

UNITED NATIONS / DOT PERFORMANCE CERTIFICATION



31HH1 DESIGN QUALIFICATION

Poly IBC UC 2.0 1000 Liter All Plastic Composite Euro IBC with AS QC II & QC III Dip Tube and KTJ Vented Bung Closure

TEST REPORT #: 24-MN40069



* Insert the month and year (last two digits) of manufacture

TESTING PERFORMED FOR:

RIKUTEC AMERICA, INC.

2510-B West Whitner Street Anderson, SC 29624

ATTN: Alex Pytka

TESTING PERFORMED BY:

TEN-E PACKAGING SERVICES, INC.

1666 County Road 74 Newport, MN 55055 Phone: 651-459-0671

Fax: 651-459-1430

May 17, 2024



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SECTION I: CERTIFICATION

DESIGN QUALIFICATION of the Rikutec America, Inc. Poly IBC UC 2.0 1000 Liter All Plastic Composite Euro IBC with AS QC II & QC III Dip Tube and KTJ Vented Bung Closure

TEN-E Packaging Services, Inc. is a current DOT UN Third-Party Certification Agency under §107.403 and certifies that the **Rikutec America, Inc.** packaging referenced above has passed the standards of the DEPARTMENT OF TRANSPORTATION'S TITLE 49 CFR; Performance Oriented Packaging Standards, Section 178. This package is also certified under IMDG and the UN Recommendations on the Transport of Dangerous Goods. 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	49 CFR	TEST	TEST	TEST	TEST
TEST	REFERENCE	LEVEL	CONTENTS	COMPLETED	RESULTS
Vibration	178.819	3.6 Hz – 1 Hour	Water	May 16, 2024	PASS
Bottom Lift	178.811	2,713.6 Kg	Water	May 16, 2024	PASS
Leakproofness	178.813	20 kPa – 10 Minutes	Empty	May 17, 2024	PASS
Hydrostatic	178.814	100 kPa – 10 Minutes	Water	May 17, 2024	PASS
Drop	178.810	1.9 m	Methanol/Water	May 17, 2024	PASS
TEST REPORT I	NUMBER:	2	24-MN40069		
UN MARKING: (CFR 49 – 178.7)		(u n 31HH1/Y/*	/ USA / +AA11220 / 0 /	2010
PACKAGING ID	ENTIFICATION C	ODE:	31HH1 (178.707 Comp	oosite IBC)	
PERFORMANCE	STANDARD:	`	Y (Packaging meets Pa	acking Group II and III t	ests)
MONTH AND YE	AR OF MANUFA	CTURE:	t		
STATE AUTHORIZING ALLOCATION OF THE MARK:			JSA		
PACKAGING CERTIFICATION AGENCY:			(+AA) TEN-E Packaging Services, Inc. (Newport, MN CAA #2006030022)		
THIRD PARTY PACKAGING IDENTIFICATION:			+AA11220		
STACKING TEST LOAD:			Kg (not intended to b	e stacked in transporta	tion)
MAXIMUM PERI	MISSIBLE GROS	S MASS:	2,010 Kg (4,431 Lbs.)		
PERIODIC DESI	GN REQUALIFIC	ATION DATE:	May 17, 2025		
CLIENT COMPETENT AUTHORITY APPROVAL:			CA2020110503		
ADDITIONAL REQUIRED RIGID PLASTIC & COMPOSITE IBC MARKINGS (CFR 49 – 178.703(b)):					
RATED CAPACITY AT 20°C (liters):		1000 Liters			
TARE MASS (Kg):			Insert Individual IBC Tare Mass		
GAUGE TEST PRESSURE (kPa):			100 kPa		
DATE OF LAST LEAKPROOFNESS TEST:		SS TEST:	Insert Month & Year of Last Leakproofness Test		
DATE OF LAST INSPECTION:			nsert Month & Year of	Last Inspection	

ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE OR FIT FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. In no event shall TEN-E Packaging Services, Inc. liability exceed the total amount paid by **Rikutec America**, **Inc.** for services rendered. In the event of future changes to the above referenced test standards, it is the responsibility of **Rikutec America**, **Inc.** to determine whether additional testing or updating of past testing is necessary to verify that the packaging we have tested remains in compliance with those standards.

