



**UNITED NATIONS / DOT
PERFORMANCE CERTIFICATION**

4G DESIGN QUALIFICATION

4 x 1 Gallon Plastic Bottle Packaging

TEST REPORT #: 11-7078 (REV 1)

u 4G / Y19.6 / S / **
n USA / +CC6891

** Insert year the packaging is manufactured

TESTING PERFORMED FOR:

**VICTORY PACKAGING
(GOLDEN STATE CONTAINER IN CALIFORNIA)**

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NOTES AND COMMENTS

Testing conducted on the following variables:
 #1) Bottle S1 – Standard and CRC Closures with Case Sealing Mechanism: Hot Melt Glued Top and Bottom Flaps
 #2) Bottle S1 – Standard and CRC Closures with Case Sealing Mechanism: Top Flaps: 3M #375 Pressure Sensitive Tape and Hot Melt Glued Bottom Flaps
 #3) Bottle P & Standard Closure P – Case Sealing Mechanism: Hot Melt Glued Top and Bottom Flaps

Note for Rev 1: Report 11-7078 issued on July 27, 2011 has been updated adding the Selective Testing Statement and updating the corrugated divider and shipper manufacturer under this revision.

Victory Packaging (Golden State Container in California) may use Certification Number +CC6891 on other corrugated shippers provided they meet 49 CFR; 178.601 (g)(1) Selective Testing Variation 1 and 49 CFR; 178.601 (g)(4) Selective Testing Variation 4.


SECTION I: CERTIFICATION

**Design Qualification of the Victory Packaging (Golden State Container in California)
4 x 1 Gallon Plastic Bottle Packaging with Multiple Variables:**

- #1) Bottle S1 – Standard and CRC Closures with Case Sealing Mechanism: Hot Melt Glued Top and Bottom Flaps
- #2) Bottle S1 – Standard and CRC Closures with Case Sealing Mechanism: Top Flaps: 3M #375 Pressure Sensitive Tape and Hot Melt Glued Bottom Flaps
- #3) Bottle P & Standard Closure P – Case Sealing Mechanism: Hot Melt Glued Top and Bottom Flaps

TEN-E PACKAGING SERVICES, INC. certifies that the **Victory Packaging (Golden State Container in California)** 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 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.

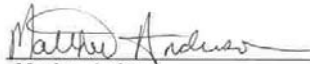
SUMMARY OF PERFORMANCE TESTS

UN /DOT TEST	CFR REFERENCE	TEST LEVEL	TEST CONTENTS	TEST COMPLETED	TEST RESULTS
Drop #1	178.603	1.2m	Methanol / Water	July 26, 2011	PASS
Drop #2	178.603	1.2m	Methanol / Water	July 26, 2011	PASS
Drop #3	178.603	1.2m	Methanol / Water	June 6, 2011	PASS
Stacking #1	178.606	181.4 Kg – 24 Hrs.	Empty	May 19, 2011	PASS
Stacking #2	178.606	181.4 Kg – 24 Hrs.	Empty	May 21, 2011	PASS
Stacking #3	178.606	476.2 Kg – 24 Hrs.	Water	June 9, 2011	PASS
Vibration #1	178.608	4.0 Hz – 1 Hr.	Water	July 26, 2011	PASS
Vibration #2	178.608	3.5 Hz – 1 Hr.	Water	July 27, 2011	PASS
Vibration #3	178.608	3.9 Hz – 1 Hr.	Water	June 7, 2011	PASS
Cobb	178.516	30 minutes	---	May 19, 2011	PASS
TEST REPORT NUMBER:			11-7078		
UN MARKING: (CFR 49 - 178.503)			 4G / Y19.6 / S / ** USA / +CC6891		
PACKAGING IDENTIFICATION CODE:			4G - Fiberboard Box (178.516)		
PERFORMANCE STANDARD:			Y (Packaging meets Packing Group II and III tests)		
AUTHORIZED GROSS MASS:			19.6 Kg (43.2 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:			+CC6891		
PERIODIC RETEST DATE:			July 27, 2013		

ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABILITY OR FIT FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. In no event shall TEN-E Packaging Services, Inc. liability exceed the total amount paid by **Victory Packaging (Golden State Container in California)** for services rendered. In the event of future changes to the above referenced test standard, it is the responsibility of **Victory Packaging (Golden State Container in California)** 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:

Victory Packaging (Golden State Container in California)
 3555 Timmons Lane
 Suite 1400
 Houston, TX 77027



Matthew Anderson
 Packaging Engineer
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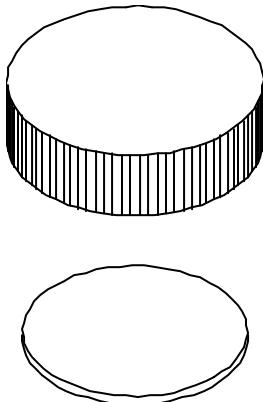
SECTIONS II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS

4 x 1 Gallon Plastic Bottle Packaging Variables (#1 & #2)

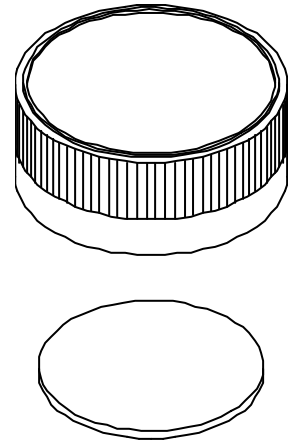
ASSEMBLY DRAWING	TEST LEVELS		
	Certification Type:	Design Qualification	
	Packaging Code Designation:	4G	
	Packing Group:	II	
	Specific Gravity:	1.2	
	TEST SAMPLE PREPARATION (Refer to Section IV)		
	Overall Packaging Tare Weight:	1,321.0 Grams	
	Inner Packaging Fill Capacity (98% Maximum Capacity):		
	Methanol/Water	3,691.1 Grams	
	Water	3,817.1 Grams	
	Package Test Weight:		
Methanol/Water	16.0 Kg	(35.2 Lbs.)	
Water	16.5 Kg	(36.3 Lbs.)	
Authorized Package Gross Mass:	19.6 Kg (43.2 Lbs.)		
CLOSING METHODS – INNER PACKAGING			
Application Torque	19 In-Lbs		
Equipment:	Kaps All Electronic Torque Tester #701		
CLOSING METHODS – SHIPPER			
Top Flaps:			
Type:	Option #1): Hot Melt Glue		
	Option #2): 3M #375 Pressure Sensitive Tape		
Width:	48mm (2")		
Overlap:	2" Minimum		
Tape Pattern:	Center Seam		
Inner Flaps:	Meet		
Outer Flaps:	Meet		
Bottom Flaps:			
Type:	Option #1): Hot Melt Glue		
	Option #2): Hot Melt Glue		
Inner Flaps:	Meet		
Outer Flaps:	Meet		

