

UNITED NATIONS / DOT PERFORMANCE CERTIFICATION



31HA1 PERIODIC DESIGN REQUALIFICATION

330 Gallon Cross-Bottled Composite IBC with Greif GCube Bottle, Mauser Cage with Corner Protectors, 6" Cap (EPDM Gasket), Butterfly Valve

TEST REPORT #: 24-MN40021



* Insert the month and year (last two digits) of manufacture M***, Insert Manufacturer's Registered Symbol

TESTING PERFORMED FOR:

GREIF Packaging LLC 366 Greif Parkway Delaware, OH 43015

ATTN: John Foryt

TESTING PERFORMED BY:

TEN-E PACKAGING SERVICES, INC.

1666 County Road 74 Newport, MN 55055 Phone: 651-459-0671 Fax: 651-459-1430

February 12, 2024





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NOTES AND COMMENTS

The test data in this report may be used by the assembler of the given repaired or remanufactured IBC design type for <u>self-certification</u> of the UN marked container. Each service provider (assembler) must insert the appropriate manufacturer's registered symbol (or other applicable identification information) in the UN mark. Failure to include this information within the UN marking may render the certification invalid.

This report documents the testing of the 330 gallon design. Smaller versions of this design may be authorized based on the definition of a different design type under 49 CFR §178.801(c)(7). Below is the calculated authorized gross mass for a 275 gallon version of this design.

275 Gallon Greif GCube Bottle with Mauser Cage with Corner Protectors		
UN MARKING (275 Gallon IBC):	u 31HA1 / Y / ** / USA / M**** / 3855 / 1689	
PACKAGING IDENTIFICATION CODE:	31HA1 (178.707 Composite IBC)	
PERFORMANCE STANDARD:	Y (Packaging meets Packing Group II and III tests)	
MONTH AND YEAR OF MANUFACTURE:	**	
STATE AUTHORIZING ALLOCATION OF THE MARK:	USA	
MANUFACTURER'S REGISTERED NUMBER:	M****, Insert Manufacturer's Registered Number	
STACKING TEST LOAD:	3,855 Kg (8,500 Lbs.)	
MAXIMUM PERMISSIBLE GROSS MASS:	1,689 Kg (3,724 Lbs.)	
INFORMATION FOR CALCULATION:	 Capacity: 1041 Liter Tare Weight: 57 Kg Specific Gravity: 1.6 	



SECTION I: CERTIFICATION

PERIODIC DESIGN REQUALIFICATION of the Greif 330 Gallon Cross-Bottled Composite IBC with Greif GCube Bottle, Mauser Cage, Corner Protectors, 6" Cap (EPDM Gasket), Butterfly Valve

TEN-E Packaging Services, Inc. is a current DOT UN Third-Party Certification Agency under §107.403 and certifies that the **Greif Packaging LLC** 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	3.3 Hz – 1 Hour	Water	February 5, 2024	PASS
Bottom Lift	178.811	2,693.0 Kg	Water	February 5, 2024	PASS
Stacking	178.815	3,855.6 Kg – 24 Hours	Water	February 6, 2024	PASS
Leakproofness	178.813	20 kPa – 10 Minutes	Empty	February 7, 2024	PASS
Hydrostatic	178.814	70 kPa – 10 Minutes	Water	February 7, 2024	PASS
Drop	178.810	1.6 m	Methanol/Water Solution	February 12, 2024	PASS
TEST REPORT	NUMBERS:		24-MN40021, 18-MN4009	0	
UN MARKING: (CFR 49 – 178.7	03)		(^u _n) 31HA1 / Y / * / USA / M*** / 3855 / 2063		
PACKAGING ID	ENTIFICATION (CODE:	31HA1 (178.707 Composite IBC)		
PERFORMANCE STANDARD:		Y (Packaging meets Packing Group II and III tests)			
MONTH AND YEAR OF MANUFACTURE:		*		·	
STATE AUTHORIZING ALLOCATION OF THE MARK:		USA			
PACKAGING CERTIFICATION AGENCY:		(+AATEN-E Packaging Services, Inc. (Newport, MN CAA #2006030022)			
SYMBOL OF THE MANUFACTURER:		M****			
STACKING TEST LOAD:		3,855.6 Kg (8,500.0 Lbs.)			
MAXIMUM PERI	MISSIBLE GROS	S MASS:	2,063 Kg (4,548.5 Lbs.)		
PERIODIC DESIGN REQUALIFICATION DATE:		February 12, 2025			
ADDITIONAL REQUIRED RIGID PLASTIC & COMPOSITE IBC			EIBC MARKINGS (CFR 49	– 178.703(b)):	
RATED CAPACITY AT 20°C (liters):		Insert Rated Capacity of IBC in Liters			
TARE MASS (Kg):		Insert Individual IBC Tare Mass			
GAUGE TEST PRESSURE (kPa):		70 kPa			
DATE OF LAST LEAKPROOFNESS TEST:		Insert Month & Year of Last Leakproofness Test			
DATE OF LAST INSPECTION:		Insert 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 **Greif Packaging LLC** for services rendered. In the event of future changes to the above referenced test standards, it is the responsibility of **Greif Packaging LLC** 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:

