

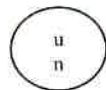
DOT/UNITED NATIONS

Performance Oriented Packaging Certification



DESIGN QUALIFICATION

**7944 5 Gallon Rectangle 63mm
Swing Handle
22MM Vent- No Hole - Group II
HDPE
8241-003- Rieke FSII Cap
Test Report #: 2021-64**



3H1/Y1.8/150/
USA /5105**

****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: 10/1/21
Recertification Date: 10/1/22

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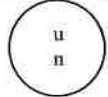
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SECTION I: Certification

Design Qualification
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	1.8 m	Windshield Fluid/Antifreeze Coolant 50/50 Diluted (WW/A)	September 3,2021	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	September 8, 2021	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	September 10,2021	PASS
Stacking	178.606	595.3 lbs.	Water	October 1, 2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	September 2, 2021	PASS
TEST REPORT NUMBERS:		2021-64			
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			October 1, 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:

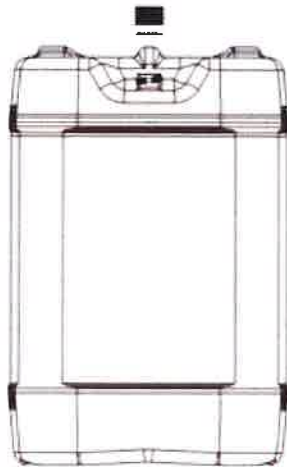
Priority Plastics, Inc.
500 Industrial Park Road
Portland, IN 47371



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

SECTION II: PACKAGING DESCRIPTION / COMPONENTS

5 Gallon Rectangle, Crimp Neck, 22MM Vent-No Hole HDPE Packaging



Certification Type:	Design Qualification
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:	1.190 Kg
Fill Capacity (98% Overflow):	
• Windshield Washer/Antifreeze	18.963 Kg
• Water	20.090 Kg
Package Test Weight:	
• WW/A:	20.153 Kg
• Water	21.280 Kg
Calculated Package Gross Mass:	37.35 Kg (82.34 Lbs.)

CLOSING METHODS

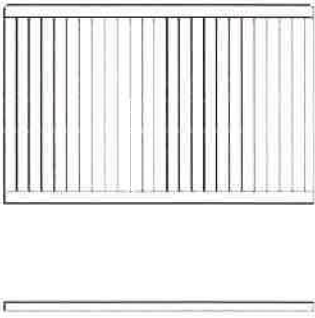
Application Torque Crimp Neck: Manual Crimp On
Application Torque 22MM Neck: 25 & 30 In-Lbs.
Equipment for Cap Crimp Neck: Rieke FS-600 Crimper
Equipment for 22MM Neck: GP-055_G & GP-056-A and V-GP-171-A

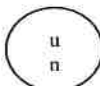
COMPONENT INFORMATION

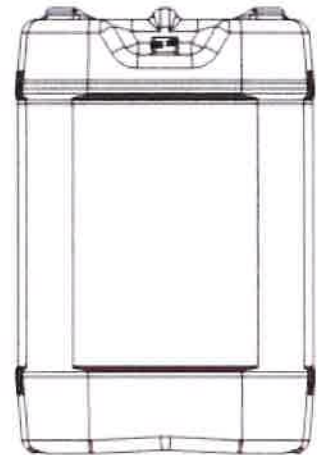
CLOSURE (8241-003)

Manufacturer: Rieke Corporation		  
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:	27.77 Grams	
Closure Overall Dimensions:		
• Height	1.192"	
• O.D. of Retainer	2.775"	
• O. D. of Body	2.290"	
• Min. ID of Retainer:	2.612"	
• Style	Crimp on Finish	
Markings (QC Audit):	Rieke® PAT. PEND FLEXSPOUT® LIFT BAIL, PULL OUT CAVITY 58, Gray Cover—Rieke6®, PA. PEND, Cavity 33	

CLOSURE 6043-000-070	Drawing
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Manufacturer: Berry Plastics		
Description:	22/410 Fine Rib Serrated Closure-Lined	
Material:	Polypropylene	
Tare Weight:	2.23 Grams	
Overall Dimensions:		
• Height	0.654"	
• Diameter	1.004"	
Thread Dimensions:		
• T	0.872"	
• E	0.786"	
Liner:		
Description:	Foam Liner	

TIGHT HEAD PLASTIC JERRICAN (7944)			
Manufacturer: Priority Plastics, Portland, IN			
Description: 5 Gallon Rectangle W/Swing Handle 63MM Crimp and 22MM Vent – No Hole			
Material /Pigment: High Density Polyethylene /Natural			
Method of Manufacturer:		Blow Molded	
Tare Weight:		1.160 Kg	
Capacity:			
• Rated:		5 Gallons (20 Liters)	
• Overflow:		20.500 Kg (5.41 Gallons)	
Overall Dimensions:			
• Height:		14.35"	
• Length:		11.220"	
• Width:		10.269"	
Finish Dimensions:			
• O.D. Neck		2.583"	
• I.D. Neck		2.295"	
• Bead Thickness			
Wall Thickness:		Body	Top Head
• Minimum		0.039"	0.036"
			Btm Head
			0.039"
• Material:		High Density Polyethene	
Markings (QC Audit)		 <p>3H1/Y1.8/100/21 /USA/M5105 "2" HDPE Recycling Symbol, Month Clock, 7, PRIORITYPLASTICS.COM</p>	




