DOT/UNITED NATIONS
Performance Oriented Packaging Certification

PriorityPlastics

3H1 Periodic Retest

7940 20 Liter Rectangle 63MM
Rieke FS-10-10-231 Solid Flexspout
No Vent- Group II

Test Report #: 2021-65

u
n

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: 11/15/21
Recertification Date: 11/15/22

TABLE OF CONTENTS

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 15, 2021	PASS
Leakproofness	178.604	20 kPa – 5 Min. 3 PSI	Empty	November 12, 2021	PASS
Hydrostatic	178.605	100 kPa – 30 Min.	Water	November 12, 2021	PASS
Stacking/Dynamic Compression	178.606	874.95 lbs	Water	November 12, 2021	PASS
Vibration	178.608	1.6mm – 1 Hr	Water	November 12,2021	PASS

TEST REPORT NUMBERS: **2010-03,** 2011-03, 2012-22, 2013-26, 2014-29, 2017-11, 2018-55, 2019-66, 2020-49, 2021-65

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 15, 2022

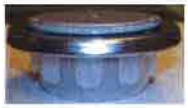
In the event of future changes to the above referenced test standard, it is the responsibility of Priority Plastics to determine whether additional testing or updating of past testing is necessary to verify that the packaging tested remains in compliance with those standards.

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 No 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: 1.228 Kg

Fill Capacity (98% Overflow):

- Windshield Washer/Antifreeze 20.188Kg
- Water 20.580 Kg

Package Test Weight:

- WW/A: 21.416 Kg
- Water 21.808 Kg

Calculated Package Gross Mass: 38.27 Kg (84.37 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 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:	27.55 Grams
Closure Overall Dimensions:	
• **Height**	1.186"
• **O.D. of Retainer**	2.773"
• **O. D. of Body**	2.273"
• **Min. ID of Retainer:**	2617"
• **Style**	Crimp on Finish
Markings (QC Audit):	Rieke® FLEXSPOUT®, FSII™ LIFT BAIL, PULL OUT CAVITY 7, Gray Cover—Rieke6®, Cavity 1

TIGHTHEAD PLASTIC JERRICAN				DRAWING
Manufacturer: Priority Plastics, Portland, IN				
Description:	20 Liter Rectangle with integrated Handle and No Vent.			
Material / Pigment:	High Density Polyethylene /Blue			
Method of Mfgr:	Blow Molded			
Tare Weight:	1.200 Kg			
Capacity:				
• **Rated:**	5.3 Gallon			
• **Overflow:**	21.000 Kg (5.546 Gallons)			
Overall Dimensions:				
• **Height:**	15.14"			
• **Length:**	11.125"			
• **Width:**	10.244"			
Finish Dimensions:				
• **O.D. Neck**	2.576"			
• **I.D. Neck**	2.294"			
• **Bead Thickness**	0.147"			
Thread Pitch				
Wall Thickness:	Body	Top Head	Bottom Head	
• **Minimum**	0.044"	0.038"	0.041"	
• **Minimum From Design Cert 2010-03**	**0.036"**	**0.032"**	**0.035"**	
• **Material:**	High Density Polyethene			
Markings (QC Audit)	u n 3H1/Y1.8/100/21 USA/M5105 "2" HDPE Recycling Symbol, Logo, Month Clock, Cavity # 4			

SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS

TEST INFORMATION	TEST CRITERIA
TEST CONTENTS: Windshield Washer/Antifreeze (0.976SG) **SAMPLE PREPARATION:** REFER TO Section II **CONDITIONING:** -18°C (0°F) **TEST CONTENTS TEMP.:** -18.0°C **DROP HEIGHT:** 1.83 Meters (72") (Refer to Section IV) **TEST EQUIPMENT:** L.A.B. Accu drop	• 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
13	PASS	No leakage. No damage.
14	PASS	No leakage. No damage.
15	PASS	No leakage. No damage.

BOTTOM DIAGONAL CHIME DROP TEST SET-UP AND RESULTS

Sample #	Results	Comments
17	PASS	No leakage. No damage.
18	PASS	No leakage. No damage.
19	PASS	No leakage. No damage.