MANUFACTURER:

Rikutec America, Inc. 2510-B West Whitner Street Anderson, SC 29624 Oscar Mejia
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TEN-E Packaging Services, Inc.
1666 County Road 74
Newport, MN 55055

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1666 County Road 74
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SECTIONS II & V: PACKAGING DESCRIPTIONS / COMPONENT DRAWINGS

Poly IBC UC 2.0 1000 Liter All Plastic Composite Euro IBC with AS QC II & QC III Dip Tube and KTJ Vented Bung Closure					
ASSEMBLY DRAWING		TEST LEV	ELS		
	Certification Type:		Design Qualif	ication	
· · ·	Packaging Code De	esignation:	31HH1		
2 9 1	Packing Group:		П		
	Specific Gravity:		1.9		
00	Test Pressure:		100 kPa		
	TE	ST SAMPLE PR (Refer to Sec			
	Overall IBC Tare W (Sample #1 and Sar	•	97.0 Kg	213.8 Lbs.	
	Net Fill Weight (98%	6 Maximum Capa	icity):		
	Water	(Sample #1)	1,029.0 Kg	2,268.6 Lbs.	
	Methanol/Water	(Sample #2)	942.8 Kg	2,078.5 Lbs.	
	IBC Test Weight:				
	Water	(Sample #1)	1,126.0 Kg	2,482.3 Lbs.	
	Methanol/Water	(Sample #2)	1,039.8 Kg	2,292.3 Lbs.	
	Maximum Permissik	ole Gross Mass:	2,052.1 Kg	4,524.0 Lbs.	
		CLOSING ME	THODS		
	AS Quick Connect	II Dip Tube:			
	Application Torqu	ıe:	25 Ft-Lbs.		
	Equipment:		Torque Wren	ch #740	
	AS Quick Connect	III Dip Tube:			
	Application Torqu	ıe:	25 Ft-Lbs.		
	Equipment:		Equipment: Torque Wrench #740		ch #740
	(2) AS Quick Connect Shipping Caps:				
	Application Torqu	ıe:	5 Ft-Lbs.		
	Equipment:		Torque Wrench #740		
2" KTJ Vented Bung Closure:					
	Application Torqu	ıe:	25 Ft-Lbs.		
	Equipment:		Torque Wren	ch #740	



COMPONENT INFORMATION

	CLOSURE (21310201)	DRAWING
Manufacturer: Kunstst	offtechnik Jaeger, Braunschweig, Germany	
Description:	2" Vented Buttress Threaded Plug	
Quantity:	1	
Material:	Polypropylene, Natural with Microporous PTFE Vent	
Tare Weight:	33.846 Grams	
Overall Dimensions:		
Height	34.5 mm (1.358")	
Diameter	78.7 mm (3.102")	
Thread Dimensions:		
Major Diameter:	61.9 mm (2.437")	
Minor Diameter:	54.9 mm (2.162")	
Markings (QC Audit):	1	
POE PROFILE GASKE	T (22010202):	
Description:	Natural Polyolefin Profile Gasket	
Tare Weight:	2.921 Grams	
Thickness:	3.8 mm (0.15")	-
Diameter:	72.5 mm (2.85")	

	DRAWING	
Manufacturer: Rikutec	America, Inc., Whitinsville, MA	
Description:	Outer Buttress Threaded Bulkhead Fitting	
Quantity:	used on 2.0 IBC designs 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 12/23 SPI "2" Recycling Symbol	



