

Section 1

Re: MX 11 1250 DOT (UN) – Plastic Pallet

Report Number: HM 12934

Date of Report: 1/20/2025

Date of Test: 1/14/2025

Test performed by: **Advanced Packaging Technology Laboratories, Inc.**
200 Larkin Drive, Unit H
Wheeling, IL 60090

Test conducted for: **Schuetz Container Systems**
200 Aspen Hill Road
North Branch, NJ 08876

Attention: Brian Minnich

Items tested: One (1) sample set of composite IBC's intended for the transport of hazardous liquids.

Container: 330 GAL/1250-liter HDPE rectangular receptacle inside steel frame work

Approximate Overall Dimensions on Pallet (O.D.): 47.5" L X 39.5" W X 54" H

Nominal Tare Weight: 169.091 lbs.

Nominal Gross Weight: 4568.7 lbs.

Object of test: Design re-qualification testing to determine compliance with applicable sections of 49 CFR pertaining to the transport of dangerous goods – Packing Group II.

Findings: As submitted and tested, this package design was considered to comply with noted requirements.



31HA1 / Y / 01 25* / USA / +BR12642 / 3855 / 2072
Tare Weight: 76.69 kg

Marking is not to scale, for example purposes only. Marking must be in accordance with 178.3.
*indicates the month and last two digits of year of manufacture as per 178.703 (a) (1) (iv).

Expiration: This package certification expires 1 year from the date of this report.

Rafael Cameron
UN/DOT Manager

Charles Hernandez
UN/DOT Project Lead

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Section 2 - Package Description

IBC

Package Identification:	UN 31HA1			
Manufacturer:	SCHUTZ, North Branch, NJ 08876			
Tank Style:	Rectangular style container with rectangular tubular steel grid cage, bottom steel plate, corner protectors			
Protector Material:	Black HDPE			
Cage/Plate Material:	Galvanized steel			
Bottom steel plate and palletized Base Material:	Plate: Galvanized steel / Pallet: Black HDPE			
Manufacturing Method:	Frame: Welded and assembled with hardware Inner Receptacle: blow molded			
Part Number:	MX 11 1250 DOT (UN) – Plastic Pallet			
Maker's Certification:	31HA1/Y/06 24/USA/+AA6155/ 3855/2060/1250L/69KG/100 kPa Scheutz4			
Overall Height	54	in (min)	1371.6	mm (min)
Nestled Stacking Height	N/A	in (min)	1371.6	mm (min)
Outer dimensions				
Length	47.5	in (min)	1206.5	mm (min)
Width	39.5	in (min)	1003.3	mm (min)
Height	54	in (min)	1371.6	mm (min)
Steel Framework Tare Weight	25855.2	grams	57	lbs.
Steel Protective Bottom / Plastic Palletized Base Tare Weight	27216	grams	60	lbs.
Hardware	118.7	grams	0.261	lbs.
Corner Protector Tare Weight	1130.4	grams	2.492	lbs.
Tubular style bracing bars	832	grams	1.834	lbs.
Quantity:	One (1)			
Unique features:	None			
Note:	<ul style="list-style-type: none"> Unit was received with all components in place as a finished IBC All item identifications are found in the drawing at the back of this report. Assembly is found in the drawings. The lab did not assemble this unit. Four (4) corner protectors (282.6 grams each) molded to protect the bottom corners of the inner receptacle Two (2) steel tubular style bars (416.0 grams each) are used to secure the top of the container to steel frame. 			

Inner Receptacle

Manufacturer:	SCHUTZ, North Branch, NJ 08876						
Part number:	Container MX 11 1250 DOT (UN)						
Style:	330-gallon plastic receptacle						
Manufacturing method:	Extrusion blow molded						
Material:	Opaque "Natural" HDPE						
Location:	Inside steel framework						
Discharge Type:	DN50 HPDE screw butterfly valve with induction foil seal						
Indicated Capacity	330		Gallons		1249.05		Liters
98% of Maximum Capacity	329.549		Gallons		1247.342		Liters
Maximum Capacity	336.275		Gallons		1272.8		Liters
Dimensions:	Diameter	N/A		in	N/A		mm
	Length	45.375		in	1152.525		mm
	Width	37.5		in	952.5		mm
	Height	46.5		in	1181.1		mm
Thickness range:		Minimum	Maximum		Minimum	Maximum	
	Top	0.133	0.216	in	3.378	5.486	mm
	Bottom	0.096	0.16	in	2.438	4.064	mm
	Sides	0.1	0.153	in	2.54	3.886	mm
Gram weight:	21319.2 grams (47 lbs.)						
Quantity:	One (1)						
Orientation:	See closure instructions						
Resin manufacturer:	Proprietary						
Resin grade:	Proprietary						
Melt-flow index:	Proprietary				g/10 min		
Density:	Proprietary				g/cm ³		
Note:	Outlet nozzle spout (42.3 grams) is shipped with receptacle.						