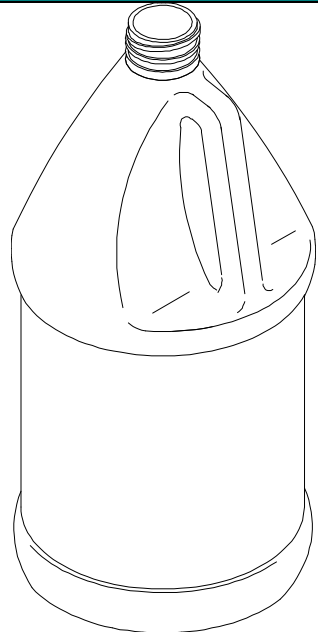
4 x 1 Gallon Plastic Bottle Packaging Variable (#3)	
ASSEMBLY DRAWING	TEST LEVELS
	Certification Type: Design Qualification
	Packaging Code Designation: 4G
	Packing Group: II
	Specific Gravity: 1.2
	TEST SAMPLE PREPARATION (Refer to Section IV)
	Overall Packaging Tare Weight: 1,321.0 Grams
	Inner Packaging Fill Capacity (98% Maximum Capacity):
	Methanol/Water 3,691.1 Grams
	Water 3,817.1 Grams
	Package Test Weight:
	Methanol/Water 16.0 Kg (35.2 Lbs.)
	Water 16.5 Kg (36.3 Lbs.)
	Authorized Package Gross Mass: 19.6 Kg (43.2 Lbs.)
	CLOSING METHODS – INNER PACKAGING
	Application Torque 19 In-Lbs
Equipment: Kaps All Electronic Torque Tester #701	
CLOSING METHODS – SHIPPER	
Top Flaps:	
Type: Option #3): Hot Melt Glue	
Width: 48mm (2")	
Inner Flaps: Meet	
Outer Flaps: Meet	
Bottom Flaps:	
Type: Option #3): Hot Glue	
Inner Flaps: Meet	
Outer Flaps: Meet	

COMPONENT INFORMATION

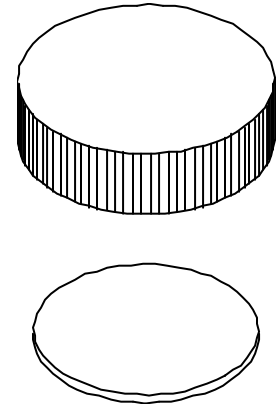
CLOSURE		Drawing
Manufacturer: Rexam Plastic Packaging: Evansville, IN (Dwg #: K6955K)		
Description:	38mm Threaded Closure "S-1"	
Quantity:	4	
Material:	Polypropylene	
Density:	0.925 g/cc	
Tare Weight:	3.39 Grams	
Overall Dimensions:		
• Height	0.455" ± 0.015"	
• Diameter	1.61"	
Thread:		
• Type	38mm	
• Style	400	
Finish Dimensions:		
• T	1.484"	
• E	1.390"	
Markings (QC Audit):	13 H	
LINER		
Description:	P.E. Foam Liner	
Tare Weight:	0.42 Grams	
Thickness:	0.035"	
Diameter:	1.473"	

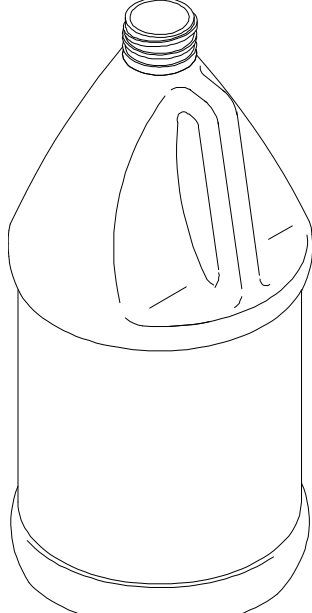
CLOSURE		Drawing
Manufacturer: Rexam Plastic Packaging: Evansville, IN (Dwg #: QIM-500-A33)		
Description:	38mm Child Resistant Closure "S-1"	
Quantity:	4	
Material/Pigment:		
• Outside	Polypropylene / White	
• Inside	Polypropylene / Natural	
Density:		
• Outside	0.902 g/cc	
• Inside	0.901 g/cc	
Tare Weight:	7.26 Grams	
Overall Dimensions:		
• Height	0.677"	
• Diameter	1.756" ± 0.015"	
Thread:		
• Type	38mm	
• Style	400	
Finish Dimensions:		
• T	1.481" ± 0.008"	
• E	1.400" ± 0.008"	
Markings (QC Audit):	4	
LINER		
Description:	P.E. Foam Liner	
Tare Weight:	0.14 Grams	
Thickness:	0.030"	
Diameter:	1.468"	