CLOS	URE (DT-62PE-XXX-1040-TF)	DRAWING
Manufacturer: AS Stro	mungstechnik, Ostfildern, Germany	
Description:	1-1/2" QC II Threaded Sealing Cap	
Quantity:	1	
Material:	Polyethylene, Natural	
Tare Weight:	17.247 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:	0.519 Grams	
Thickness:	2.8 mm (0.11")	
Diameter:	35.6 mm (1.40")	
	UBE (DT-62PE-XXX-1040-TF)	
	mungstechnik, Ostfildern, Germany	
Description:	2" QC II Buttress Threaded Insert with Dip Tube (no bellow)	633
Quantity:	1	
Material:	Polyethylene, Natural	
Tare Weight:	149 Grams	
Overall Dimensions:	1 4 6 4 7 7	
Height	1,047.7 mm (41-1/4") (with Dip Tube)	
Insert Height	34.0 mm (1.34")	
• Diameter	79.0 mm (3.11")	
Thread Dimensions (2	,	
Major Diameter	62.0 mm (2.44")	
Minor Diameter	54.6 mm (2.15")	
	-1/2" Shipping Cap - Side):	
Major Diameter	42.7 mm (1.68")	
Minor Diameter The A Diameter (2)	40.4 mm (1.59")	
Thread Dimensions (3	1	
Major Diameter	26.6 mm (1.05")	
Minor Diameter	24.0 mm (0.94")	
Markings (QC Audit):	1306B0818 1B2 5C6 3A4	
POE PROFILE GASKE	T (K12993-811)	
Description:	S62 Seal Ring, Natural Polyolefin Profile Gasket	
Tare Weight:	2.537 Grams	
Thickness:	3.8 mm (0.15")	
Diameter:	72.4 mm (2.85")	



Manufacturer: AS Stromungstechnik, Ostfildern, Germany	CLOSU	RE (DT3-62PP-XXX-1040-TF)	DRAWING
Description: 2" QC III Threaded Sealing Cap	Manufacturer: AS Stro	mungstechnik, Ostfildern, Germany	
Material:			
Tare Weight: 18.114 Grams Overall Dimensions:	Quantity:	1	
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): Patented U.S. Pat. No. 6,357,494 www.qc-system.com 3/15 O-RING Description: FEP Encapsulated O-Ring Tare Weight: 2.477 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: 135 Grams Overall Dimensions: • Height 908.05 mm (35-3/4") (with Dip Tube) • Insert Height 32.56 mm (1.282") • Diameter 80.77 mm (2.431") • Major Diameter 54.79 mm (2.157") <	Material:	Polypropylene, Natural	
 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): Patented U.S. Pat. No. 6,357,494 www.qc-system.com 3/15 O-RING Description: FEP Encapsulated O-Ring Tare Weight: 2.477 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: 135 Grams Overall Dimensions: Height 908.05 mm (35-3/4") (with Dip Tube) Insert Height 32.56 mm (1.282") Diameter 80.01 mm (3.150") Thread Dimensions (2" Container - Side): Major Diameter 54.79 mm (2.157") Thread Dimensions (1-1/2" Shipping Cap - Side): Major Diameter 50.47 mm (1.987") Markings (QC Audit): 1609F351 8 POE PROFILE GASKET (K12993-811) 	Tare Weight:	18.114 Grams	
• Diameter 77.26 mm (3.042") Thread Dimensions: • T 52.80 mm (2.079") • E 49.24 mm (1.939") Markings (QC Audit): Patented U.S. Pat. No. 6,357,494	Overall Dimensions:		
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• E	Thread Dimensions:		
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Description: FEP Encapsulated O-Ring	• E	49.24 mm (1.939")	
Description: FEP Encapsulated O-Ring	Markings (OC Audit)	Patented U.S. Pat. No. 6,357,494	
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Tube and Bottom Flexible Bellow Quantity: 1 Material: Polypropylene, Natural Tare Weight: 135 Grams Overall Dimensions: • Height 908.05 mm (35-3/4") (with Dip Tube) • Insert Height 32.56 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): 1609F351 8 POE PROFILE GASKET (K12993-811)	Manufacturer: AS Stro	mungstechnik, Ostfildern, Germany	
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Material: Polypropylene, Natural Tare Weight: 135 Grams Overall Dimensions: Polypropylene, Natural • Height 908.05 mm (35-3/4") (with Dip Tube) • Insert Height 32.56 mm (1.282") • Diameter 80.01 mm (3.150") Thread Dimensions (2" Container - Side): Container - Side): • Major Diameter 54.79 mm (2.431") • Minor Diameter 53.99 mm (2.157") • Minor Diameter 50.47 mm (1.987") Markings (QC Audit): 1609F351 8 POE PROFILE GASKET (K12993-811)	Quantity:	1 dube and Bottom Flexible Bellow	
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Overall Dimensions: • Height			_
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 Insert Height 32.56 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): 1609F351 8 POE PROFILE GASKET (K12993-811) 		908.05 mm (35-3/4") (with Dip Tube)	
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Markings (QC Audit): 1609F351 8 POE PROFILE GASKET (K12993-811)	•		
POE PROFILE GASKET (K12993-811)		,	
	<u> </u>		
Pescription: Our Ocal Ming, Matural Fulyordilli Fruille Gasket	Description:	S62 Seal Ring, Natural Polyolefin Profile Gask	et
Tare Weight: 2.508 Grams		·	
Thickness: 3.8 mm (0.15")			
Diameter: 72.5 mm (2.85")		,	



