

PERFORMANCE VERIFICATION
In Accordance with Approval CA 2020110503



31HH1 Gasket Performance Verification

**POLY IBC UC 2.0 1000 Liter All Plastic Composite Framed
IBC with AS QC II Dip Tube and AS Bung Closures**

TEST REPORT #: 23-MN40032A
Design Qualification Report Reference: 23-MN40032

TESTING PERFORMED FOR:

RIKUTEC AMERICA, INC.
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Whitinsville, MA 01588

ATTN: Alex Pytka

TESTING PERFORMED BY:

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April 17, 2023

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NOTES AND COMMENTS

Reference report 23-MN40032 for documentation of the complete UN 31HH1 performance tests.

PURPOSE AND SCOPE

Each different gasket must be tested to demonstrate the top closure with the different gasket installed can withstand a leakproofness test as described in §178.813 and a hydrostatic pressure test in §178.814 as required by paragraph 5b of the Competent Authority approval CA 2020110503.

REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES

TEST	49 CFR ^①	UN ^②	IMDG ^③
	October 2021 Edition	22 nd Edition	2020 Edition
Leakproofness:	178.813	6.5.6.7	6.5.6.7
Hydrostatic Pressure:	178.814	6.5.6.8	6.5.6.8

INDUSTRY STANDARD REFERENCES

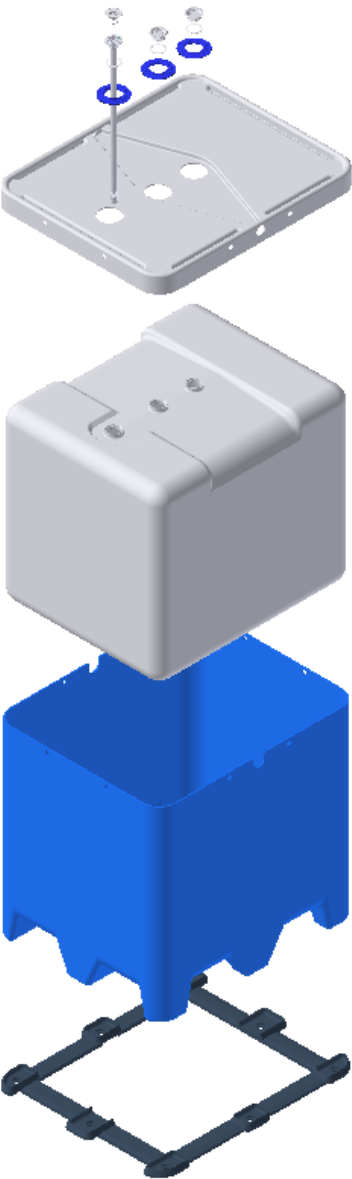
Pressure:	ASTM ^④ D8134: Standard Guide for Conducting Internal Hydrostatic Pressure Tests on United Nations (UN) IBC Design Types
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EQUIPMENT

All inspection, measuring and test equipment that can affect product quality is calibrated and adjusted at prescribed intervals, or prior to use, and is traceable to NIST, using ANSI Z540 as an overall guide for calibration certification.

PACKAGING DESCRIPTIONS / COMPONENT DRAWINGS




POLY IBC UC 2.0 1000 Liter All Plastic Composite Framed IBC with AS QC II Dip Tube and AS Bung Closures