6" Receptacle Closure

Manufacturer:		SCHUTZ, North Branch, NJ 08876				
Part number:		DN 225				
Style:		Twist type screw cap				
Closure material:		Black HDPE				
Closure gram weight:		216.7 grams				
O-Ring material:		EDPM (Ethylene propylene Dien Monomer) Synthetic Rubber				
O-Ring gram weight:		11.7 grams				
Dimensions:		Diameter	7.46	in	189.484	mm
		Height	1.45	in	36.83	mm
		Thickness (min)	0.157	in	3.987	mm
O-Ring dimensions:		Diameter	6.08	in	154.432	mm
		Thickness (min)	0.22	in	5.588	mm
Application torque:		75 ft. lbs.				
Quantity:		One (1)				
Equipment:		Torque Wrench (1503MFRMH-QR)				

Additional Test Information

Overall tare weight of package:	169.091	lbs.	76.68	kg.
Test contents:	Methanol / water solution			
Specific Gravity	0.95			
Test weight of package:	2834.67	lbs.	1285.56	kg.
Authorized package gross weight based on SG:	4568.7		lbs.	

Third-Party Laboratory Assembly and Closure Instructions

1. Third party testing laboratory received the IBC welded and assembled.
2. Remove cap and plug from top of IBC.
3. Fill IBC to correct weight and levels.
4. Seal and secure IBC 6" opening closed with 6" HDPE twist type cap and torque the cap to 75ft/lbs. with Torque Wrench (1503MFRMH-QR).

Equipment used to prepare the packages for testing

- ☐ Tape dispenser- ULINE, 2" wide hand-held, #H-150
- ☐ Tape dispenser- ULINE, 3" wide hand-held, #H-1162
- ☐ Glue gun- 3M Industrial, Set @ 220° F, # 75S9
- ☐ Poly bag sealer- MEC roller style, Set @ 410° F, #ME-803HW
- ☐ Bander- ULINE H-540/ H-572 strapping tensioner
- ☒ Hand assembled
- ☒ Other: Torque Wrench (1503MFRMH-QR)
- ☒ Other: Toyota Forklift Truck, #30690

SCHUETZ
packaging update
PACKAGING CLOSURE INFORMATION
March 22, 2023

CLOSURE SPECIFICATIONS FOR TIGHT HEAD DRUMS

PLUGS MUST BE TORQUED TO THE FOLLOWING

2" NPS AND 2" BUTTRESS - 20 FT LBS.

Dip tubes - 20 ft lbs. 3/4" NPT - 9 FT LBS

Note: Closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR OPEN HEAD DRUMS

CLOSE AND SECURE LID WITH LOCKING RING - ATTACH HOLDING PIN FOR HANDLE TO KEEP RING CLOSED.

PLUGS MUST BE TORQUED TO THE FOLLOWING :

2" NPS AND 2" BUTTRESS - 20 FT LBS

3/4" NPS - 9 FT LBS

note: closures must have gaskets to seal

CLOSURE SPECIFICATIONS FOR IBC'S

FILL PORT CAP MUST BE TORQUED TO THE FOLLOWING:

6" AND 9" FILL PORT CAP - 75 FT LBS

2" plug in 6" or 9" fill port cap must be torqued to 17 ft lbs. (Schuetz does not recommend that you remove this plug. Filling should be done through the 6" or 9" opening)

*** 56 x 4 mm and 2" buttress plug - 20 ft lbs**

Dip tubes - 20 ft lbs

Old style valves and EVOH valves

VALVE NUT - 55 FT LBS

Note: caps, valves, and plugs must have gaskets to seal

New Style valves – the valves are molded on and can not be replaced.