PLASTIC INNER RECEPTACLE (11001047)		DRAWING
Manufacturer: Rikutec America, Inc., Whitinsville, MA		
Description:	Rikutec 1000 Liter (1.0) Rigid Inner Receptacle with (3) 2" Buttress Threaded Top Fill Port Openings	
Material:	High Density Polyethylene, Natural	
Resin Type:	Two Layer Wall Design: 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	277.4 Gallons (1,050.0 Liters)	
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 Thre	ad Dimensions	
Major Diameter	64.8 mm (2.55")	
Minor Diameter	57.1 mm (2.25")	
Dip Tube Opening Thread	Dimensions	
Major Diameter	64.8 mm (2.55")	
Minor Diameter	57.4 mm (2.26")	
Wall Thickness (Min.):	2.387 mm (0.09")	
Markings (QC Audit):	u 31HH1 / Y / 0124 / D n /BAM 6808-RIKUTEC RIKUTEC Made in Germany 23H245538MD7 14783 SPI "2" PE-HD Recycling Symbol	



C	OVER – POLY BOX (2.0)	DRAWING
Manufacturer: Rikuted	: 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:	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	er 142.0 mm (5.63")	
Large Hole Diameter	er 177.8 mm (7.00")	
Markings (QC Audit):	and the state of t	
	URO BASE – POLY BOX	
	: America, Inc., Whitinsville, MA	
Description:	4-Way Entry Plastic Outer Tote	4
Quantity: Material:	High Density Polyethylene, Blue and Black	
Tare Weight:	63.5 Kg (140.0 Lbs.) (with Bottom Frame)	
Overall Dimensions:	00.0 Trg (170.0 Ebs.) (with bottom Frame)	
Length	1,193.8 mm (47.00")	
Width	990.6 mm (39.00")	
Height	1,168.4 mm (46.00")	
EURO PALLET:	1,100.4 IIIII (70.00)	
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	



SECTION III: TEST PROCEDURES AND RESULTS

VIBRATION TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
TABLE DISPLACEMENT:	1"	 An IBC passes the vibration test if there is no rupture or leakage.
TEST FREQUENCY:	3.6 Hz	(§178.819)
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	Vertical motion using	
	L.A.B. 10000 Transportation Simulator	

VIBRATION TEST SET-UP AND RESULTS (SAMPLE #1)			
	Results	Comments/Observations	
	PASS	The IBC met the criteria for passing the test. No leakage or damage.	



BOTTOM LIFT TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	Ambient	
NUMBER OF LIFTS:	8 (Four-Way Entry with 2 Lifts per Direction of Entry)	For all IBC design types designed to be lifted from the base, there may be no
FORK TINE PENETRATION:	Entry 1 & 2: 36" Entry 3 & 4: 30"	permanent deformation which renders the IBC unsafe for transportation and no loss of contents.
COMBINED GROSS MASS LIFTED:	2,713.6 Kg (5,982.4 Lbs.) (Refer to Section IV)	(§178.811)
TEST EQUIPMENT:	Fork Truck Dead Load Weights	

ВОТ	TOM LIFT TEST SET-UP	AND RESULTS (SAMPLE	E #1)
Direction of Entry #1	Direction of Entry #2	Direction of Entry #3	Direction of Entry #4
Res	ults	Comments/C	Observations
Lift #1: PASS	Lift #5: PASS		
Lift #2: PASS	Lift #6: PASS	The IBC met the criter	ia for passing the test.
Lift #3: PASS	Lift #7: PASS	No leakage	or damage.
Lift #4: PASS	Lift #8: PASS		



