



**UNITED NATIONS / DOT
PERFORMANCE CERTIFICATION**

4G DESIGN QUALIFICATION

**6 x 500mL Round Plastic Bottle Packaging with Two
Neck Finishes;
#1) 38-439
#2) 45mm**

TEST REPORT #: 12-7063 (REV 1)

**u
n** 4G / Y7.5 / S / **
USA / +CC7197

** Insert year the packaging is manufactured

TESTING PERFORMED FOR:

PUREPAK TECHNOLOGY COPORATION
324 South Braken Lane Suite 3
Chandler, AZ 85224
ATTN: Mike Dodd

TESTING PERFORMED BY:

TEN-E Packaging Services, Inc.
1666 County Road 74
Newport, MN 55055
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Issued Date: April 26, 2012
Revision Date: June 6, 2012

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NOTES AND COMMENTS

Note for Rev 1: Report 12-7063 issued on April 26, 2012 has been updated as of June 6, 2012. Per the client’s request the shipper material has been updated on page 8 under this revision


SECTION I: CERTIFICATION

Design Qualification of the PurePak Technology Corporation

6 x 500mL Round Plastic Bottle Packaging with Two Neck Finishes; #1) 38-439 & #2) 45mm

TEN-E PACKAGING SERVICES, INC. certifies that the PurePak Technology Corporation 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, ICAO/IATA Regulations 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 TEST	CFR REFERENCE	TEST LEVEL	TEST CONTENTS	TEST COMPLETED	TEST RESULTS
Drop #1	178.603	1.9m	Methanol / Water	April 25, 2012	PASS
Drop #2	178.603	1.9m	Methanol / Water	April 26, 2012	PASS
Stacking #1	178.606	317.5 Kg – 24 Hrs.	Water	April 24, 2012	PASS
Stacking #2	178.606	317.5 Kg – 24 Hrs.	Water	April 25, 2012	PASS
Pressure #1	173.27	300kPa – 30 Min.	Water	April 25, 2012	PASS
Pressure #1	173.27	300kPa – 30 Min.	Water	April 25, 2012	PASS
Vibration #1	178.608	3.8 Hz – 1 Hr.	Water	April 24, 2012	PASS
Vibration #2	178.608	3.8 Hz – 1 Hr.	Water	April 25, 2012	PASS
Cobb	178.516	30 minutes	---	April 24, 2012	PASS
TEST REPORT NUMBER:		12-7063			
UN MARKING: (CFR 49 - 178.503)		 4G / Y7.5 / S / ** USA / +CC7197			
PACKAGING IDENTIFICATION CODE:		4G - Fiberboard Box (178.516)			
PERFORMANCE STANDARD:		Y (Packaging meets Packing Group II and III tests)			
AUTHORIZED GROSS MASS:		7.5 Kg (16.5 Lbs.)			
"S" DESIGNATION:		Denotes Inner Packagings			
YEAR OF MANUFACTURE:		**Insert year the packaging is manufactured			
STATE AUTHORIZING THE MARK:		USA			
PACKAGING CERTIFICATION AGENCY:		(+CC) TEN-E Packaging Services, Inc. (Ontario, CA)			
THIRD PARTY PACKAGE IDENTIFICATION:		+CC7197			
PERIODIC RETEST DATE:		April 26, 2014			

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 PurePak Technology Corporation for services rendered. In the event of future changes to the above referenced test standard, it is the responsibility of PurePak Technology Corporation 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:

