

PERFORMANCE VERIFICATION
In Accordance with Approval CA 2020110503



31HH1 Gasket Performance Verification

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

TEST REPORT #: 23-MN40058A
Design Qualification Report Reference: 23-MN40058

TESTING PERFORMED FOR:

RIKUTEC AMERICA, INC.
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Whitinsville, MA 01588

ATTN: Alex Pytka

TESTING PERFORMED BY:

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June 8, 2023

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NOTES AND COMMENTS

Reference report 23-MN40058 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 CA2020110503.

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

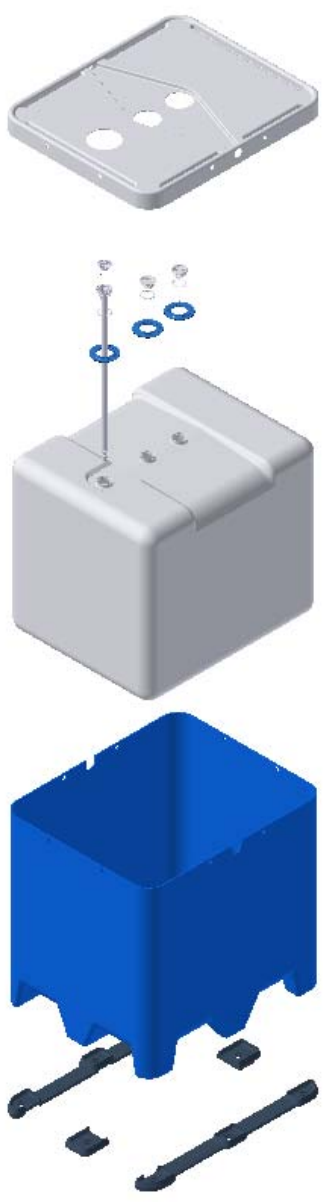
| | |
|-----------|--|
| Pressure: | ASTM ^④ D8134: Standard Guide for Conducting Internal Hydrostatic Pressure Tests on United Nations (UN) IBC Design Types |
|-----------|--|

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

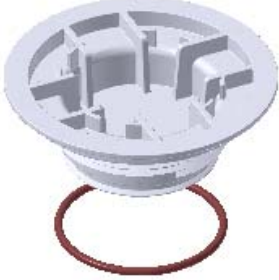
Poly IBC UC 2.0 1000 Liter All Plastic Composite Euro IBC with AS QC III Dip Tube and AS Bung Closures

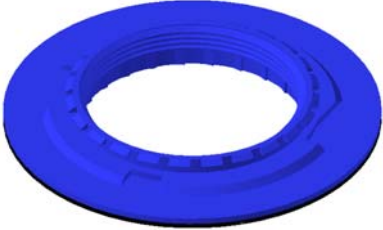
| ASSEMBLY DRAWING | TEST LEVELS | |
|--|---|----------------------------|
|  | Certification Type: | Design Qualification |
| | Packaging Code Designation: | 31HH1 |
| | Packing Group: | II |
| | Specific Gravity: | 1.9 |
| | Test Pressure: | 110 kPa |
| | TEST SAMPLE PREPARATION (Refer to Section IV) | |
| | Overall IBC Tare Weight: (Sample #1 and Sample #2) | 97.0 Kg 213.8 Lbs. |
| | Net Fill Weight (98% Maximum Capacity): | |
| | Water (Sample #1) | 1,036.9 Kg 2,286.0 Lbs. |
| | Methanol/Water (Sample #2) | 970.2 Kg 2,139.0 Lbs. |
| IBC Test Weight: | | |
| Water (Sample #1) | 1,133.9 Kg 2,499.7 Lbs. | |
| Methanol/Water (Sample #2) | 1,067.2 Kg 2,352.7 Lbs. | |
| Maximum Permissible Gross Mass: | 2,067.1 Kg 4,557.1 Lbs. | |
| CLOSING METHODS | | |
| AS QC III Dip Tube Insert: | | |
| Application Torque: | 25 Ft-Lbs. | |
| Equipment: | Torque Wrench #740 | |
| AS QC III Shipping Cap: | | |
| Application Torque: | 5 Ft-Lbs. | |
| Equipment: | Torque Wrench #740 | |
| 2" PP Vented Bung Closure: | | |
| Application Torque: | 25 Ft-Lbs. | |
| Equipment: | Torque Wrench #740 | |
| 2" PP Closed Bung Closure: | | |
| 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 (DT3-62PP-XXX-1040-TF) | | DRAWING |
|---|---|---|
| Manufacturer: AS Stromungstechnik, Ostfildern, Germany | |  |
| Description: | 2" QC III Threaded Sealing Cap | |
| Quantity: | 1 | |
| Material: | Polypropylene, Natural | |
| Tare Weight: | 18.285 Grams | |
| Overall Dimensions: | | |
| • Height | 26.14 mm (1.029") | |
| • Diameter | 77.26 mm (3.042") | |
| Thread Dimensions: | | |
| • T | 52.80 mm (2.079") | |
| • E | 49.24 mm (1.939") | |
| Markings (QC Audit): | 11/18 Patented U.S. Pat. No. 6,357,494 www.qc-system.com | |
| O-RING | | |
| Description: | FEP Encapsulated O-Ring | |
| Tare Weight: | 2.395 Grams | |
| Thickness: | 3.48 mm (0.137") | |
| Diameter: | 48.03 mm (1.891") | |
| DIP TUBE (DT3-62PP-XXX-1040-TF) | | |
| Manufacturer: AS Stromungstechnik, Ostfildern, Germany | | |
| Description: | 2" QC III Buttress Threaded Insert with Dip Tube and Bottom Flexible Bellow | |
| Quantity: | 1 | |
| Material: | Polypropylene, Natural | |
| Tare Weight: | 143 Grams | |
| Overall Dimensions: | | |
| • Height | 1,047.7 mm (41-1/4") (with Dip Tube) | |
| • Insert Height | 35.56 mm (1.282") | |
| • Diameter | 80.01 mm (3.150") | |
| Thread Dimensions (2" Container - Side): | | |
| • Major Diameter | 61.75 mm (2.431") | |
| • Minor Diameter | 54.79 mm (2.157") | |
| Thread Dimensions (1-1/2" Shipping Cap - Side): | | |
| • Major Diameter | 53.99 mm (2.126") | |
| • Minor Diameter | 50.47 mm (1.987") | |
| Markings (QC Audit): | 29430606 | |
| 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") | |