LEAKPROOFNESS TEST

TEST INFO	TEST CRITERIA	
TEST CONTENTS:	Empty	
SAMPLE PREPARATION:	Refer to Section II	- "
CONDITIONING:	Ambient	For all IBC design types intended to contain solids that are loaded or
TEST PRESSURE:	20 kPa	discharged under pressure or
TEST DURATION:	10 Minutes	intended to contain liquids, there may
AREA OF PRESSURIZATION:	Through Top Head	be no leakage of air from the IBC. (§178.813)
TEST EQUIPMENT:	Regulated Air Source #: 2	,
	Pressure Gauge #: 615 & 641	

LEAKPROOFN	ESS TEST SET-UP AND RESULT	S (SAMPLE #1)
Set-Up Photo	Leakproofness Photo	Leakproofness Photo
As 1941 JY (01-34 JUSA And Copyoling in Name And Copyoling in Name	Control of 200 200 200 200 200 200 200 200 200 20	TARE ZERO ZOO MENU
Results	Comments/C	Observations
PASS	The IBC met the criter No lea	



HYDROSTATIC PRESSURE TEST

TEST INFO	TEST CRITERIA	
TEST CONTENTS:	Water	
WATER TEMPERATURE:	20.2°C (68.4°F)	
FILL CAPACITY:	Maximum Capacity	For rigid plastic and composite IBC
SAMPLE PREPARATION:	Refer to Section II	design types intended to contain solids loaded or discharged under pressure or
CONDITIONING:	Ambient	intended to contain liquids, there may
TEST PRESSURE:	100 kPa	be no leakage and no permanent deformation which renders the IBC
TEST DURATION:	10 Minutes	unsafe for transportation.
AREA OF PRESSURIZATION:	Through Top Head	(§178.814)
TEST EQUIPMENT:	Regulated Water Source #: 2 Pressure Gauge #: 641	

HYDROSTATIC PRESSURE TEST SET-UP AND RESULTS (SAMPLE #1) Set-Up Photo Hydrostatic Pressure Photo Hydrostatic Pressure Photo Fresults Comments/Observations The IBC met the criteria for passing the test. No leakage.



DROP TEST

TEST I	TEST CRITERIA	
TEST CONTENTS: SAMPLE PREPARATION:	Methanol/Water Solution (0.963 SG) Refer to Section II	For all IBC design types, there may be no damage which renders the
CONDITIONING: TEST CONTENTS TEMP.:	-18°C (0°F) Chamber #202 -18.3°C (-0.9°F)	 IBC unsafe to be transported for salvage or for disposable, and no loss of contents. The IBC shall be capable of being
DROP HEIGHT:	1.9 Meters (75") (Refer to Section IV)	lifted by an appropriate means until clear of the floor for five minutes. • A slight discharge from closures
DROP ORIENTATION:	Most Vulnerable Part of Base	upon impact is not considered a failure provided that no further
TEST EQUIPMENT:	Quick Release Hook Mechanism 5 Ton Overhead Hoist	leakage occurs. (§178.810)

DROP T	EST SET-UP AND RESULTS (SAM	IPLE #2)
Set-Up Photo	Post Drop Photo	Post Drop Photo
Results	Comments/C	Observations
PASS	The IBC met the criter No leakage. All three clamping nu on the bottom left sid	ts broke off the bottle and a crack



REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES						
	49 CFR①	UN@	IMDG3			
TEST	October 2023 Edition	23 rd Edition	2022 Edition			
Vibration:	178.819	6.5.6.13	6.5.6.13			
Bottom Lift:	178.811	6.5.6.4	6.5.6.4			
Leakproofness:	178.813	6.5.6.7	6.5.6.7			
Hydrostatic Pressure:	178.814	6.5.6.8	6.5.6.8			
Drop:	178.810	6.5.6.9	6.5.6.9			

- ① United States Department of Transportation Code of Federal Regulations (CFR) Title 49, Transportation, Parts 100-185
- ② The United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (UN Orange Book)
- ③ International Maritime Dangerous Goods Code (IMDG)