Greif Packaging LLC 366 Greif Parkway Delaware, OH 43015

Oscar Meiiz 0 Technician TEN-E Packaging Services, Inc. 1666 County Road 74 Newport, MN 55055

Ander

Earry J. Anderson Manager, Technical Services TEN-E Packaging Services, Inc. 1666 County Road 74 Newport, MN 55055

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SECTIONS II & V: PACKAGING DESCRIPTIONS / COMPONENT DRAWINGS

330 Gallon Cross-Bottled Composite IBC with Greif GCube Bottle, Mauser Cage with Corner Protectors, 6" Cap (EPDM Gasket), Butterfly Valve

ASSEMBLY DRAWING	TEST LI	EVELS
	Certification Type:	Periodic Design Requalification
	Packaging Code Designation:	31HA1
	Packing Group:	II
	Specific Gravity:	1.6
	Test Pressure:	70 kPa
	TEST SAMPLE F (Refer to S	PREPARATION ection IV)
	Overall IBC Tare Weight: (Sample #1 and Sample #2)	64.0 Kg 141.1 Lbs.
	Net Fill Weight (98% Maximum Ca	pacity):
	Water (Sample #1)	1,268.2 Kg 2,795.9 Lbs
	Methanol/Water (Sample #2)	1,221.1 Kg 2,692.1 Lbs
	IBC Test Weight:	
	Water (Sample #1)	1,332.2 Kg 2,936.9 Lbs
	Methanol/Water (Sample #2)	1,285.1 Kg 2,833.1 Lbs
	Maximum Permissible Gross Mass	: 2,093.1 Kg 4,614.4 Lbs
		METHODS
XIIII D	6" Fill Port Cap:	
	Application Torque:	65 Ft-Lbs.
	Equipment:	Torque Wrench #742
	Dispensing Valve:	
	Application Method:	Installed by Manufacturer
	Refer to Appendix A for Manuf	acturer's Closure Instructions





COMPONENT INFORMATION

6" THREADED	CAP (CLSC	00041GG200	01)	DRAWING
Manufacturer: Greif, Italy				
Description:	6" Threaded F	Fill Port Cap		
Material:	High Density	Polyethylene,	Black	
Tare Weight:	139 Grams			
Overall Dimensions:				
Height	42.52 mm	(1.674")		
Top Diameter	161.77 mm	(6.369")		
Bottom Diameter	182.98 mm	(7.204")		
Thread Dimensions (to B	ottle):			
Major Diameter	163.27 mm	(6.428")		
Minor Diameter	154.56 mm	(6.085")		
Markings (OC Audit):	GC	2A	9/23	
Markings (QC Addit).	SPI "2" HDPE	Recycling Sy	mbol	
GASKET				
Description:	Tan EPDM G	asket		
Tare Weight:	11 Grams			
Thickness:	6.90 mm	(0.272")		
Diameter:	156.0 mm	(6.142")		





DISPENSING VALVE		DRAWING
Manufacturer: Greif, A	sip, IL	
BUTTERFLY VALVE		
Description:	2" Integrated Butterfly Valve	
Material:	High Density Polyethylene, White with Red Glass filled Polypropylene Handle	
Tare Weight:	N/A	
Overall Dimensions:		
Length	98.50 mm (3.878")	
Width/Diameter	79.17 mm (3.117")	
 Height 	124.58 mm (4.905")	
Thread Dimensions	To Accommodate Closure	
Major Diameter	63.34 mm (2.494")	
Minor Diameter	61.36 mm (2.416")	
Markings (QC Audit):	GC 311-23	
VALVE CLOSURE		
Description:	2" NPS Threaded Valve Closure	
Material:	Polyethylene, White	
Tare Weight:	17.723 Grams	
Overall Dimensions:		
Height	15.67 mm (0.617")	
Diameter	77.27 mm (3.042")	
Thread Dimension:		
 Major 	63.81 mm (2.512")	
Minor	61.98 mm (2.440")	
Seal:	Laminated Foil Induction Seal	
Markings (QC Audit):	5/23 1 SPI "2" PE-HD Recycling Symbol	