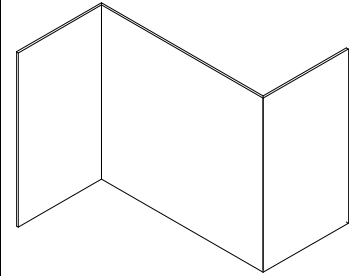
PLASTIC BOTTLE		Drawing
Manufacturer: Consolidated Container Company: Ontario, CA (Dwg #: MA8410-2)		
Description:	1 Gallon Round Plastic Bottle "S-1"	
Quantity:	4	
Material/Pigment:	High Density Polyethylene / Natural	
Method of Mfg:	Blow Molded	
Density:	0.945 g/cc	
Tare Weight:	121 Grams	
Capacity:		
• Rated	1 Gallon	
• Overflow	132.5 Ounces	
Overall Dimensions:		
• Height	11.8770" ± 0.080"	
• Diameter	6.000" ± 0.090"	
Finish Dimensions:		
• T	1.464" ± 0.012"	
• E	1.370" ± 0.012"	
• Thread Pitch	0.1620"	
Wall Thickness:		
• Minimum	0.010"	
Markings (QC Audit):	SPI "2" HDPE Recycling Symbol MA8410 2	

CLOSURE		Drawing
Manufacturer: Drug Plastics & Glass Company, Inc.: Boyerton, PA (Dwg. #: 7802I1-G1)		
Description:	38mm Threaded Closure "P"	
Quantity:	4	
Material:	Polypropylene	
Density:	0.909 g/cc	
Tare Weight:	3.0 Grams ± 5 Grams	
Overall Dimensions:		
• Height	0.457" ± 0.015"	
• Diameter	1.612" ± 0.018"	
Thread:		
• Type	38mm	
• Style	400	
Finish Dimensions:		
• T	1.484" ± 0.007"	
• E	1.390" ± 0.007"	
• Thread Pitch	6 T.P.I.	
Markings (QC Audit):	H 11	
LINER		
Description:	P.E. Foam Liner	
Tare Weight:	0.49 Grams	
Thickness:	0.034"	
Diameter:	1.468"	



PLASTIC BOTTLE		Drawing
Manufacturer: Consolidated Container Company: Ontario, CA (128PR3N069X003US)		
Description:	1 Gallon Round Plastic Bottle "P"	
Quantity:	4	
Material/Pigment:	High Density Polyethylene / Natural & White	
Method of Mfg:	Blow Molded	
Density:	0.949 g/cc	
Tare Weight:	120 Grams	
Capacity:		
• Rated	1 Gallon	
• Overflow	3,895 Grams (1.0 Gallons)	
Overall Dimensions:		
• Height	11.869"	
• Diameter	5.940"	
Finish Dimensions:		
• T	1.452" – 1.476"	
• E	1.358" – 1.382"	
• Thread Pitch	0.1623"	
Wall Thickness:		
• Minimum	0.019"	
Markings (QC Audit):	SPI "2" HDPE Recycling Symbol MA8410 1	

DIVIDER		Drawing
Manufacturer: International Paper; Carson, CA		
Description:	"Z" Divider	
Quantity:	1	
Material/Flute:	26 ECT Single Wall Natural Kraft Corrugated Fiberboard; C-Flute	
Basis Weight (Outer to Inner) Lbs./MSF:		
• Measured	28.6/26.7/28.3	
Combined Wt. of Facings:	56.9	
Board Caliper (Nom.):	0.157"	
Tare Weight:	86 Grams	
Overall Dimensions (Blank Size):		
• Length	24-7/8"	
• Width:	11-7/8"	
Markings (QC Audit):	NONE	
SHIPPER		
Manufacturer: International Paper; Camarillo, CA		
Description:	Regular Slotted Container	
Material/Flute (Inner to Outer):	Option #1: 51 ECT Double Wall Natural Kraft Corrugated Fiberboard; B/C-Flute Option #2: 51 ECT Double Wall Mottled White Corrugated Fiberboard; B/C-Flute	
Basis Weight (Outer to Inner) Lbs./MSF:		
• Specification	42/26/35/26/35	
• Measured	Option #1: 41.9/26.4/36.3/27.3/35.9 Option #2: 41.0/25.9/35.7/25.96/35.3	
Combined Wt. of Facings:	114.1	
Tare Weight:	770 Grams	
Dimensions		
	Specification Dimensions (Inside)	Measured Dimensions (Outside)
• Length	12-7/16"	13-1/4"
• Width	12-7/16"	12-7/8"
• Height	12-1/8"	13-1/2"
Board Caliper (Nominal):	0.261"	
Manufacturer's Joint:	Inside Glued, 1-1/4" Lap	
No Box Manufacturer's Certification:		
Markings (QC Audit):	NONE	



SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS

DESIGN #1 / Standard Closures

TEST INFORMATION	CRITERIA FOR PASSING THE TEST
TEST CONTENTS: Methanol/Water Solution (0.967 SG) SAMPLE PREPARATION: Refer to Section II CONDITIONING: -18°C (0°F), Chamber #201 TEST CONTENTS TEMP.: -18.1°C (-0.58°F) DROP HEIGHT: 1.2 Meters (48") (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. (§178.603)







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	DESIGN #1 / CRC Closures
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
TEST CONTENTS: Methanol/Water Solution (0.967 SG) SAMPLE PREPARATION: Refer to Section II CONDITIONING: -18°C (0°F), Chamber #201 TEST CONTENTS TEMP.: -18.1°C (-0.58°F) DROP HEIGHT: 1.2 Meters (48") (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 #6: Flat on Bottom	Sample #7: Flat on Top	Sample #8: Flat on Long Side
		
PASS: No leakage or damage.	PASS: No leakage or damage.	PASS: No leakage or damage.
Sample #9: Flat on Short Side	Sample #10: Bottom Corner	*Sample #6: 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	DESIGN #2 / Standard Closure
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Methanol/Water Solution (0.967 SG)</p> <p>SAMPLE PREPARATION: Refer to Section II</p> <p>CONDITIONING: -18°C (0°F), Chamber #201</p> <p>TEST CONTENTS TEMP.: -18.1°C (-0.58°F)</p> <p>DROP HEIGHT: 1.2 Meters (48") (Refer to Section IV)</p> <p>TEST EQUIPMENT: L.A.B. Accu Drop 160 #301</p>	<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 #20: Flat on Bottom	Sample #21: Flat on Top	Sample #22: Flat on Long Side
		
PASS: No leakage or damage.	PASS: No leakage or damage.	PASS: No leakage or damage.
Sample #23: Flat on Short Side	Sample #24: Bottom Corner	*Sample #20: 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	DESIGN #2 / CRC Closure
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Methanol/Water Solution (0.967 SG)</p> <p>SAMPLE PREPARATION: Refer to Section II</p> <p>CONDITIONING: -18°C (0°F), Chamber #201</p> <p>TEST CONTENTS TEMP.: -18.1°C (-0.58°F)</p> <p>DROP HEIGHT: 1.2 Meters (48") (Refer to Section IV)</p> <p>TEST EQUIPMENT: L.A.B. Accu Drop 160 #301</p>	<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 #25: Flat on Bottom	Sample #26: Flat on Top	Sample #27: Flat on Long Side
		