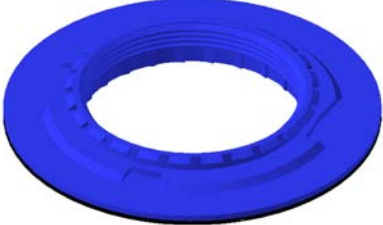
ASSEMBLY DRAWING	TEST LEVELS		
	Certification Type:	Design Qualification	
	Packaging Code Designation:	31HH1	
	Packing Group:	II	
	Specific Gravity:	1.9	
	Test Pressure:	110 kPa	
	TEST SAMPLE PREPARATION (Refer to Section IV)		
	Overall IBC Tare Weight: (Sample #1 and Sample #2)	96.0 Kg	211.6 Lbs.
	Net Fill Weight (98% Maximum Capacity):		
	Water (Sample #1)	1,043.7 Kg	2,301.0 bs.
	Methanol/Water (Sample #2)	990.8 Kg	2,184.4 Lbs.
	IBC Test Weight:		
	Water (Sample #1)	1,139.7 Kg	2,512.5 Lbs.
	Methanol/Water (Sample #2)	1,086.8 Kg	2,395.9 Lbs.
	Maximum Permissible Gross Mass:	2,079.0 Kg	4,583.3 Lbs.
CLOSING METHODS			
2" PP Closed Bung Closure:			
Application Torque:	25 Ft-Lbs.		
Equipment:	Torque Wrench #740		
2" PP Vented Bung Closure:			
Application Torque:	25 Ft-Lbs.		
Equipment:	Torque Wrench #740		
AS QC II Shipping Cap:			
Application Torque:	5 Ft-Lbs.		
Equipment:	Torque Wrench #740		
AS QC II Dip Tube Insert:			
Application Torque:	25 Ft-Lbs.		
Equipment:	Torque Wrench #740		


COMPONENT INFORMATION


CLOSURE (K12992-PP)		DRAWING
Manufacturer: AS Stromungstechnik, Ostfildern, Germany		
Description:	2" Non-Vented Buttress Threaded Plug	
Quantity:	2	
Material:	Polypropylene, Natural	
Tare Weight:	34.333 Grams	
Overall Dimensions:		
• Height	33.0 mm (1.30")	
• Diameter	80.0 mm (3.15")	
Thread Dimensions:		
• Major Diameter:	61.9 mm (2.44")	
• Minor Diameter:	55.6 mm (2.19")	
Markings (QC Audit):	as 1	
PE PROFILE GASKET (K12993-PE)		
Description:	Natural Polyethylene Profile Gasket	
Tare Weight:	2.959 Grams	
Thickness:	3.8 mm (0.15")	
Diameter:	72.4 mm (2.85")	

CLOSURE (K13011-PP)		DRAWING
Manufacturer: AS Stromungstechnik, Ostfildern, Germany		
Description:	2" Vented Buttress Threaded Plug	
Quantity:	1	
Material:	Polypropylene, Natural with Microporous PTFE Vent	
Tare Weight:	33.727 Grams	
Overall Dimensions:		
• Height	35.0 mm (1.38")	
• Diameter	80.0 mm (3.15")	
Thread Dimensions:		
• Major Diameter:	61.9 mm (2.44")	
• Minor Diameter:	55.6 mm (2.19")	
Markings (QC Audit):	as	
PE PROFILE GASKET (K12993-PE)		
Description:	Natural Polyethylene Profile Gasket	
Tare Weight:	2.959 Grams	
Thickness:	3.8 mm (0.15")	
Diameter:	72.4 mm (2.85")	