| CLAMPING NUT (2.0) | | DRAWING |
|--|--|---|
| Manufacturer: Rikutec America, Inc., Whitinsville, MA | |  |
| Description: | Outer Buttress Threaded Bulkhead Fitting 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 | |

| COVER – POLY BOX (2.0) | | DRAWING |
|--|--|---------|
| Manufacturer: Rikutec America, Inc., Whitinsville, MA | | |
| Description: | Top HUVEX with (3) Access Holes Secured to Tote with (8) Plastic Pins | |
| Quantity: | 1 | |
| Material: | High Density Polyethylene, Natural | |
| Tare Weight: | 11.0 Kg (24.25 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 1060 Liter / Tare 96kg Gauge of Pressure" 100 kPa Hersteller: RIKUTEC SPI "2" PE HD Recycling Symbol | |
| EURO BASE – POLY BOX | | |
| Manufacturer: Rikutec America, Inc., Whitinsville, MA | | |
| Description: | 4-Way Entry Plastic Outer Tote | |
| Quantity: | 1 | |
| Material: | HDPE / Foam / HDPE | |
| Tare Weight: | 62.5 Kg (137.79 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") | |
| EURO PALLET | | |
| Description: | Molded Pallet Feet and Bottom Detachable Plastic Euro 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



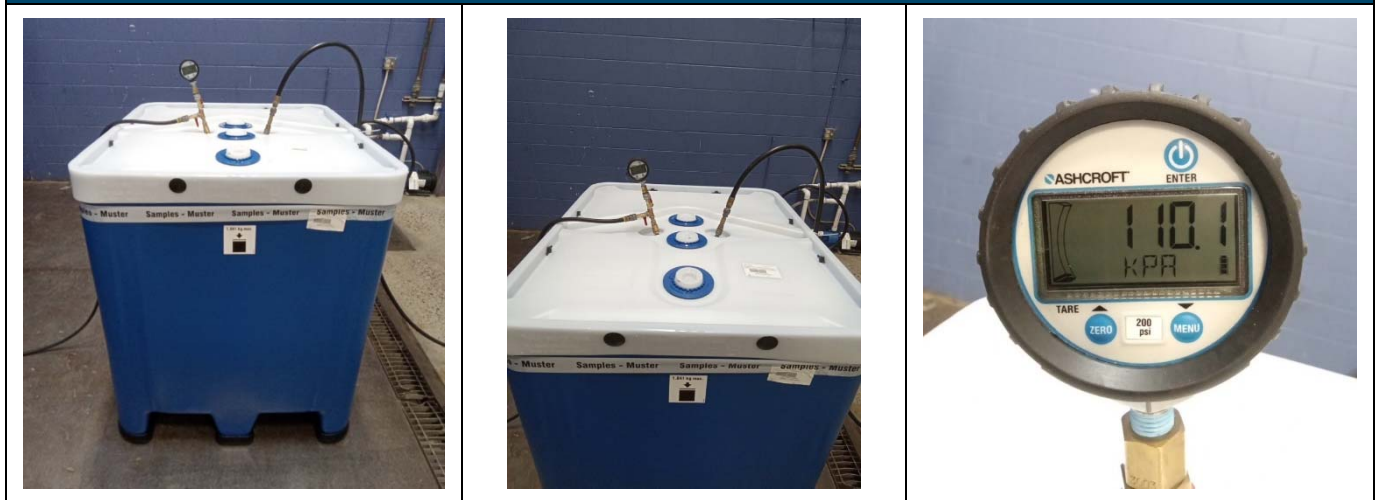
LEAKPROOFNESS TEST RESULTS

| Sample I.D. | Gasket | Test Date | Results | Comments/Observations |
|-------------|--------------------|--------------|-------------|--|
| 1 | PE Profile Gaskets | June 7, 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 | June 8, 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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