PASS: No leakage or damage.	PASS: No leakage or damage.	PASS: No leakage or damage.
Sample #28: Flat on Short Side	Sample #29: Bottom Corner	*Sample #25: 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	DESIGN #3
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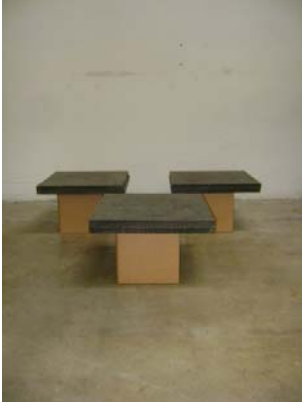
TEST INFORMATION	CRITERIA FOR PASSING THE TEST
TEST CONTENTS: Methanol/Water Solution (0.967 SG) SAMPLE PREPARATION: Refer to Section II CONDITIONING: -18°C (0°F), Chamber #201 TEST CONTENTS TEMP.: -18.1°C (-0.58°F) DROP HEIGHT: 1.2 Meters (48") (Refer to Section IV) TEST EQUIPMENT: L.A.B. Accu Drop 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 #39: Flat on Bottom	Sample #40: Flat on Top	Sample #41: Flat on Long Side
		
PASS: No leakage or damage.	PASS: No leakage or damage.	PASS: No leakage or damage.
Sample #42: Flat on Short Side	Sample #43: Bottom Corner	*Sample #39: 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 TESTS	DESIGN #1
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TEST INFORMATION	CRITERIA FOR PASSING THE TEST
<p>TEST CONTENTS: Empty</p> <p>SAMPLE PREPARATION: Refer to Section II</p> <p>CONDITIONING: 73°F / 50% RH, Chamber #202</p> <p>TEST LOAD APPLIED: 181.4 Kg (400.0 Lbs.) (Refer to Section IV)</p> <p>TEST DURATION: 24 Hours</p> <p>TEST EQUIPMENT: Dead Load Weights</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>

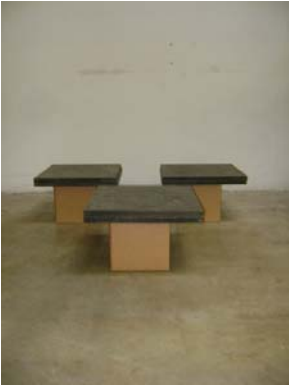
STACKING TEST SET-UP AND RESULTS			
	Sample #	Maximum Deflection After 24 Hours	Results
	11	1/4"	PASS
	12	0"	PASS
	13	0"	PASS
	Stacking Stability:		Not conducted; required only for guided load tests.

STACKING TESTS

DESIGN #2


TEST INFORMATION		CRITERIA FOR PASSING THE TEST
TEST CONTENTS:	Empty	<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. (§178.606)
SAMPLE PREPARATION:	Refer to Section II	
CONDITIONING:	73°F / 50% RH, Chamber #202	
TEST LOAD APPLIED:	181.4 Kg (400.0 Lbs.) (Refer to Section IV)	
TEST DURATION:	24 Hours	
TEST EQUIPMENT:	Dead Load Weights	


STACKING TEST SET-UP AND RESULTS

	Sample #	Maximum Deflection After 24 Hours	Results
	30	0"	PASS
	31	1/8"	PASS
	32	1/16"	PASS
	Stacking Stability:		Not conducted; required only for guided load tests.

STACKING & STACKING STABILITY TESTS	DESIGN #3
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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: 476.2 Kg (1,050.00 Lbs.) (Refer to Section IV)</p> <p>TEST DURATION: 24 Hours</p> <p>TEST EQUIPMENT: L.A.B. 5250 Compression System #402</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
	44	0.14"	PASS
	45	0.14"	PASS
	46	0.14"	PASS


STACKING STABILITY TEST SET-UP	CRITERIA FOR PASSING THE TEST
	<p>In guided load tests, stacking stability must be assessed after test completion.</p> <ul style="list-style-type: none"> Two filled packagings of the same type must be placed on the test sample. The stacked packages must maintain their position for one hour. <p style="text-align: right;">(\$178.606)</p>
PASS	

REPETITIVE SHOCK VIBRATION TESTS

DESIGN #1 / Standard Closure


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:	4.0 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
	14	PASS	No leakage or damage.
	15	PASS	
	16	PASS	

REPETITIVE SHOCK VIBRATION TESTS	DESIGN #1 / CRC Closure
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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: 4.0 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
	17	PASS	No leakage or damage.
	18	PASS	
	19	PASS	