CLOSURE (Dwg. DT-62PE-XXX-1040-TF)		DRAWING
Manufacturer: AS Stromungstechnik, Ostfildern, Germany		
Description:	1-1/2" QC II Threaded Sealing Cap	
Quantity:	1	
Material:	Polyethylene, Natural	
Tare Weight:	17.150 Grams	
Overall Dimensions:		
• Height	25.1 mm (0.99")	
• Diameter	75.7 mm (2.98")	
Thread Dimensions:		
• T	41.2 mm (1.62")	
• E	38.6 mm (1.52")	
Markings (QC Audit):	www.qc-sytem.com AS patented U.S. Pat. No. 6,357,494	
PE GASKET		
Description:	Polyethylene, Natural Gasket	
Tare Weight:	0.577 Grams	
Thickness:	2.8 mm (0.11")	
Diameter:	35.6 mm (1.40")	
DIP TUBE (Dwg. DT-62PE-XXX-1040-TF)		
Manufacturer: AS Stromungstechnik, Ostfildern, Germany		
Description:	2" QC II Buttress Threaded Insert with Diptube and Bottom Flexible Bellow	
Quantity:	1	
Material:	Polyethylene, Natural	
Tare Weight:	162 Grams	
Overall Dimensions:		
• Height	1,040.0 mm (40.94") (with Diptube)	
• Insert Height	34.0 mm (1.34")	
• Diameter	79.0 mm (3.11")	
Thread Dimensions (2" Container - Side):		
• Major Diameter	62.0 mm (2.44")	
• Minor Diameter	54.6 mm (2.15")	
Thread Dimensions (1-1/2" Shipping Cap - Side):		
• Major Diameter	42.7 mm (1.68")	
• Minor Diameter	40.4 mm (1.59")	
Thread Dimensions (3/4" Plug - Side):		
• Major Diameter	26.6 mm (1.05")	
• Minor Diameter	24.0 mm (0.94")	
Markings (QC Audit):	218ZTDOX 1B2 3A4 5C6	
PE PROFILE GASKET (K12993-PE)		
Description:	Natural Polyethylene Profile Gasket	
Tare Weight:	2.965 Grams	
Thickness:	3.8 mm (0.15")	
Diameter:	72.4 mm (2.85")	

CLAMPING NUT (2.0)		DRAWING
Manufacturer: Rikutec America, Inc., Whitinsville, MA		
Description:	Outer Buttress Threaded Clamping Nut used on 2.0 IBC designs	
Quantity:	3 (1 on each opening)	
Material:	Polyethylene, Blue, and Black Rubber	
Tare Weight:	60 Grams	
Overall Dimensions:		
• Height	0.758"	
• Diameter	5.905"	
Thread Dimensions:		
• T	3.446"	
• E	3.245"	
Markings (QC Audit):	RIKUTEC 1/23 SPI "2" Recycling Symbol	

PLASTIC INNER RECEPTACLE (2.0)		DRAWING
Manufacturer: Rikutec America, Inc., Whitinsville, MA		
Description:	Rikutec 2.0 1000 Liter Rigid Inner Receptacle with (3) 2" Buttress Threaded Top Fill Port Openings	
Material:	High Density Polyethylene, Natural	
Resin Type:	Two Layer Wall Design: <ul style="list-style-type: none"> • Inside: Lupolen 4261 A Q149 • Outside: Lupolen 4261 AG UV 60005 	
Method of Manufacture:	Blow Molded	
Tare Weight:	50.71 Lbs. (23.0 Kg)	
Capacity:		
• Rated	1,000 Liter	
• Overflow	281.4 Gallons (1,065.0 Liter)	
Overall Dimensions:		
• Length	1,155.7 mm (45.50")	
• Width	962.5 mm (37.88")	
• Height	1,044.7 mm (41.13")	
2" Fill Port Opening Thread Dimensions		
• Major Diameter	64.8 mm (2.55")	
• Minor Diameter	57.1 mm (2.25")	
Clamping Nut Thread Dimensions		
• Major Diameter	85.5 mm (3.37")	
• Minor Diameter	81.2 mm (3.20")	
Dip Tube Opening Thread Dimensions		
• Major Diameter	64.8 mm (2.55")	
• Minor Diameter	57.4 mm (2.26")	
Wall Thickness (Minimum):	2.387 mm (0.09")	
Markings (QC Audit):	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; flex-direction: column; justify-content: center; align-items: center; margin-right: 5px;"> u n </div> <div> <p>31HH1 / Y / 0123 / D / BAM 6808-RIKUTEC</p> <p>RIKUTEC 22/I 238528MD7 Made in Germany SPI "2" PE-HD Recycling Symbol</p> </div> </div>	