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(f))
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
7	**PASS**	**All three samples maintained the 20.7 kPa test pressure for 5 minutes without leakage.**
8	**PASS**	
9	**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(e))
FILL CAPACITY:	Maximum Capacity	
CLOSURE APPLICATION:	Refer to Section II	
CONDITIONING:	Ambient	
TEST PRESSURE:	100 kPa	
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
10	PASS	**All three samples maintained the 100 kPa test pressure for 30 minutes without leakage.**
11	PASS	
12	PASS	

DYNAMIC COMPRESSION TEST RESULTS

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Empty and Without Closure	• After application of the required load, there can be no buckling of the sidewalls sufficient to cause damage to its expected contents. • In no case may the maximum deflection exceed one inch. (§ 178.606)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
PRE-LOAD APPLIED:	50 Lbs.	
MINIMUM TEST LOAD REQUIRED:	264.6 Kg (874.95 Lbs.) (Refer to Section IV.)	
TEST EQUIPMENT:	TLS(Tech Lab Systems)	

DYNAMIC COMPRESSION TEST SET-UP & RESULTS

Sample #	Load	Deflection	Results
4	874.95 Lbs.	0.891"	Passed
5	874.95 Lbs.	0.904"	Passed
6	874.95 Lbs.	0.903"	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
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
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: MATEMATICAL CALCULATIONS

INFORMATION USED FOR CALCULATIONS

Overall Packaged Tare Weight (PTW):	**1.228 Kg**	**WW/A SG**
Overflow Capacity (OFC) :		**SG: 0.976**
Windshield Washer/Antifreeze	**20.600 Kg**	
Water	**21.000Kg**	**5.546 Gallons (GAL)**
Packing Group:	**II**	
Product Specific Gravity (PSG):	**1.8**	
Packing Group Multiplication Factor (MF):	**1.00**	
Nesting Height of one Package (NH):	**15.14 Inches**	
Stack Test # of Samples Tested Simultaneously:	**0**	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

OC	x	98%		
20.600	x	98% =	**20.188 Kg**	**WW/A**
21.000	x	98% =	**20.580 Kg**	**Water**

PACKAGED TEST WEIGHT

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

PTW	+	98% OFC =		
1.228	+	20.188	**21.416 Kg**	**47.214 Lbs. WW/A**
1.228	+	20.580	**21.808Kg**	**48.078 Lbs. Water**

CALCULATED PACKAGE GROSS MASS (CPGM)

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

PTW	+	(PSG	x	98%OFC)
1.228	+	1.8	x	20.580
		38.27 Kg		**84.37 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**

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

A =	n	x	(w	+	(s	x	v	x	8.3	x	0.98))	x	1.5
855.852	6.80		2.707		1.8		5.546		8.3		0.98		1.5

388.208 Kg **855.852 Lbs.**

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

Top Load used in Design Qualification Testing: 264.6 Kg x 1.5 = 396.9 Kg 874.95 Lbs.
Minimum Required Top Load

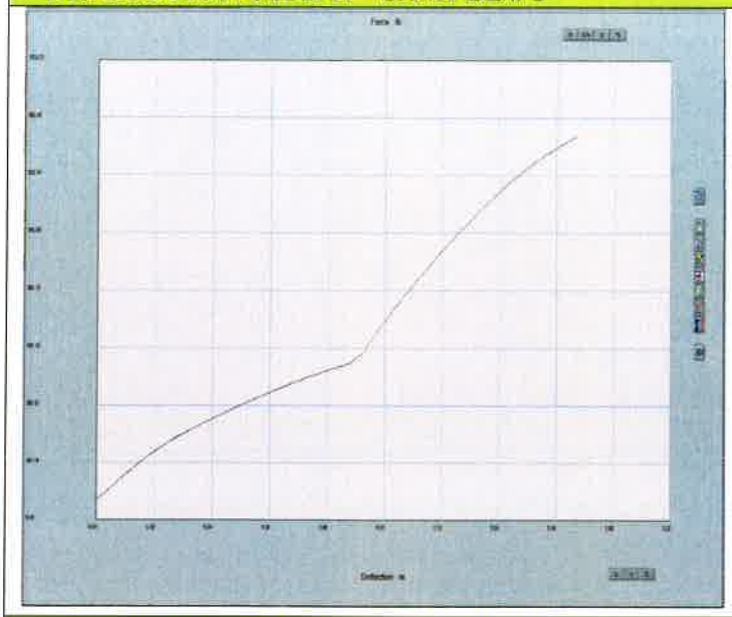
N = Number of Packages in a 3m High Stack (118.11/Nesting Height (NH)-1)