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RIGID PL	ASTIC INNER RECEPTACLE	DRAWING
Manufacturer: Greif, Hou	iston, TX	
Description:	 330 Gallon Rigid Plastic Inner Receptacle with: 6" Buttress Threaded Top Opening Integrated Dispensing Valve - Bottom 	
Material:	High Density Polyethylene, Natural, GBC3	
Method of Manufacture:	Blow Molded	
Tare Weight:	18.5 Kg (with Valve)	
Capacity:		
Rated	330 Gallons	
Overflow	341.9 Gallons (1,294.0 Liters)	
Overall Dimensions:		
Length	1,155.70 mm (45-1/2")	
Width	965 37 mm (38-1/8")	
Height	1,231.90 mm (48-1/2")	
6" Fill Port Opening Thread Dimensions:		
Major Diameter	159.28 mm (6.271")	
Minor Diameter	151.43 mm (5.962")	
Neck Height	31.62 mm (1.245")	
2" Dispensing Valve Ope	ening Thread Dimensions:	
Major Diameter	74.09 mm (2.917")	
Minor Diameter	68.52 mm (2.698")	
Wall Thickness:	1.5 mm (Nominal)	
	u 31HA1	
Markings (QC Audit):	GBC USA GBC23 HOU01 1/24 01/13/24 04:34:26 SPI "02" PE-HD Recycling Symbol	
CORNER SUPPORT INSE	ERTS	
Description:	(4) Plastic Corner Supports	
Material:	Polyethylene, Black	
Tare Weight:	258 Grams	
Overall Dimensions:	13-7/8" (L) x 12-3/4" (W) x 5" (H)	
Markings (QC Audit):	2 12/17 SPI "2" HD-PE Recycling Symbol	





OUTER	RECEPTACLE AND PALLET	
Manufacturer: Mauser,	East Brunswick, NJ	
SUPPORT BARS		
Material:	(2) Galvanized Steel Square Style Support Bars	
Tare Weight:	453 Grams	
Length:	1,025 mm (40-3/8")	
Attachment Method	(2) Star Head Screws per Bar	
CAGE		
Description:	 Steel Cage With: (1) Front Panel Square Style Bars 4-Way Entry Composite Pallet 	
Material:	Pallet: Steel Pan with Black Plastic Feet and Sump Area Cage: Galvanized Steel	
Tare Weight	42.0 Kg (Includes Cage, Plate, & Pallet)	DR I
Overall Dimensions:		
Length	1,190.62 mm (46-7/8")	- L
Width	1,003.30 mm (39-1/2")	
Height w/o Pallet	1,212.85 mm (47-3/4")	
Height with Pallet	1,333.50 mm (52-1/2")	
Attachment Method	 (9) Hexagon Head Screws (1) Each Corner (1) each centered on two sides and back (1) each side of recessed area for outlet flange 	
Markings (QC Audit):	MAUSER Packaging Solutions	

DRAWING



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:	3.3 Hz	(§178.819)
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	Vertical motion using L.A.B. 10000 Transportation Simulator	





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
FORK TINE PENETRATION:	Entry 1 & 2: 36" Entry 3 & 4: 30"	no permanent deformation which renders the IBC unsafe for transportation and no loss of contents.
COMBINED GROSS MASS LIFTED:	2,693.0 Kg (5,937.0 Lbs.) (Refer to Section IV)	(§178.811)
TEST EQUIPMENT:	Fork Truck Dead Load Weights	

BOT	TOM LIFT TEST SET-UP	AND RESULTS (SAMPLE	5 #1)
Direction of Entry #1	Direction of Entry #2	Direction of Entry #3	Direction of Entry #4
Res	sults	Comments/C)bservations
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		



STACKING TEST

TEST INFORMATION		TEST CRITERIA
TEST CONTENTS:	Water	
SAMPLE PREPARATION:	Refer to Section II	En mantel staid als die and annuals its
CONDITIONING:	Ambient	• For metal, rigid plastic, and composite IBCs, there may be no permanent
TEST LOAD APPLIED:	3,855 Kg (8,500 Lbs.) (Refer to Section IV)	deformation, which renders the IBC unsafe for transportation, and no loss of contents.
TEST DURATION:	24 Hours	(3170.015)
TEST EQUIPMENT:	L.A.B. 6630 Compression System	

STACKING TEST SET-UP AND RESULTS (SAMPLE #1)							
	Results	Comments/Observations					
	PASS	The IBC met the criteria for passing the test. 0.25" maximum deflection after 24 Hours. No leakage.					