REPETITIVE SHOCK VIBRATION TESTS

DESIGN #2 / Standard Closure


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:	3.5 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
	33	PASS	No leakage or damage.
	34	PASS	
	35	PASS	

REPETITIVE SHOCK VIBRATION TESTS	DESIGN #2 / CRC Closure
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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: 3.5 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
	36	PASS	No leakage or damage.
	37	PASS	
	38	PASS	

REPETITIVE SHOCK VIBRATION TESTS

DESIGN #3

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:	3.9 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
	47	PASS	No leakage or damage.
	48	PASS	
	49	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	

Natural Kraft Shipper

COBB WATER ABSORPTION TEST RESULTS	
Sample #	Water Absorbed (g/m ²)
1	111 g/m ²
2	105 g/m ²
3	107 g/m ²
4	108 g/m ²
5	114 g/m ²
AVERAGE:	109.0 g/m²
RESULT	PASS

Mottled White Shipper

COBB WATER ABSORPTION TEST RESULTS	
Sample #	Water Absorbed (g/m ²)
1	124 g/m ²
2	131 g/m ²
3	137 g/m ²
4	143 g/m ²
5	140 g/m ²
AVERAGE:	135.0 g/m²
RESULT	PASS

REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES			
TEST	49 CFR ^① October 2010 Edition	UN ^② 16th Edition	IMDG ^③ 2010 Edition
Drop:	178.603	6.1.5.3	6.1.5.3
Stacking:	178.606	6.1.5.6	6.1.5.6
Vibration:	178.608	---	---
Cobb:	178.516	6.1.4.12.1	6.1.4.12.1

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

Drop:	ASTM ^④ D5276:	Standard Test Method for Drop Test of Loaded Containers by Free Fall
	ISO ^⑤ 2248:	Packaging – Complete, Filled Transport Packages – Vertical Impact Test By Dropping
Stacking:	ASTM ^④ D4577:	Standard Test Method for Compression Resistance of a Container Under Constant Load
	ISO ^⑤ 2234:	Packaging – Complete, Filled Transport Packages – Stacking Tests using Static Load
Vibration:	ASTM ^④ D999:	Standard Test Method for Vibration Testing of Shipping Containers
	ISO ^⑤ 2247:	Packaging – Complete, Filled transport Packages – Vibration Test at Fixed Low Frequency
Cobb:	ISO ^⑤ 535:	Paper and Board - Determination of Water Absorption - Cobb Method

④ 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 Packaging Tare Weight (PTW):	1,321.0 Grams	
Overflow Capacity (OFC):		Methanol/Water SG
Methanol/Water	3,766.4 Grams	SG: 0.967
Water	3,895.0 Grams	
Number of Inner Packagings (# IP):	4	
Packing Group	II	
Product Specific Gravity (PSG):	1.2	
Packing Group Multiplication Factor (MF):	1.00	
Overall Height of one Package (OH):	13.50 Inches	
Stack Test-# of Samples Tested Simultaneously:	3	

98% OF OVERFLOW

Overflow Capacity (OFC) x 98%

<u>OFC</u>	x	<u>98%</u>		
3,766.4	x	98% =	3,691.1 Grams	Methanol/Water
3,895.0	x	98% =	3,817.1 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>	
1,321	+	3,691	x	4	Methanol/Water
1,321	+	3,817	x	4	Water
Methanol/Water:		16.0	Kg	35.2	Lbs.
Water:		16.5	Kg	36.3	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>
1,321	+	1.2	x	3,817	x	4
		19.6	Kg	43.2	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	
1.2	x	1.00	<u>Required Drop Height</u>	<u>Actual Drop Height</u>
		1.20 Meter	47.2 Inches	48 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	/	13.50	-1	=	7.7
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>			
19.6	x	7.7			
		150.9 Kg	332.7 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	19.6	x	7.7
		452.8 Kg	998.2 Lbs.	