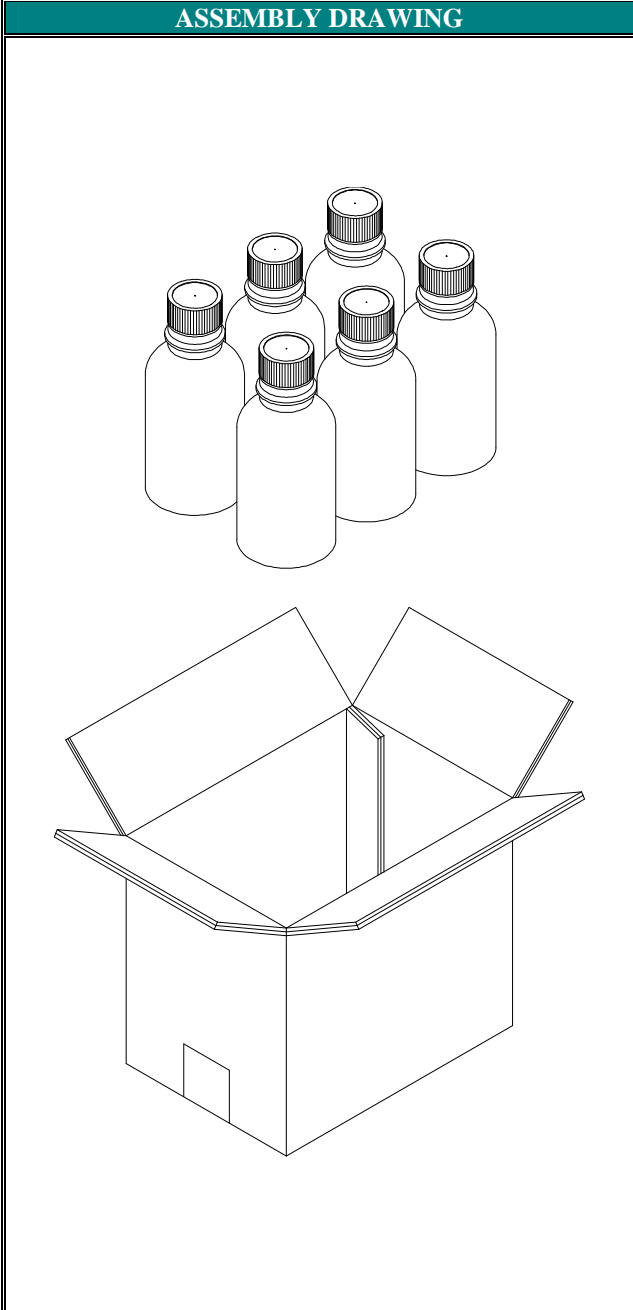
PurePak Technology Corporation
324 South Braken Lane Suite 3
Chandler, AZ 85224



Matthew Anderson
Packaging Engineer
TEN-E Packaging Services, Inc.
326 North Corona Avenue
Ontario, CA 91764

SECTIONS II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS

6 x 500mL Round Plastic Bottle Packaging with 38-439 Neck Finish

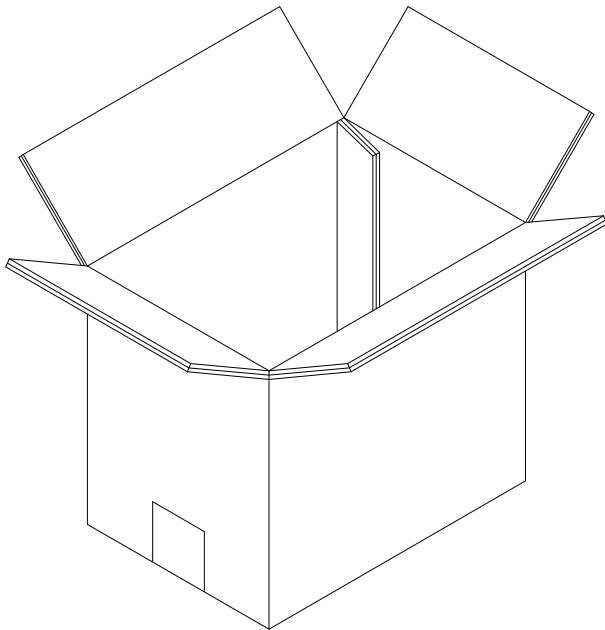


ASSEMBLY DRAWING		TEST LEVELS	
		Certification Type:	Design Qualification
		Packaging Code Designation:	4G
		Packing Group:	II
		Specific Gravity:	1.9
		Internal Pressure:	300 kPa
TEST SAMPLE PREPARATION (Refer to Section IV)			
		Overall Packaging Tare Weight:	653.0 Grams
		Inner Packaging Fill Capacity (98% Maximum Capacity):	
		Methanol/Water	584.6 Grams
		Water	602.7 Grams
		Package Test Weight:	
		Methanol/Water	4.1 Kg (9.0 Lbs.)
		Water	4.2 Kg (9.2 Lbs.)
		Authorized Package Gross Mass:	7.5 Kg (16.5 Lbs.)
CLOSING METHODS – INNER PACKAGING			
		Application Torque	50 In-Lbs
		Equipment:	Kaps-All Electronic Torque Tester #701
CLOSING METHODS – SHIPPER			
Top Flaps:			
		Type:	Pressure Sensitive Tape 3M; Supplied by PurePak
		Width:	48mm (2")
		Overlap:	2" Minimum
		Tape Pattern:	Center Seam
		Inner Flaps:	3-1/8" Width Gap
		Outer Flaps:	Meet
Bottom Flaps:			
		Type:	Pressure Sensitive Tape 3M; Supplied by PurePak
		Width:	48mm (2")
		Overlap:	2" Minimum
		Tape Pattern:	Center Seam
		Inner Flaps:	3-1/8" Width Gap
		Outer Flaps:	Meet