	INDUSTRY STANDARD REFERENCES						
Vibration	ASTM@ D7387:	Standard Test Method for Vibration Testing of IBCs Used for Shipping Liquid Hazardous Materials (Dangerous Good)					
Vibration:	ISO© 2247:	Packaging – Complete, Filled Transport Packages – Vibration Test at Fixed Low Frequency					
Pressure:	ASTM@ D8134:	Standard Guide for Conducting Internal Hydrostatic Pressure Tests on United Nations (UN) IBC Design Types					
	ASTM@ D5276:	Standard Test Method for Drop Test of Loaded Containers by Free Fall					
Drop:	ASTM@ D7790:	Standard Test Method for the Preparation of Plastic Packagings Containing Liquids for United Nations (UN) Drop Testing					
	ISO© 2248:	Packaging – Complete, Filled Transport Packages – Vertical Impact Test by Dropping					

- American Society for Testing and Materials (ASTM)
- ⑤ International Organization for Standardization (ISO)

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.



SECTION IV MATHEMATICAL CALCULATIONS

INFORMATION USED FOR CALCULATIONS							
Overall IBC Tare Weight (IBCTW)-Sample 1:	97.0 Kg	213.8 Lbs.					
Overall IBC Tare Weight (IBCTW)-Sample 2:	97.0 Kg	213.8 Lbs.					
Overflow Capacity (OFC):							
Water	1,050.0 Kg	2,314.8 Lbs.					
Methanol/Water	962.0 Kg	2,120.8 Lbs.					
Actual Load Applied for Bottom Lift (BLALA):	1,587.6 Kg	3,500.0 Lbs.					
Packing Group	II						
Product Specific Gravity (PSG):	1.90	Min Wt To Be Applied					
Packing Group Multiplication Factor (MF):	1.00	3,172.7 Lbs. (Btm Lift)					
# of IBC Stacked During Transportation (#IBC):	0						

			98%	OF OVER	LOW		
			Overflow	Capacity (O	FC) x 98%		
OFC	x	98%					
1,050.0	Х	98% =	1,029.0	Kg	2,268.6	Lbs. Water	Sample #1
962.0	X	98% =	942.8	Kg	2,078.5	Lbs. Methanol/Water	Sample #2

IBC TEST WEIGHT (IBCW)							
Overall IBC Tare Weight (IBCTW) + 98% Overflow Capacity (OFC)							
IBCTW	+	98% OFC =					
97.0	+	1,029.0	1,126.0	Kg	2,482.3	Lbs. Water	Sample #1
97.0	+	942.8	1,039.8	Kg	2,292.3	Lbs. Methanol/Water	Sample #2

AUTHORIZED IBC GROSS MASS (AIBCGM)					
Overall IBC Tare Weight (IBCTW) + (Product SG (PSG) x 98% Overflow (OFC))					
IBCTW	+	(PSG	х	x 98% OFC)	
97.0	_ + _	1.90	x	1,029.0	
		2,052.1	Kg	4,524.0 Lbs.	



BOTTOM LIFT CALCULATIONS												
The IBC must be loaded to 1.25 times the combined maximum permissible gross mass with load being evenly												
distributed Minimum Required Load												
Authorized IBC Gross Mass x 1.25												
AIBCGM	_ x	1.25	<u> </u>	Minimum Re	equired Load							
2,052.1	х	1.25	=	2,565.1	Kg	5,655.1	Lbs.					
Combined Gross Mass Lifted												
Actual Load Applied (ALA) + IBC Test Weight (IBCW)												
IBCW	_ + _	ALA	<u> </u>	Total Load Lifted								
1,126.0	+	1,587.6	=	2,713.6	Kg	5,982.4	Lbs.					

DROP HEIGHT <u>Calculation For Product Specific Gravities Exceeding 1.2</u> Product Specific Gravity (PSG) x Packing Group Multiplication Factor (MF)									
PS	SG	_ x	MF	_	Packing Group:				
1.9	90	x	1.00		Required Drop Height Actual Drop Heigh				
			1.90	Meter	74.8 Inches	75 Inches			