COVER – POLY BOX (2.0)		DRAWING
Manufacturer: Rikutec America, Inc., Whitinsville, MA		
Description:	Top HUVEX cover with (3) Access Holes Secured to Tote with (8) Plastic Pins	
Quantity:	1	
Material:	High Density Polyethylene, Natural	
Tare Weight:	10.5 Kg (23.15 Lbs.)	
Overall Dimensions:		
• Length	1,212.9 mm (47.75")	
• Width	1,003.3 mm (39.50")	
• Height	962.2 mm (37.88")	
• Small Hole Diameter	142.0 mm (5.63")	
• Large Hole Diameter	177.8 mm (7.00")	
Markings (QC Audit):	(u n) 31HH1 / Y / 0123 / D / BAM / 6808 RIKUTEC / 3314 / 2070 / TR6F142 POLY-IBC UC 1000 Max Capacity 1050 Liter / Tare 96kg Gauge of Pressure" 100 kPa SPI "2" PE HD Recycling Symbol Hersteller: RIKUTEC Made In Germany	
FRAMED inSE – POLY BOX		
Manufacturer: Rikutec America, Inc., Whitinsville, MA		
Description:	4-Way Entry Plastic Outer Tote	
Quantity:	1	
Material:	HDPE / Foam / HDPE	
Tare Weight:	61.5 Kg (135.6 Lbs.) (with Bottom Frame)	
Overall Dimensions:		
• Length	1,193.8 mm (47.00")	
• Width	990.6 mm (39.00")	
• Height	1,168.4 mm (46.00")	
FRAMED PALLET:		
Description:	Molded Pallet Feet and Bottom Detachable Plastic Framed Pallet with (8) Plastic Screws and Bolts	
Markings (QC Audit):		
• Frame	SPI "2" PE-HD Recycling Symbol	
• Box	None	

TEST PROCEDURES AND RESULTS

LEAKPROOFNESS TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Empty	<ul style="list-style-type: none"> For all IBC design types intended to contain solids that are loaded or discharged under pressure or intended to contain liquids, there may be no leakage of air from the IBC. (§178.813)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
TEST PRESSURE:	20 kPa	
TEST DURATION:	10 Minutes	
AREA OF PRESSURIZATION:	Through Top Head	
TEST EQUIPMENT:	Regulated Air Source #: 2 Pressure Gauge #: 615 & 641	

LEAKPROOFNESS TEST SET-UP PHOTOS



LEAKPROOFNESS TEST RESULTS

Sample I.D.	Gasket	Test Date	Results	Comments/Observations
1	PE Profile Gaskets	April 17, 2023	PASS	The IBC met the criteria for passing the test. No leakage.

HYDROSTATIC PRESSURE TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	<ul style="list-style-type: none"> For rigid plastic and composite Framed IBC design types intended to contain solids loaded or discharged under pressure or intended to contain liquids, there may be no leakage and no permanent deformation which renders the IBC unsafe for transportation. (§178.814)
WATER TEMPERATURE:	20.1°C (68.2°F)	
FILL CAPACITY:	Maximum Capacity	
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
TEST PRESSURE:	110 kPa	
TEST DURATION:	10 Minutes	
AREA OF PRESSURIZATION:	Through Top Head	
TEST EQUIPMENT:	Regulated Water Source #: 2 Pressure Gauge #: 615 & 641	

HYDROSTATIC PRESSURE TEST SET-UP PHOTOS



HYDROSTATIC PRESSURE TEST RESULTS

Sample I.D.	Gasket	Test Date	Results	Comments/Observations
1	PE Profile Gaskets	April 17, 2023	PASS	The IBC met the criteria for passing the test. No leakage.

DISCLAIMER OF WARRANTIES

TEN-E PACKAGING SERVICES, INC. certifies that the previously described testing services have been performed in accordance with standard good laboratory practices and the Department of Transportation's Title 49 CFR §178.813 and §178.814. The results included within this test report relate only to the items tested. ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE, FIT FOR A PARTICULAR PURPOSE OR IN COMPLIANCE WITH ANY FEDERAL OR STATE REGULATIONS, ARE DISCLAIMED



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