SECTIONS II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS

6 x 500mL Round Plastic Bottle Packaging with 45mm Neck Finish

ASSEMBLY DRAWING



TEST LEVELS

Certification Type:	Design Qualification
Packaging Code Designation:	4G
Packing Group:	II
Specific Gravity:	1.9
Internal Pressure:	300 kPa

TEST SAMPLE PREPARATION
(Refer to Section IV)

Overall Packaging Tare Weight:	652.0 Grams	
Inner Packaging Fill Capacity (98% Maximum Capacity):		
Methanol/Water	603.6 Grams	
Water	622.3 Grams	
Package Test Weight:		
Methanol/Water	4.2 Kg	(9.2 Lbs.)
Water	4.3 Kg	(9.4 Lbs.)
Authorized Package Gross Mass:	7.7 Kg	(16.9 Lbs.)

CLOSING METHODS – INNER PACKAGING

Application Torque	25 In-Lbs
Equipment:	Kaps-All Electronic Torque Tester #701

CLOSING METHODS – SHIPPER

Top Flaps:

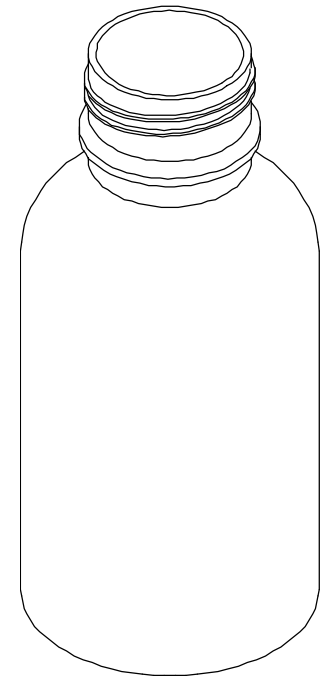
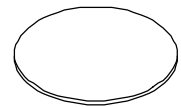
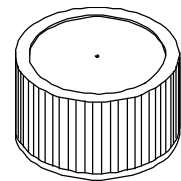
Type:	Pressure Sensitive Tape 3M; Supplied by PurePak
Width:	48mm (2")
Overlap:	2" Minimum
Tape Pattern:	Center Seam
Inner Flaps:	3-1/8" Width Gap
Outer Flaps:	Meet

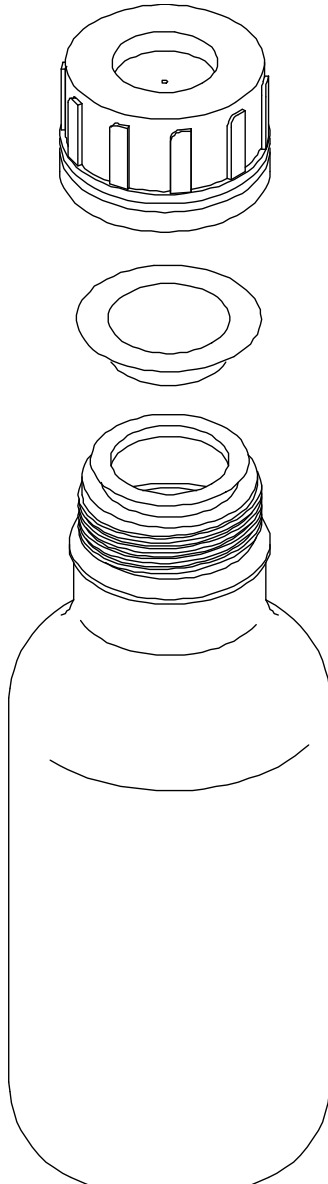
Bottom Flaps:

Type:	Pressure Sensitive Tape 3M; Supplied by PurePak
Width:	48mm (2")
Overlap:	2" Minimum
Tape Pattern:	Center Seam
Inner Flaps:	3-1/8" Width Gap
Outer Flaps:	Meet