LEAKPROOFNESS TEST

TEST INF	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	(§178.813)		
TEST EQUIPMENT: Regulated Air Source #: 2 Pressure Gauge #: 615 & 64				

LEAKPROOFN	LEAKPROOFNESS TEST SET-UP AND RESULTS (SAMPLE #1)						
Set-Up Photo	Leakproofness Photo	Leakproofness Photo					
		ASHCROFT ENER					
Results	Comments/C	Observations					
PASS	The IBC met the criter No lea	ia for passing the test. akage.					



HYDROSTATIC PRESSURE TEST

TEST INFO	TEST CRITERIA			
TEST CONTENTS:	Water			
WATER TEMPERATURE:	20.3°C (157°F)			
FILL CAPACITY:	Maximum Capacity	 For rigid plastic and composite IBC design types intended to contain solids loaded or discharged under pressure 		
SAMPLE PREPARATION:	Refer to Section II			
CONDITIONING:	Ambient	or intended to contain liquids, there		
TEST PRESSURE:	70 kPa	may be no leakage and no permanent		
TEST DURATION:	10 Minutes	unsafe for transportation.		
AREA OF PRESSURIZATION:	Through Top Head	(§178.814)		
TEST EQUIPMENT:	Regulated Water Source #: 2 Pressure Gauge #: 615 & 641			







DROP TEST

TEST	TEST CRITERIA	
TEST CONTENTS:	Methanol/Water Solution (0.964 SG)	For all IBC design types, there may
SAMPLE PREPARATION:	Refer to Section II	be no damage which renders the
CONDITIONING:	-18°C (0°F) Chamber #202	salvage or for disposable, and no
TEST CONTENTS TEMP.:	-18.4°C (-1.1°F)	loss of contents.The IBC shall be capable of being
DROP HEIGHT:	1.6 Meters (63") (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	DROP TEST SET-UP AND RESULTS (SAMPLE #3)						
Set-Up Photo	Post Drop Photo	Post Drop Photo					
Results	Comments/C	bservations					
PASS	The IBC met the criter Deformation seen to the bottle Corner Protectors were split o	ia for passing the test. and pallet upon impact. Plastic on four corners. No leakage.					



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REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES						
	49 CFR ①	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			
Stacking:	178.815	6.5.6.6	6.5.6.6			
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

The United Nations Recommendations on the Transport of Dangerous Goods – Model Regulations (UN – Orange Book)
 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					
	ASTM@ D8409:	Standard Guide for Conducting Stacking Tests on UN Packagings Using Guided or Unguided Loads					
Stacking:	ASTM@ D4577:	Standard Test Method for Compression Resistance of a Container Under Constant Load					
	ISO© 2234:	Packaging – Complete, Filled Transport Packages – Stacking Test using Static Load					
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					
	ISO⑤ 2248:	Packaging – Complete, Filled Transport Packages – Vertical Impact Test by Dropping					

④ American Society for Testing and Materials (ASTM)

© 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.

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SECTION IV MATHEMATICAL CALCULATIONS

INFORMATION USED FOR CALCULATIONS							
Overall IBC Tare Weight (IBCTW)-Sample 1:	64.0 Kg	141.1 Lbs.					
Overall IBC Tare Weight (IBCTW)-Sample 2:	64.0 Kg	141.1 Lbs.					
Overflow Capacity (OFC):							
Water	1,294.0 Kg	2,852.8 Lbs.					
Methanol/Water	1,246.0 Kg	2,746.9 Lbs.					
Actual Load Applied for Bottom Lift (BLALA):	1,360.8 Kg	3,000.0 Lbs.					
Packing Group	II						
Product Specific Gravity (PSG):	1.60	Min Wt To Be Applied					
Packing Group Multiplication Factor (MF):	1.00	2,830.7 Lbs. (Btm Lift)					
# of IBC Stacked During Transportation (#IBC):	2						

	98% OF OVERFLOW							
	Overflow Capacity (OFC) x 98%							
_	OFC	_ x _	98%	_				
	1,294.0	х	98% =	1,268.2	Kg	2,795.9	Lbs. Water	Sample #1
	1,246.0	х	98% =	1,221.1	Kg	2,692.1	Lbs. Methanol/Water	Sample #2

IBC TEST WEIGHT (IBCW)								
 Overall IBC Tare Weight (IBCTW) + 98% Overflow Capacity (OFC)								
IBCTW	+	98% OFC =						
64.0	+	1,268.2	1,332.2	Kg	2,936.9	Lbs. Water	Sample #1	
64.0	+	1,221.1	1,285.1	Kg	2,833.1	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	98% OFC)			
64.0	+	1.60	x	1,268.2	_		
		2,093.1	Kg	4,614.4	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	_ =	Minimum Re	equired Load			
	2,093.1	х	1.25	=	2,616.5	Kg	5,768.3	Lbs.	
Combined Gross Mass Lifted									
Actual Load Applied (ALA) + IBC Test Weight (IBCW)									
_	IBCW	_ + _	ALA	_ =	Total Load Lifted				
	1,332.2	+	1,360.8	=	2,693.0	Kg	5,937.0	Lbs.	