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

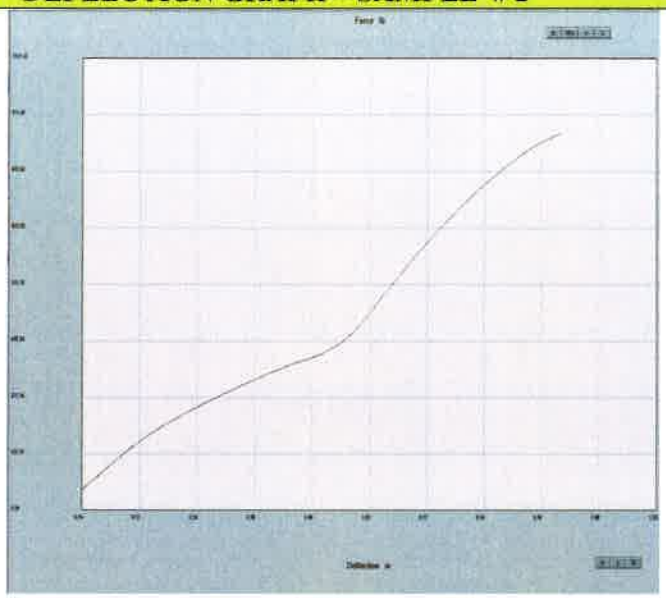
(118.11	/	NH)	-	1	=	n
118.11	/	15.14	-	1	=	6.80

SECTION V: INDIVIDUAL LOAD VS. DEFLECTION GRAPHS AND DATA

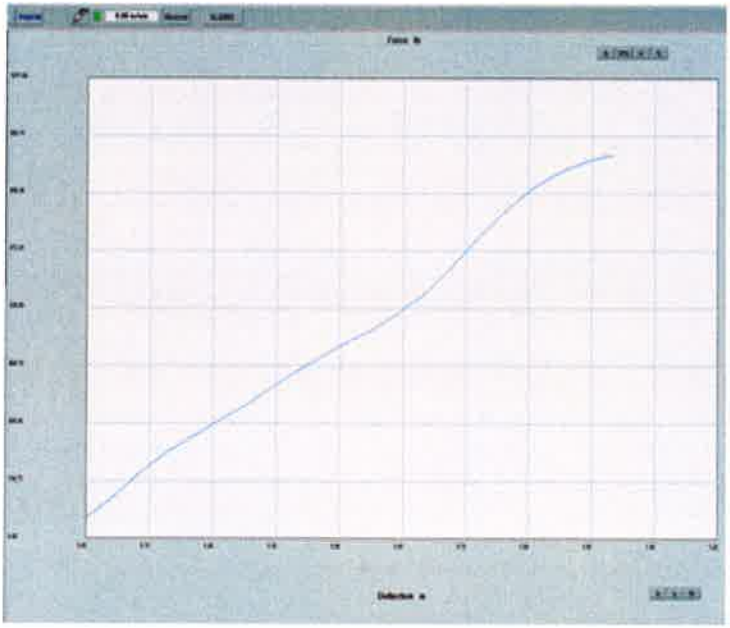
DEFLECTION GRAPH – SAMPLE # 1



DEFLECTION GRAPH – SAMPLE # 2



DEFLECTION GRAPH – SAMPLE # 3



MAXIMUM LOAD VS. DEFLECTION

Sample #	Maximum Load – Lbs.	Deflection – Inch
20	945.23 Lbs.	1.00”
21	925.20 Lbs.	1.00”
22	898.20 Lbs.	1.00”

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: September 17, 2019

Closing Instructions for 20 Liter – 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.