COMPONENT INFORMATION

CLOSURE		Drawing
Manufacturer: Rexam Plastic Packaging: Evansville, IN (Dwg. #: QIM-317-4937)		
Description:	38mm Threaded Closure	
Quantity:	6	
Material:	Polypropylene	
Density:	0.907 g/cc	
Tare Weight:	10.3 Grams	
Overall Dimensions:		
• Height	1.016" ± 0.015"	
• Diameter	1.701" ± 0.015"	
Thread:		
• Type	38mm	
• Style	439	
Finish Dimensions:		
• T	1.483" ± 0.007"	
• E	1.389" ± 0.007"	
Markings (QC Audit):	35	
LINER		
Description:	P.E. Foam Liner	
Tare Weight:	0.64 Grams	
Thickness:	0.054"	
Diameter:	1.380"	
PLASTIC BOTTLE		
Manufacturer: Heise Industries, Inc.: East Berlin, CT (Dwg. #: D-45262)		
Description:	500mL Round Plastic Bottle	
Quantity:	6	
Material/Pigment:	High Density Polyethylene / Natural	
Method of Mfg:	Blow Molded	
Density:	0.944 g/cc	
Tare Weight:	50 Grams ± 2 Grams	
Capacity:		
• Rated	500mL	
• Overflow	602.9cc ± 13cc	
Overall Dimensions:		
• Height	6.906" ± 0.060"	
• Diameter	3.071" ± 0.060"	
Finish Dimensions:		
• T	1.461" ± 0.010"	
• E	1.367" ± 0.010"	
• Thread Pitch	0.1640"	
Wall Thickness:		
• Minimum	0.027"	
Markings (QC Audit):	SPI "2" HDPE Recycling Symbol 1 11/10	



CLOSURE		Drawing	
Manufacturer: George MENSHEN GmbH: Finnentrop, Germany			
Description:	45mm Threaded Closure		
Quantity:	6		
Material:	Polyethylene		
Density:	0.934 g/cc		
Tare Weight:	10.28 Grams		
Overall Dimensions:			
• Height	30.3mm		
• Diameter	51.3mm		
Thread:			
• Type	45mm		
• Style	Buttress		
Finish Dimensions:			
• T	1.812"		
• E	1.675"		
Markings (QC Audit):	7		
LINER			
Description:	PTFE Liner		
Tare Weight:	0.90 Grams		
Thickness:	0.009"		
Diameter:	45mm		
PLASTIC BOTTLE			
Manufacturer: Heise Industries, Inc.: East Berlin, CT (Dwg. #: D-45261)			
Description:	500mL Round Plastic Bottle		
Quantity:	6		
Material/Pigment:	High Density Polyethylene / Natural		
Method of Mfg:	Blow Molded		
Density:	0.943 g/cc		
Tare Weight:	50 Grams ± 2 Grams		
Capacity:			
• Rated	500mL		
• Overflow	621.2cc ± 13cc		
Overall Dimensions:			
• Height	6.906" ± 0.060"		
• Diameter	3.071" ± 0.060"		
Finish Dimensions:			
• T	1.772" ± 0.010"		
• E	1.644" ± 0.010"		
• Thread Pitch	0.1587"		
Wall Thickness:			
• Minimum	0.025"		
Markings (QC Audit):	SPI "2" HDPE Recycling Symbol 1 3/11		



SHIPPER		
Manufacturer: Sound Packaging: Chandler, AZ (Design #: 94120161)		
Description:	Regular Slotted Container	
Material/Flute (Inner to Outer):	Double Wall Natural Kraft Corrugated Fiberboard; B/C-Flute	
Basis Weight (Outer to Inner) Lbs./MSF:		
• Measured	42.1/22.7/43.3/22.6/42.9	
Combined Wt. of Facings:	128.3	
Tare Weight:	283 Grams	
Dimensions		
	Specification Dimensions (Inside)	Measured Dimensions (Outside)
• Length	9-3/8"	9-7/8"
• Width	6-5/16"	7"
• Height	7-1/8"	8-5/8"
Board Caliper (Nominal):	0.263"	
Manufacturer's Joint:	Inside Glued, 1-3/8"	
No Box Manufacturer's Certification:		
Markings (QC Audit):	NONE	

SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS 38-439







TEST INFORMATION		CRITERIA FOR PASSING THE TEST
TEST CONTENTS:	Methanol/Water Solution (0.970 SG)	<ul style="list-style-type: none"> For packaging containing liquid, each packaging does not leak. There can be no damage to the outer packaging likely to adversely affect safety during transport and there is no leakage of the filling substance from the inner packaging. Any discharge from a closure is slight and ceases immediately after impact with no further leakage. (§178.603)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	-18°C (0°F), Chamber #201	
TEST CONTENTS TEMP.:	-18.5°C (-1.30°F)	
DROP HEIGHT:	1.9 Meters (75") (Refer to Section IV)	
TEST EQUIPMENT:	L.A.B. Accu Drop 160 #301	

DROP ORIENTATIONS & TEST RESULTS		
Sample #1: Flat on Bottom	Sample #2: Flat on Top	Sample #3: Flat on Long Side
PASS: No leakage or damage.	PASS: No leakage or damage.	PASS: No leakage or damage.
Sample #4: Flat on Short Side	Sample #5: Bottom Corner	*Sample #1: Top Corner
PASS: No leakage or damage.	PASS: No leakage. Slight deformation to shipper on impact.	PASS: No leakage. Slight deformation to shipper on impact.

