DOT/UNITED NATIONS

Performance Oriented Packaging Certification

PriorityPlastics

DESIGN QUALIFICATION

7944 5 Gallon Rectangle 63mm
Swing Handle
No Vent- Group II
HDPE
Rieke FSII with White Cap
Test Report #: 2021-42

u n 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: 6/14/21
Recertification Date: 6/14/22

TABLE OF CONTENTS

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)	June 1, 2021	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	June 11, 2021	PASS
Hydrostatic	178.605	150 kPa – 30 Min.	Water	June 11, 2021	PASS
Stacking	178.606	575.4 lbs.	Water	June 14, 2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	June 11, 2021	PASS

TEST REPORT NUMBERS:	**2021-42**
UN MARKING: (CFR 49 – 178.503)	u n 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	June 14, 2022

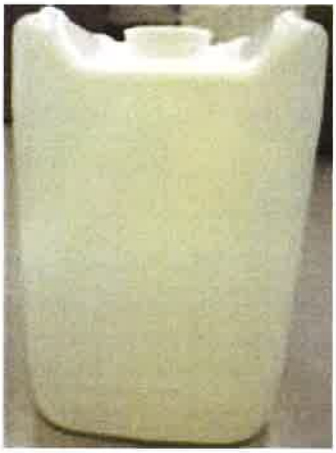
In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

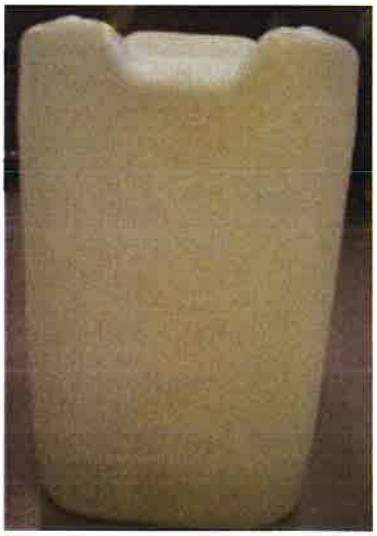
MANUFACTURER:
Priority Plastics, Inc.
500 Industrial Park Road
Portland, IN 47371

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

SECTION II: PACKAGING DESCRIPTION / COMPONENTS

5 Gallon Rectangle, Crimp Neck, No Vent 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: 1.188 Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze 18.816 Kg
- Water 19.365 Kg

Package Test Weight:

- WW/A: 20.004 Kg
- Water 20.553 Kg

Calculated Package Gross Mass: 36.04 Kg (79.45 Lbs.)

CLOSING METHODS

Application Torque Crimp Neck: Manual Crimp On

Equipment for Cap Crimp Neck: Rieke FS-600 Crimper

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:	28.0 Grams
Closure Overall Dimensions:	
• **Height**	1.181"
• **O.D. of Retainer**	2.782"
• **O. D. of Body**	2.295"
• **Min. ID of Retainer:**	2.689"
• **Style**	Crimp on Finish
Markings (QC Audit):	Rieke® PAT. PEND FLEXSPOUT® LIFT BAIL, PULL OUT CAVITY 95, Gray Cover—Rieke6®, PA. PEND, Cavity 34

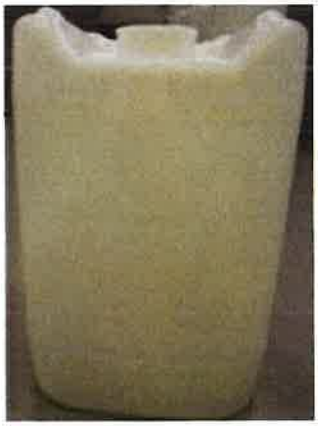
Priority Plastics

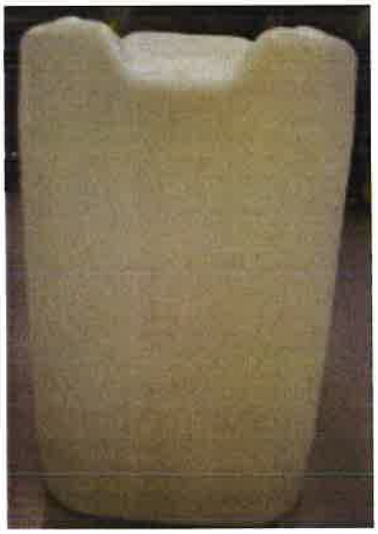
Design Qualification Test Report # 2021-42 done by
Priority Plastics, Inc
July 10, 2021

TIGHT HEAD PLASTIC JERRICAN (7944)

Manufacturer: Priority Plastics, Portland, IN

Description: 5 Gallon Rectangle W/Swing Handle 63MM Crimp and No Vent			
Material /Pigment: High Density Polyethylene /Natural			
Method of Manufacturer:	Blow Molded		
Tare Weight:	1.160 Kg		
Capacity:			
• **Rated:**	5 Gallons (20 Liters)		
• **Overflow:**	19.760 Kg (5.219 Gallons)		
Overall Dimensions:			
• **Height:**	14.33"		
• **Length:**	10.876 "		
• **Width:**	10.199"		
Finish Dimensions:			
• **O.D. Neck**	2.574"		
• **I.D. Neck**	2.300"		
•			
• **Bead Thickness**			
Wall Thickness:	Body	Top Head	Btm Head
• **Minimum**	0.038"	0.035"	0.038"
• **Material:**	High Density Polyethene		
Markings (QC Audit)	u n 3H1/Y1.8/100/21 /USA/M5105 "2" HDPE Recycling Symbol, Month Clock, Logo, 5		