STACK TEST CALCULATIONS										
The IBC must be loaded to 1.8 times the combined maximum permissible gross mass of the number of similar IBCs										
that may be stacked on top of the IBC during transportation										
Minimum Required Load										
Authorized IBC Gross Mass x # of IBC Stack During Transportation (-1) x 1.8										
_	AIBCGM	_ x _	#IBC (-1)	х	1.8 =	Minimum Required Load				
	2,093.1	х	1.00	x	1.8 =	3,767.8	Kg	8,306.4	Lbs.	

DROP HEIGHT								
Calculation For Product Specific Gravities Exceeding 1.2 Product Specific Gravity (PSG) x Packing Group Multiplication Factor (MF)								
	PSG x MF		Pac	Packing Group: II				
	1.60	х	1.00		Required Drop Height	Actual Drop Height		
			1.60	Meter	63.0 Inches	63 Inches		



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APPENDIX A: MANUFACTURER'S CLOSURE INSTRUCTIONS



IBC CLOSURE NOTIFICATION

Country: USA

DOT Regulations in 49 CFR 178.2 (c)(1) require that Greif Packaging LLC provides a closure notification statement on 31HA1 composite IBCs, including inner receptacles and service equipment. For non-UN inner receptacles, the following closure notification also applies.

CLOSURE NOTIFICATION STATEMENT

- . Top openings in Greif UN IBC's must be fitted with 6" or 9" caps and gaskets supplied by Greif, Inc.
- · 6" threaded top closures are to be torqued to the following based on the gasket:
- EPDM gaskets = 65 ft-lbs
- SBR and Santoprene gaskets = 45 ft-lbs
- Viton gaskets = 75 ft-lbs
- · 9" threaded top closures must be torqued to 85 ft-lbs
- · Plugs in both cap sizes must be torqued to the following:
- 2" NPT and Buttress plugs = 20 ft-lbs
- 3/4" plugs inside 2" plugs = 9 ft-lbs
- 3/4" manual vent plugs from Stainlez = 2 ft-lbs.
- Representative service equipment in the form of a bottom Greif Italy plastic collar valve must be tightened to a torque of 40 ft-lbs minimum. All other plastic collar valves and metal collar valves must be tightened to a torque of 50 ft-lbs minimum.
 - For valve installation, the starting orientation of the valve handle should approximately be at the 11 o'clock position.
 - Once the valve is in position, hand tighten the collar until gasket contact occurs. Confirm the
 valve is approximately at the 11 o'clock position before proceeding with the required torque
 application.
 - The required torque should be obtained when the handle is prior to or at the 12 o'clock position.
 - If torque is reached prior to the handle being at the 12 o'clock position, the valve handle must be adjusted clockwise to the 12 o'clock position; additional torque may be applied to level valves that do not reach the 12 o'clock position with the required torque application.
- Should the valve orientation pass the 12 o'clock position prior to reaching required torque, loosen
 valve and reposition prior to re-starting the installation process.
- 2" weld on valves have no closing torque required.

NOTE: The filler is responsible for verifying closing torque on all closures and valves that are preinstalled. Greif completes testing to the minimum of the stated ranges for all closures where applicable.



Product Type: IB2

May 4, 2021 - rev0

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LEAKPROOFNESS TESTING STATEMENT

Greif Packaging LLC manufactures composite IBCs that are compliant with all applicable regulatory requirements in 49 CFR for the design types marked as 31HA1. Greif applies a UN mark to every inner receptacle manufactured in its North America facilities that is compliant with DOT regulations, including 49 CFR 178.703.

Every inner receptacle manufactured by Greif in North America is visually inspected and leakproofness tested in compliance with 49 CFR 178.813. For inner receptacles sold with representative service equipment preinstalled, i.e. bottom discharge valve, every unit is visually inspected and leak-tested with the valve in place, and the leakproofness testing date, as performed by Greif on its inner receptacles.

The remanufacturer or service provider who installs Greif inner receptacles in structural equipment is responsible for the full UN mark, in accordance with the test report, on rebottled or remanufactured units.