* Flat on Bottom Drop sample was also used for the Top Corner Drop

DROP TESTS	45mm
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
TEST CONTENTS: Methanol/Water Solution (0.097 SG) SAMPLE PREPARATION: Refer to Section II CONDITIONING: -18°C (0°F), Chamber #201 TEST CONTENTS TEMP.: -18.2°C (-0.76°F) DROP HEIGHT: 1.9 Meters (75") (Refer to Section IV) TEST EQUIPMENT: L.A.B. Accu Drop 160 #301	<ul style="list-style-type: none"> For packaging containing liquid, each packaging does not leak. There can be no damage to the outer packaging likely to adversely affect safety during transport and there is no leakage of the filling substance from the inner packaging. Any discharge from a closure is slight and ceases immediately after impact with no further leakage. <p style="text-align: right;">(\$178.603)</p>


DROP ORIENTATIONS & TEST RESULTS		
Sample #9: Flat on Bottom	Sample #10: Flat on Top	Sample #11: Flat on Long Side
		
PASS: No leakage or damage.	PASS: No leakage or damage.	PASS: No leakage or damage.
Sample #12: Flat on Short Side	Sample #13: Bottom Corner	*Sample #9: Top Corner
		
PASS: No leakage or damage.	PASS: No leakage. Slight deformation to shipper on impact.	PASS: No leakage. Slight deformation to shipper on impact.

* Flat on Bottom Drop sample was also used for the Top Corner Drop

STACKING & STACKING STABILITY TESTS	38-439
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Water</p> <p>SAMPLE PREPARATION: Refer to Section II</p> <p>CONDITIONING: 73°F / 50% RH, Chamber #202</p> <p>TEST LOAD APPLIED: 317.5 Kg (700.0 Lbs.) (Refer to Section IV)</p> <p>TEST DURATION: 24 Hours</p> <p>TEST EQUIPMENT: L.A.B. Validator Compression System #403</p>	<ul style="list-style-type: none"> There must be no leakage of the filling substance from the inner receptacle, or inner packaging. There can be no deterioration that could adversely affect transport safety or any distortion liable to reduce the package's strength, cause instability in stacks of packages, or cause damage to inner packagings that is likely to reduce safety in transport. <p style="text-align: right;">(§178.606)</p>

STACKING TEST SET UP AND RESULTS			
	Sample #	Maximum Deflection After 24 Hours	Results
	6	0.085"	PASS
	7	0.085"	PASS
	8	0.085"	PASS

STACKING STABILITY TEST SET-UP	CRITERIA FOR PASSING THE TEST
	<p>For stack stability TEN-E places the filled samples one on top of the other. The bottom sample is rotated to the top until all three samples have been subjected to stacking stability for one hour each. (§178.606)</p>
PASS	

STACKING & STACKING STABILITY TESTS **45mm**

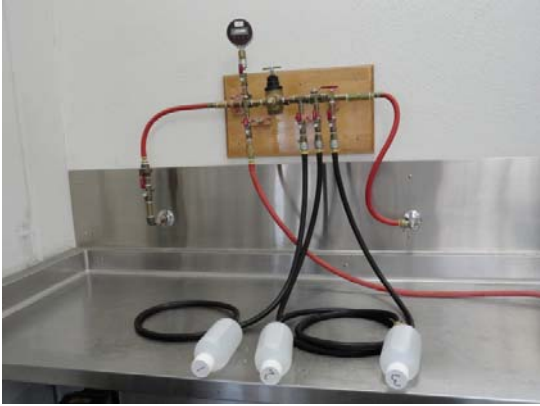
TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Water</p> <p>SAMPLE PREPARATION: Refer to Section II</p> <p>CONDITIONING: 73°F / 50% RH, Chamber #202</p> <p>TEST LOAD APPLIED: 317.5 Kg (700.0 Lbs.) (Refer to Section IV)</p> <p>TEST DURATION: 24 Hours</p> <p>TEST EQUIPMENT: L.A.B. Validator Compression System #403</p>	<ul style="list-style-type: none"> • There must be no leakage of the filling substance from the inner receptacle, or inner packaging. • There can be no deterioration that could adversely affect transport safety or any distortion liable to reduce the package's strength, cause instability in stacks of packages, or cause damage to inner packagings that is likely to reduce safety in transport. <p style="text-align: right;">(§178.606)</p>