*** - Underline italic indicates the latest change to the instructions.**

Section 3 – Testing Procedures and Results

Package Preparation – For All Testing

The packages were filled to a minimum of 98% full (see Section 4 for calculation).

Package Panel Orientation – For All Test setups



Vibration Standard

Test Method: 49 CFR 178.819 using ASTM 999-08 (Method A1)

Test contents of inner containers:	Water			
Number of packages tested:	One (1)			
Weight of packages tested:	2834.67			lbs.
Duration:	1 hour			
Frequency:	4.16	Hz	249.6	rpm

The packages were conditioned in accordance with 49 CFR 178.802 to 50% +/- 2% relative humidity at 23 °C +/- 2 °C for at least 24 hours. The samples were placed on the table and the steel shim (2" wide x 20" long by 1/16" thick, steel) was used (inserted a minimum of 10" under the test sample and along the full length of the IBC on all sides) to assist in adjusting the frequency.

Results

Package #	Pass / Fail	Description of Results
1	Pass	No visible damage or leakage. The IBC remained centered on the pallet. The pallet remained intact and all boards showed no signs of fatigue.

Pass/Fail Criteria

A packaging passes the vibration test if there is no rupture or leakage. The test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

Bottom Lift Test

Test Method: 49 CFR 178.811

Test contents of inner containers:	Water
Number of packages tested:	One (1)
Number of possible entry/lifting points:	Four (4)

The packages were conditioned in accordance with 49 CFR 178.802 to 50% +/- 2% relative humidity at 23 °C +/- 2 °C for at least 24 hours. The tested IBC was raised and lowered twice by a lift truck with the forks centrally positioned and spaced at three quarters of the dimension of the side of entry. The forks must penetrate to three quarters of the direction of entry. The test must be repeated from each possible direction of entry.

Bottom lift test weight:	5800.00	lbs.	2630.862	kg
Rounded up from required weight:	5710.87	lbs.	2590.433	kg

See Section 4 for Calculation

Results

Package #	Pass / Fail	Description of Results
1	Pass	No damage or leakage of contents. The package lifted clear of the ground without any IBC damage.

Stacking Test

Test Method: 49 CFR 178.815

Free standing:	<input checked="checked" type="checkbox"/>	Guided Load:	<input type="checkbox"/>
Packages tested:	One (1)	Test duration:	24 hours

The packages were conditioned in accordance with 49 CFR 178.802 to 50% +/- 2% relative humidity at 23 °C +/- 2 °C for at least 24 hours.

Stacking test weight:	8500.00	lbs.	3855.574	kg
Rounded up from:	8223.66	lbs.	3730.227	kg

See Section 4 for Calculation.

The stacking test load was applied to the top of the packages by loading the unit with the stacking test weight (above) and the weight was maintained for 24 hours.

Results

Package #	Pass / Fail	Description of Results
1	Pass	No damage or leakage of content. No change in appearance, looks like new.

Pass/Fail Criteria

No loss of contents and no permanent deformation which renders the corrugated intermediate bulk container unsafe for transportation, and no loss of content.

Drop Test

Test Method: 49 CFR 178.810

Test contents of inner containers:	Methanol / water solution	
Number of packages tested:	One (1)	
Drop height:	1.6	meters

Testing was conducted to certify the package for Packing Group:	II	
Specific Gravity	1.6	
Weight of package as tested:	2834.67	lbs.

Conditioning

The packages were conditioned in accordance with 49 CFR 178.802 to -18 °C or lower for at least 24 hours. Drop testing was conducted within two (2) minutes after removing the test package from the conditioning chamber.

Results

Package #	Orientation	Results & Description
2	Bottom angled to corner no more than 5 degrees	Pass. Steel framework bowed outward on impact. Container is able to be lifter through all 4 entry points. Top steel bracing bars bowed inward. No leakage.

Pass/Fail Criteria

A package is considered to successfully pass the drop tests if no loss of contents is achieved. A slight discharge that stops flowing from a closure upon impact is not considered to be a failure of the intermediate bulk container if it stops.



Hydrostatic Pressure Test

Test Method: 49 CFR 178.814 10 minutes minimum duration.