SECTION III: TEST PROCEDURES AND RESULTS


DROP TESTS

TEST INFORMATION	TEST CRITERIA
<p>TEST CONTENTS: Windshield Washer/Antifreeze(0.971SG)</p> <p>SAMPLE PREPARATION: REFER TO Section II</p> <p>CONDITIONING: -18°C (0°F)</p> <p>TEST CONTENTS TEMP.: -18.7°C (-1.66°F)</p> <p>DROP HEIGHT: 1.83 Meters (72") (Refer to Section IV)</p> <p>TEST EQUIPMENT: L.A.B. Accu drop 160</p>	<ul style="list-style-type: none"> 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
	7	PASS	No leakage or Breakage
	8	PASS	No leakage or Breakage
	9	PASS	No leakage or Breakage


BOTTOM DIAGONAL CHIME DROP TEST SET-UP AND RESULTS

	Sample #	Results	Comments / Observations
	11	PASS	No leakage or Breakage
	12	PASS	No leakage or Breakage
	13	PASS	No leakage or Breakage

LEAKPROOFNESS TESTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Empty	<ul style="list-style-type: none"> A packaging passes the test if there is no leakage of air from the packaging. (§ 178.604)
CLOSURE APPLICAAION:	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
	14	PASS	All three samples maintained the 20.7 kPa test pressure for 5 minutes without leakage.
	15	PASS	
	16	PASS	

HYDROSTATIC PRESSURE TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	<ul style="list-style-type: none"> 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:	100 kPa (14.5 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
	17	PASS	All three samples maintained the 100 kPa test pressure for 30 minutes without leakage.
	18	PASS	
	19	PASS	

STACKING AND STACKING STABILITY TEST RESULTS


TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	<ul style="list-style-type: none"> No test sample may leak There can be no deterioration that could adversely affect transportation safety or any distortion liable to reduce the package's strength, cause instability in stacks of packages, or cause damage to inner packagings that is likely to reduce safety in transportation.. (§ 178.606)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	40°C (104°F) Stack Room	
TEST LOAD APPLIED:	275.3487 Kg (607.04 Lbs.)	
TEST EQUIPMENT:	Stack Room and Weights	

STACKING TEST SET-UP AND RESULTS

	Sample #	Maximum Deflection After 28 Days	Results
	1	5/8"	PASS
	2	3/8"	PASS
	3	3/8"	PASS

Comments / Observations: Following the 28 day stack test there was no leakage from the test samples and no damage likely to affect the performance of the package.


STACKING STABILITY TEST SET-UP AND RESULTS

	Results	Criteria For Passing the Test
	PASS	<ul style="list-style-type: none"> In guided load tests, stacking stability must be assessed after test completion. Two filled packages of the same type must be placed on the test sample. The stacked packages must maintain their position for one hour. (178.606)
<p>For stack stability Priority Plastics places the filled packages one on top of the other. The bottom sample is rotated to the top until all three samples have been subjected to stacking stability for one hour each.</p>		

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. <ul style="list-style-type: none"> • 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 DISPLACEMENT:	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
	4	PASS	No leakage or damage.
	5	PASS	
	6	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):	1.190 Kg	<u>WW/A SG</u>
Overflow Capacity (OFC) :		SG: 0.971
Windshield Washer/Antifreeze	19.350 Kg	
Water	20.500 Kg	5.41 Gallons (GAL)
Packing Group:	II	
Product Specific Gravity (PSG):	1.8	
Packing Group Multiplication Factor (MF):	1.00	
Nesting Height of one Package (NH):	14.35 Inches	
Stack Test # of Samples Tested Simultaneously:	0	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OC</u>	x	<u>98%</u>		
19.350	x	98% =	18.963 Kg	WW/A
20.500	x	98% =	20.090 Kg	Water

PACKAGED TEST WEIGHT

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

<u>PTW</u>	+	<u>98% OFC =</u>		
1.190	+	18.963	20.153 Kg	44.429 Lbs. WW/A
1.190	+	20.090	21.280 Kg	46.914 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>	
1.190	+	1.8	x	20.090	
					37.35 Kg
					82.34 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

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				
<u>(118.11</u>	/	<u>NH)</u>	-	<u>1</u>
118.11	/	14.35	-	1
			=	<u>n</u>
			=	7.23
Stack Test Load Calculation (Individual Package)				
Calculated Pkg Gross Mass (CPGM) x # of Pkg in a 3m High Stack (#3mHS)				
<u>CPGM</u>	x	<u>#3Mhs</u>		
37.35	x	7.23		
		270.04 Kg	595.335 Lbs.	

Closing Instructions

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

Date Created: November 12, 2021

Closing Instructions for 5 Gallon Swing Handle – 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: Priority item number 6043-000-060 with Foam Liner.22mm



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 gasket is in the 22 mm closure.



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.

July 10, 2021

WALL THICKNESS PROFILE			
MEASUREMENT LOCATION	MEASUREMENT I.D.	MEASUREMENT In INCHES	MEASUREMENT In MM
	   	TOP HEAD	
1		0.158	4.0132
2		0.157	3.9878
3		0.045	1.1430
4		0.037	0.9398
5		0.065	1.6510
6		0.063	1.6002
7		0.160	4.0640
8		0.213	5.4102
SIDEWALL			
9		0.158	4.0132
10		0.081	2.0574
11		0.152	3.8608
12		0.063	1.6002
13		0.093	2.3622
14		0.080	2.0320
15		0.209	5.3086
16		0.103	2.6162
17		0.213	5.4102
18		0.058	1.4732
19		0.103	2.6162
20		0.088	2.2352
BOTTOM			
21		0.056	1.4224
22		0.225	5.7150
23		0.059	1.4986
24		0.145	3.6380
25	0.055	1.3970	
26	0.178	4.5212	
27	0.056	1.4224	