STACKING TEST SET UP AND RESULTS			
	Sample #	Maximum Deflection After 24 Hours	Results
	14	0.078"	PASS
	15	0.078"	PASS
	16	0.078"	PASS

STACKING STABILITY TEST SET-UP	CRITERIA FOR PASSING THE TEST
	<p>For stack stability TEN-E places the filled samples one on top of the other. The bottom sample is rotated to the top until all three samples have been subjected to stacking stability for one hour each. (§178.606)</p>
PASS	

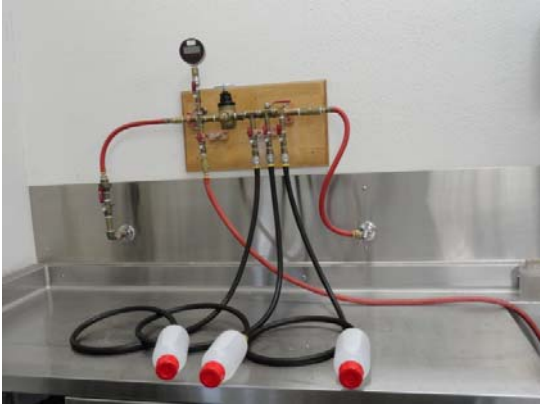
PRESSURE DIFFERENTIAL TEST **38-439**

TEST INFORMATION		CRITERIA FOR PASSING THE TEST
TEST CONTENTS:	Water	<ul style="list-style-type: none"> Packaging for which retention of liquid is a basic function must be capable of withstanding the pressure requirements without leakage. (§173.27)
FILL CAPACITY:	Maximum Capacity	
CLOSURE APPLICATION:	Refer to Section II	
CONDITIONING:	Ambient	
TEST PRESSURE:	300kPa	
TEST DURATION:	30 Minutes	
AREA OF PRESSURIZATION:	Through the Bottom	
TEST EQUIPMENT:	Regulated Water Source Gauge #605	

HYDROSTATIC PRESSURE TEST SET-UP & RESULTS			
	Sample #	Results	Comments / Observations
	1	PASS	All three samples maintained the 300kPa test pressure for 30 minutes without leakage.
	2	PASS	
	3	PASS	

PRESSURE DIFFERENTIAL TEST	45mm
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Water</p> <p>FILL CAPACITY: Maximum Capacity</p> <p>CLOSURE APPLICATION: Refer to Section II</p> <p>CONDITIONING: Ambient</p> <p>TEST PRESSURE: 300kPa</p> <p>TEST DURATION: 30 Minutes</p> <p>AREA OF PRESSURIZATION: Through the Bottom</p> <p>TEST EQUIPMENT: Regulated Water Source Gauge #605</p>	<ul style="list-style-type: none"> Packaging for which retention of liquid is a basic function must be capable of withstanding the pressure requirements without leakage. (§173.27)


HYDROSTATIC PRESSURE TEST SET-UP & RESULTS			
	Sample #	Results	Comments / Observations
	1	PASS	All three samples maintained the 300kPa test pressure for 30 minutes without leakage.
	2	PASS	
	3	PASS	

REPETITIVE SHOCK VIBRATION TESTS

38-439


TEST INFORMATION		CRITERIA FOR PASSING THE TEST
TEST CONTENTS:	Water	Immediately following the period of vibration, each package must be removed from the platform, turned on its side and observed for any evidence of leakage. <ul style="list-style-type: none"> • A packaging passes the vibration test if there is no rupture or leakage from any of the packages. • No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength. (\$178.608)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	73°F / 50% RH, Chamber #202	
TABLE DISPLACEMENT:	1"	
TEST FREQUENCY:	3.8 Hz	
TEST DURATION:	1 Hour	
TEST EQUIPMENT:	Vertical motion using L.A.B. Palletizer Transportation Simulator #501	

VIBRATION TEST SET-UP & RESULTS

	Sample #	Results	Comments / Observations
	6	PASS	No leakage or damage.
	7	PASS	
	8	PASS	

REPETITIVE SHOCK VIBRATION TESTS	45mm
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Water</p> <p>SAMPLE PREPARATION: Refer to Section II</p> <p>CONDITIONING: 73°F / 50% RH, Chamber #202</p> <p>TABLE DISPLACEMENT: 1"</p> <p>TEST FREQUENCY: 3.8 Hz</p> <p>TEST DURATION: 1 Hour</p> <p>TEST EQUIPMENT: Vertical motion using L.A.B. Palletizer Transportation Simulator #501</p>	<p>Immediately following the period of vibration, each package must be removed from the platform, turned on its side and observed for any evidence of leakage.</p> <ul style="list-style-type: none"> A packaging passes the vibration test if there is no rupture or leakage from any of the packages. No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength. (\$178.608)