Sample Number	Applied Pressure	Duration	Pass/Fail
IBC #1	100 kPa	30 min.	Pass

Pass/Fail Criteria

An IBC passes the hydrostatic test if for each test sample there is no leakage of liquid from the package.

Leakproofness Test

Test Method: 49 CFR 178.813 Duration determined by time necessary to check for leaks.

Sample Number	Applied Pressure	Duration	Pass/Fail
IBC #1	20 kPa	30 min.	Pass

Pass/Fail Criteria

No leakage

Stack Test Weight

Load = $1.8 \times N$

N = combined maximum permissible gross mass of number of IBC's intended to be stacked.

S= Number of IBC's stacked on top. S=1

Where: $N = S \times 4568.7 \text{ lbs.}$

Required applied weight = 8223.66 lbs.

Actual superimposed weight	8500.00	lbs.	3854.875	kg
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Bottom Lift Test Weight

Load = $1.25 \times \text{Gross Mass}$

Required applied weight = 5710.87 lbs.

Actual applied load	5800.00	lbs.	2630.385	kg
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Section 4 - Calculations

Capacity

Capacity of IBC:	336.275	gallons	1272.8	liters
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Weight of Test Package

Steel Framework:	25855.2	grams	25.855	kg	57	lbs.
Steel Base with HDPE Pallet:	27216	grams	27.216	kg	60	lbs.
Inner Receptacle:	21319.2	grams	21.319	kg	47	lbs.
Closure and hardware:	2309.5	grams	2.309	kg	5.091	lbs.
Total:	76699.9	grams	76.699	kg	169.091	lbs.

Filled Test Package Weight

Weight of fill (100% full):	2665.584	lbs.	1209.1	kg
Weight of filled package:	2834.675	lbs.	1285.8	kg

Drop Test Height

Maximum specific gravity of certification:	1.6
Packing group of certification:	II
Drop height:	1.6 meters

Note: Drop Height was adjusted as per 178.810 (d) (3) (ii)

Marked Weight to Accommodate Actual Product

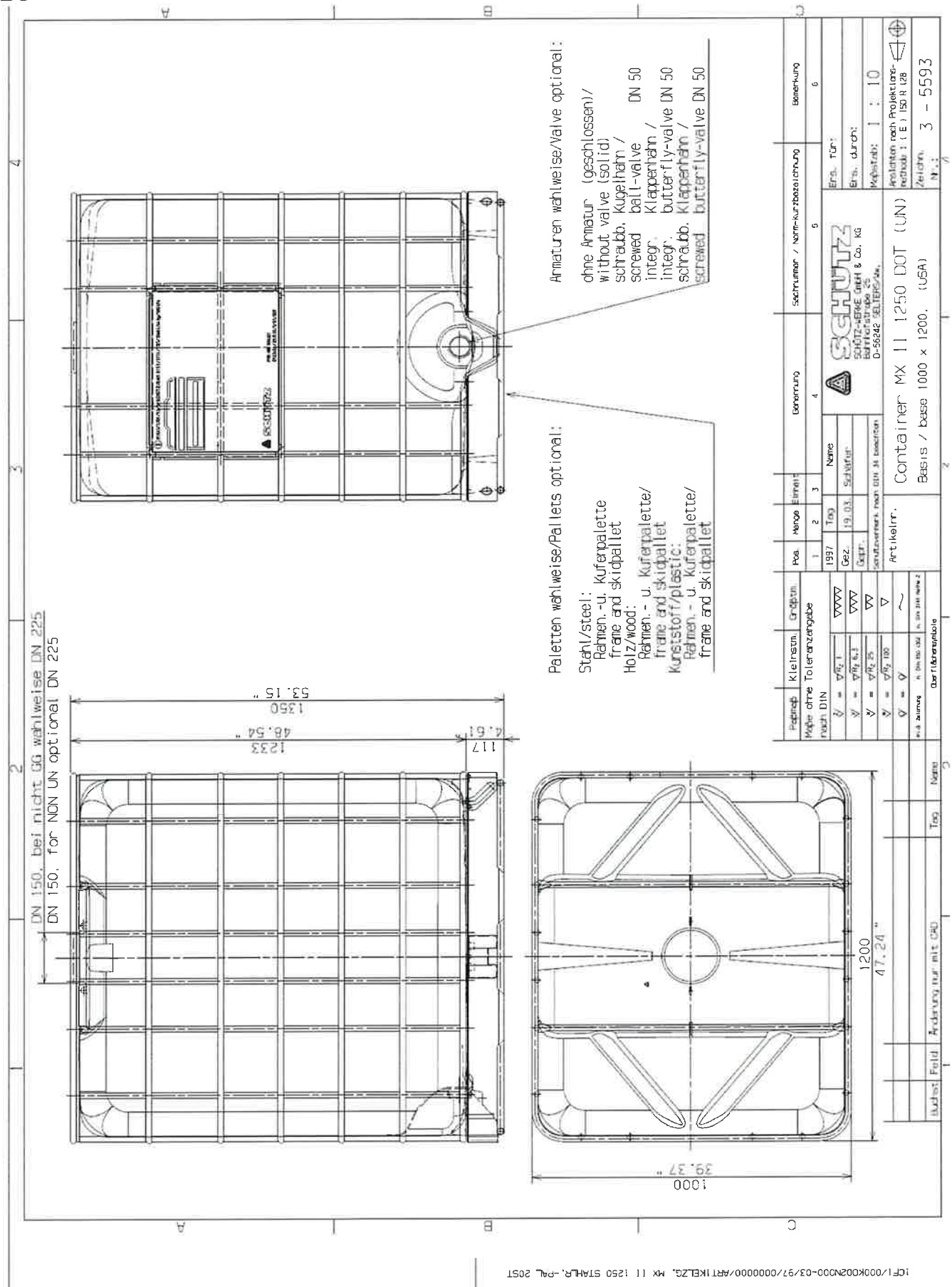
Weight of fill	4399.61	lbs.	1995.65	kg
Total tare weight	169.091	lbs.	76.699	kg
Weight of fill + Tare weight	4568.701	lbs.	2072.349	kg
Marked weight rounded down	4568.7	lbs.	2072	kg