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) **TEST CONTENTS TEMP.:** -18.5°C (-1.3°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
4	PASS	No leakage or Breakage
5	PASS	No leakage or Breakage
6	PASS	No leakage or Breakage

BOTTOM DIAGONAL CHIME DROP TEST SET-UP AND RESULTS

Sample #	Results	Comments / Observations
8	PASS	No leakage or Breakage
9	PASS	No leakage or Breakage
10	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	

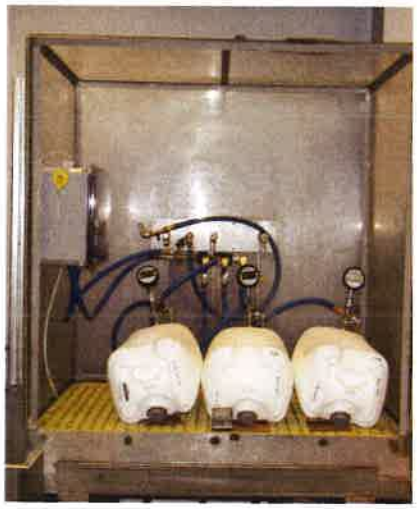
LEAKPROOFNESS TEST SET-UP & RESULTS

Sample #	Results	Comments / Observations
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	• 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
12	PASS	**All three samples maintained the 100 kPa test pressure for 30 minutes without leakage.**
13	PASS	
14	PASS	

STACKING AND STACKING STABILITY TEST RESULTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	• 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:	278.92 Kg (614.92 Lbs.)	
TEST EQUIPMENT:	Stack Room and Weights	

STACKING TEST SET-UP AND RESULTS

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

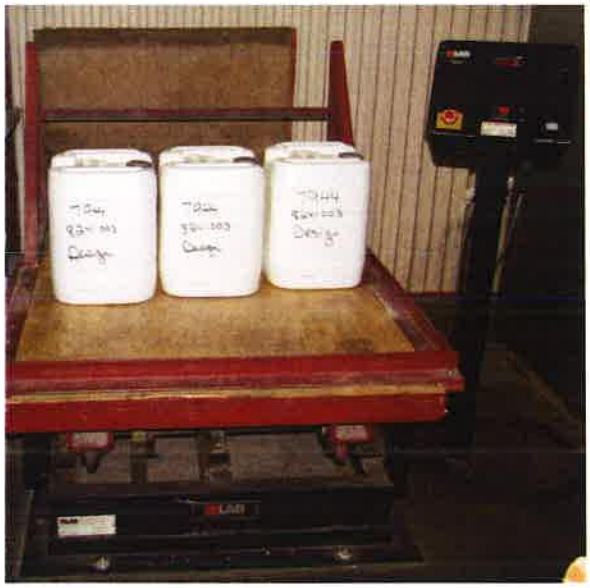
Results	Criteria For Passing the Test
PASS	• In guided load tests, stacking stability must be assessed after test completion. • Two filled packages of the same type must be placed on the test sample. • The stacked packages must maintain their position for one hour. (178.606)

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.

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:	4.0 Hz	
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	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

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):	**1.188 Kg**	**WW/A SG**
Overflow Capacity (OFC) :		**SG: 0.985**
Windshield Washer/Antifreeze	**19.200 Kg**	
Water	**19.760Kg**	**5.219 Gallons (GAL)**
Packing Group:	**II**	
Product Specific Gravity (PSG):	**1.8**	
Packing Group Multiplication Factor (MF):	**1.00**	
Nesting Height of one Package (NH):	**14.33 Inches**	
Stack Test # of Samples Tested Simultaneously:	**0**	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

OC	x	98%		
19.200	x	98% =	**18.816 Kg**	**WW/A**
19.760	x	98% =	**19.365 Kg**	**Water**

PACKAGED TEST WEIGHT

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

PTW	+	98% OFC =		
1.188	+	18.816	**20.004 Kg**	**44.101 Lbs. WW/A**
1.188	+	19.365	**20.553 Kg**	**45.311 Lbs. Water**

CALCULATED PACKAGE GROSS MASS (CPGM)

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

PTW	+	(PSG	x	98%OFC)
1.188	+	1.8	x	19.365
		36.04 Kg		**79.45 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**

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						
(118.11	/	NH)	-	1	=	n
118.11	/	14.33	-	1	=	7.242

Stack Test Load Calculation (Individual Package)				
Calculated Pkg Gross Mass (CPGM) x # of Pkg in a 3m High Stack (#3mHS)				
CPGM	x	#3Mhs		
36.04	x	7.242		
		261.00 Kg	575.406. Lbs.	

Priority Plastics

Closing Instructions

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

Date Created: April 2, 2021

Closing Instructions for 5 Gallon Swing Handle – Flexspout & No Vent

Caps that this closing instruction includes are:
Rieke Cap: FS-10-10-231 Self Venting FSII Solid Flexspout (Rieke # 03160001, Priority # 8241-003)

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.

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.