VIBRATION TEST SET-UP & RESULTS			
	Sample #	Results	Comments / Observations
	14	PASS	No leakage or damage.
	15	PASS	
	16	PASS	

COBB WATER ABSORPTION TESTS

TEST INFORMATION		CRITERIA FOR PASSING THE TEST
SAMPLE SIZE:	(5) 5" x 5" Squares	<ul style="list-style-type: none"> An increase in mass greater than 155 g/m² over the 30 minute duration represents an unacceptable level of water resistance. (§178.516)
CONDITIONING:	73°F / 50% RH, Chamber #202	
WATER APPLIED:	100mL / Sample	
TEST DURATION:	30 Minutes / Sample	
TEST EQUIPMENT:	UWE Analytical Balance #102 Gurley Cobb Water Absorption Apparatus	

COBB WATER ABSORPTION TEST RESULTS	
Sample #	Water Absorbed (g/m ²)
1	105 g/m ²
2	102 g/m ²
3	106 g/m ²
4	106 g/m ²
5	106 g/m ²
AVERAGE:	105.0 g/m²
RESULT	PASS

REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES

TEST	49 CFR ^① October 2011 Edition	UN ^② 17th Edition	IMDG ^③ 2010 Edition	ICAO ^④ 2011-2012 Edition	IATA ^⑤ 53rd Edition
Drop:	178.603	6.1.5.3	6.1.5.3	6; 4.3	6.3.3
Stacking:	178.606	6.1.5.6	6.1.5.6	6; 4.6	6.3.6
Pressure:	173.27(c)	4.1.1.4.1	---	4; 1.1.6	5.0.2.9
Vibration:	178.608	---	---	4; 1.1.1	5.0.2.7
Cobb:	178.516	6.1.4.12.1	6.1.4.12.1	6; 3.1.11.1	6.2.12.2

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)

④ Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO)

⑤ International Air Transport Association (IATA) Dangerous Goods Regulations

INDUSTRY STANDARD REFERENCES

Drop:	ASTM ^⑥ D5276:	Standard Test Method for Drop Test of Loaded Containers by Free Fall
	ISO ^⑦ 2248:	Packaging – Complete, Filled Transport Packages – Vertical Impact Test By Dropping
Stacking:	ASTM ^⑥ D4577:	Standard Test Method for Compression Resistance of a Container Under Constant Load
	ISO ^⑦ 2234:	Packaging – Complete, Filled Transport Packages – Stacking Tests using Static Load
Hydrostatic Pressure:	ASTM ^⑦ D7660:	Standard Guide for conducting Internal Pressure Tests on United Nations (UN) Packagings
Vibration:	ASTM ^⑥ D999:	Standard Test Method for Vibration Testing of Shipping Containers
	ISO ^⑦ 2247:	Packaging – Complete, Filled transport Packages – Vibration Test at Fixed Low Frequency
Cobb:	ISO ^⑦ 535:	Paper and Board - Determination of Water Absorption - Cobb Method

⑥ American Society for Testing and Materials (ASTM)

⑦ 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

38MM

INFORMATION USED FOR CALCULATIONS

Overall Packaging Tare Weight (PTW):	653.0 Grams	
Overflow Capacity (OFC):		Methanol/Water SG
Methanol/Water	596.5 Grams	SG: 0.970
Water	615.0 Grams	
Number of Inner Packagings (# IP):	6	
Packing Group	II	
Product Specific Gravity (PSG):	1.900	
Packing Group Multiplication Factor (MF):	1.00	
Overall Height of one Package (OH):	8.63 Inches	
Stack Test-# of Samples Tested Simultaneously:	3	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OFC</u>	x	<u>98%</u>		
596.5	x	98% =	584.6 Grams	Methanol/Water
615.0	x	98% =	602.7 Grams	Water

PACKAGE TEST WEIGHTS

Overall Pkg Tare Weight (PTW) + (98% Overflow Capacity (OFC) x # of Inner Pkg (# IP))

<u>PTW</u>	+	<u>(98% OFC)</u>	x	<u># IP)</u>	
653	+	585	x	6	Methanol/Water
653	+	603	x	6	Water
Methanol/Water:		4.1	Kg	9.0	Lbs.
Water:		4.2	Kg	9.2	Lbs.