Certified Weights

Certified actual product weight	4399.61	lbs.	1995.65	kg
Certified product weight + Tare weight	4568.701	lbs.	2072.349	kg
Certified gross weight (rounded down)	4568.7	lbs.	2072	kg

Section 5 - Drawings and Pictures of Packaging Components





Appendix A - Test Equipment and Instrumentation

Instrument or Equipment	Manufacturer	Model Number	Serial Number
Gram Scale	Mettler Toledo	PG4002-S	1122253714
Electronic Scale	American Scientific Products	TL-1600S	19538
Vibration Table	MTS	840	381A
Compression Tester	Tinius-Olsen	Electromatic	62560
Digital Micrometer	Mitutoyo	Digimatic	29376130
Mechanical Micrometer	Mitutoyo	MIC	LFM-1
Puncture Tester	TMI	A942	A942
Conditioning Chamber #2	Midwest Labs	922A	55455
Conditioning Chamber #6	Thermotron	SM-16C	23409
Conditioning Chamber #12	Thermotron	SM-16C	23408
Conditioning Chamber #16	Thermotron	SM-32C	42371
Drop Hook	Vestil	LM-HP	N/A
Fork Lift	Caterpillar	GC25K	AT 82C-90656
Fork Lift	Allis Chalmers	ACC40 PS	ALF111630

Calibration reports, certifications or additional information available upon request.

Appendix B - Definitions / Abbreviations / Conversions

Definitions

Proprietary – Customer was unable to obtain the required data or the MFG refused to provide this data due to trade secrets.

Types of Fiberboard: Single - wall (**SW**), Double - wall (**DW**), Triple - wall (**TW**)

Abbreviations

MD - Machine direction

CMD - Cross direction

N/A - Not applicable

N/T - Not tested

N/I - Not indicated

DNA - Does not apply

MSF – 1000 square feet

B/A – Board analysis

Conversions

1 gallon water = 8.344 lbs.

1 mm = 25.4 inches

1 kg. = 2.2046 lbs.

1 ounce = 28.349 grams

meters³ = 0.028 ft³

1 fl. Oz. = 29.573 cc

mils = inches / 0.001

1 meters = 39.369 inches

1 meters = 3.28 feet

1 lbs. = 453.6 grams

1 gal = 3.785 liters