAPHS AND DATA**

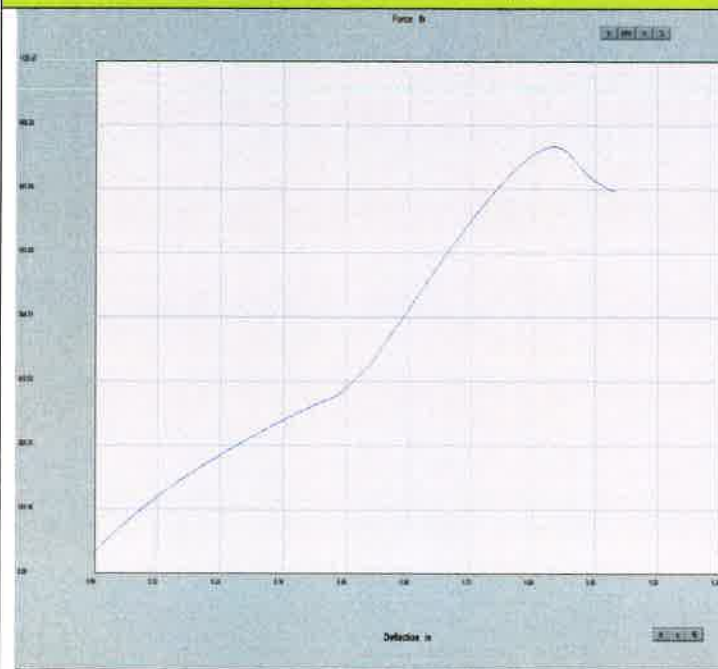
**DEFLECTION GRAPH – SAMPLE # 1**



**DEFLECTION GRAPH – SAMPLE # 2**



**DEFLECTION GRAPH – SAMPLE # 3**



**MAXIMUM LOAD VS. DEFLECTION**

Sample #	Maximum Load – Lbs.	Deflection – Inch
15	901.58 Lbs.	1.00"
16	971.10 Lbs.	1.00"
17	941.18 Lbs.	0.88"

## Closing Instructions

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

Date Created:  
Revision Date: November 21, 2021

### Closing Instructions for 20 Liter – Flexspout & 22MM Vent

Caps that this closing instruction includes are:

Rieke Cap: FS-10-10-231 Self Venting FSII Solid Flexspout (Rieke # 03160001, Priority # 8241-003)

Cap: Berry Plastics Quebec Canada.: Priority item number 8231-000-070 with Induction Seal Liner.



**Step 1** Place the correct flexspout cap as listed above on the container



**Step 2.** Sit the flexspout cap in the neck opening of the container



**Step 3.** Place Rieke's FS-600 Crimper fixture over the flexspout cap



**Step 4.** Pull down on the handles on the crimper to crimp the flexspout on the container ensuring to pull down evenly to ensure the flexspout is crimped over the bead on the neck finish of the container.



**Step 5.** Ensure the 22MM Cap is Induction Sealed.



**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.