AUTHORIZED PACKAGE GROSS MASS CALCULATION (APGM)

Overall Pkg Tare Weight (PTW) + (Product SG (PSG) x 98% Overflow (OFC) x # of Inner Pkg (# IP))

<u>PTW</u>	+	<u>(PSG</u>	x	<u>98% OFC</u>	x	<u># IP)</u>
653	+	1.9	x	603	x	6
		7.5	Kg	16.5	Lbs.	

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

STACKING TEST MINIMUM LOAD CALCULATIONS				
Number of Packages in a 3m High Stack (118 / Overall Pkg Height (OH) -1)				
118 / Overall Height of one Pkg (OH) - 1				
<u>(118</u>	/	<u>OH)</u>	-1	= <u># 3m HS</u>
118	/	8.63	-1	= 12.7
Stacking Test Load Calculation (Individual Package)				
Authorized Pkg Gross Mass (APGM) x # of Pkg in a 3m High Stack (# 3m HS)				
<u>APGM</u>	x	<u># 3m HS</u>		
7.5	x	12.7		
		95.3 Kg	210.1 Lbs.	

Stacking Test Load Calculation				
Samples x Authorized Pkg Gross Mass (APGM) x # of Pkg in a 3m High Stack (# 3m HS)				
<u>Samples</u>	x	<u>(APGM</u>	x	<u># 3m HS)</u>
3	x	7.5	x	12.7
		285.8 Kg	630.1 Lbs.	

SECTION IV: MATHEMATICAL CALCULATIONS

45MM

INFORMATION USED FOR CALCULATIONS

Overall Packaging Tare Weight (PTW):	652.0 Grams	
Overflow Capacity (OFC):		Methanol/Water SG
Methanol/Water	615.9 Grams	SG: 0.970
Water	635.0 Grams	
Number of Inner Packagings (# IP):	6	
Packing Group		
Product Specific Gravity (PSG):	1.900	
Packing Group Multiplication Factor (MF):	1.00	
Overall Height of one Package (OH):	8.63 Inches	
Stack Test-# of Samples Tested Simultaneously:	3	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OFC</u>	x	<u>98%</u>		
615.9	x	98% =	603.6 Grams	Methanol/Water
635.0	x	98% =	622.3 Grams	Water

PACKAGE TEST WEIGHTS

Overall Pkg Tare Weight (PTW) + (98% Overflow Capacity (OFC) x # of Inner Pkg (# IP))

<u>PTW</u>	+	<u>(98% OFC)</u>	x	<u># IP</u>	
652	+	604	x	6	Methanol/Water
652	+	622	x	6	Water
Methanol/Water:		4.2	Kg	9.2	Lbs.
Water:		4.3	Kg	9.4	Lbs.

AUTHORIZED PACKAGE GROSS MASS CALCULATION (APGM)

Overall Pkg Tare Weight (PTW) + (Product SG (PSG) x 98% Overflow (OFC) x # of Inner Pkg (# IP))

<u>PTW</u>	+	<u>(PSG)</u>	x	<u>98% OFC</u>	x	<u># IP</u>
652	+	1.9	x	622	x	6
		7.7	Kg	16.9	Lbs.	

DROP HEIGHT				
Calculation For Product Specific Gravities Exceeding 1.2				
Product Specific Gravity (PSG) x Packing Group Multiplication Factor (MF)				
<u>PSG</u>	x	<u>MF</u>	Packing Group: 0	
1.9	x	1.00	<u>Required Drop Height</u>	<u>Actual Drop Height</u>
		1.90 Meter	74.8 Inches	75 Inches

STACKING TEST MINIMUM LOAD CALCULATIONS				
Number of Packages in a 3m High Stack (118 / Overall Pkg Height (OH) -1)				
118 / Overall Height of one Pkg (OH) - 1				
<u>(118</u>	/	<u>OH)</u>	-1	=
118	/	8.63	-1	=
				<u># 3m HS</u>
				12.7
Stacking Test Load Calculation (Individual Package)				
Authorized Pkg Gross Mass (APGM) x # of Pkg in a 3m High Stack (# 3m HS)				
<u>APGM</u>	x	<u># 3m HS</u>		
7.7	x	12.7		
		97.8 Kg	215.6 Lbs.	

Stacking Test Load Calculation				
Samples x Authorized Pkg Gross Mass (APGM) x # of Pkg in a 3m High Stack (# 3m HS)				
<u>Samples</u>	x	<u>(APGM</u>	x	<u># 3m HS)</u>
3	x	7.7	x	12.7
		293.4 Kg	646.8 Lbs.	