



**gh Package
& Product
Testing and
Consulting of AZ, Inc.**

21609 N. 12th Ave.
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Phoenix, AZ 85027

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02 Mar. 2011

To: Mr. Michael Dodd
PurePak Technology Corporation
324 S. Bracken Lane
Suite #3
Chandler, AZ 85224

From: Michael Greer
gh Package & Product Testing of AZ, Inc.

Subject: DOT/UN 49 CFR Design Qualification Testing of a 4G Combination Package for Liquids.

Specific Item: Four 9 pint Containers in a Corrugated Box (Beta Bottle)

Outer Container Closure Schemes: Tape Bottom –Tape Top
Glued Bottom-Tape Top

File Number: U-5089-11

Dear Mr. Dodd,

The attached report provides details of specific procedures, test conditions, and results of the UN/DOT tests required to certify subject packaging design. This certification is required prior to use of the design for transport of PG II, SG 1.84 compatible hazardous liquid materials. Samples of the packaging design were tested to Packing Group II Criteria per UN/DOT Test Specifications (Cobb Water Absorption Test, Drop Test, Stacking Test, Internal Pressure Test, and Vibration Test). In addition, the Mullen Burst Testing, basis weight, and caliper values were determined to further identify the fiberboard components of the package.

If gh Testing of Arizona can be of service in the future, please advise.

Sincerely,

Mr. Michael Greer
President
gh Package & Product Testing
and Consulting of Arizona, Inc.



Laboratory Report

**Package & Product
Testing and
Consulting of AZ, Inc.**

21609 N. 12th Ave.
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324 S. Bracken Lane
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Chandler, AZ 85224**

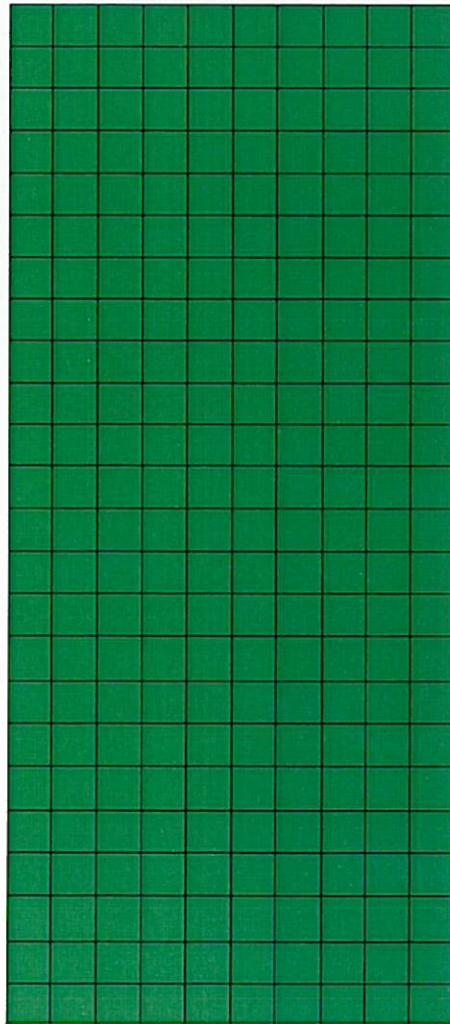
File #: U-5089-11



4G/Y32.3/S/
USA/+1452**

**This Report
Prepared for:**

Mr. Michael Dodd



U. S. DEPARTMENT OF TRANSPORTATION

Performance Oriented Package Test Report

File # U-5089-11 Report Date: 25 February 2011
(Periodic Testing Required by February 2013)

Tested by:

**gh Package & Product Testing
& Consulting of Arizona, Inc.
21609 N. 12th Ave., Suite 300
Phoenix, AZ 85027
Phone: 623.869.8008**

Tested for:

**PurePak Technology
324 S. Bracken Lane Suite #3
Chandler, AZ 85224
Attn: Michael Dodd
480.926.0022**

DESIGN QUALIFICATION TESTING

**4G Combination Package for Liquids (2 Closure Schemes)
Inner Packagings: Four 9-Pint Plastic Bottles
Testing Date(s): 02/15/2011 - 02/23/2011**



4G/Y32.3/S/
USA/+BV1452**
***year of manufacture*

TRANSPORTATION MODES

This packaging design was successfully tested as required by 49CFR and is suitable for use for shipments of compatible hazardous materials via surface and Cargo aircraft modes of transportation⁽¹⁾. Use of packaging methods or package components other than those documented in this report may invalidate this certification. The shipper is required to insure this packaging design is used in accordance with all requirements of the national & international regulations applicable to the intended commodity and intended mode(s) of transport (49CFR, ICAO/IATA, IMO/IMDG, et. al.).

⁽¹⁾49CFR (§172.101, §173.24(i) & §173.27(f)) & ICAO/IATA may limit the quantities allowed inner/outer packagings and/or prohibit shipments of specific commodities via aircraft.

Mr. Frank Reyes (Certifying Official)
**gh Package & Product Testing
and Consulting of Arizona, Inc.**

gh Package & Product Testing and Consulting of AZ, Inc
Test Report Number U-5089-11 Report Date: 25 February 2011

SECTION II PACKAGE DESCRIPTION

Two 4G Combination Package Designs were tested specifically for surface and cargo aircraft shipments of four 9-pint bottles containing a compatible PG II, SG1.84, Corrosive Liquid, Class 8 material. Use of these packaging designs for a commodity, other than that for which they were tested, will be at the discretion of the shipper. The four containers are placed into a fiberboard box. The two designs are identical in all respects except for the closure methods used for the exterior containers. The following tables describe the components of the package design.

Outer Packaging – UN 4G (Refer to Section V for drawings)

Box Style	RSC-White -corrugated	FEFCO Style: 201
Manufacturer	Temple Inland (Austin, TX)	
Part Number	507089 (bottom of test boxes)	
Material of Construction	Corrugated - White	
Number of Walls – Flute Type	Double wall C/B Flute	
BMC: ECT/Mullen	275 lb Mullen	
Dimension (OD) LxWxH	33.66 x 33.34 x 36.51 cm (13.250" x 13.125" x 14.375")	
Dimension (ID) LxWxH	32.39 x 32.39 x 34.29 cm (12.75" x 12.75" x 13.50")	
Weight	0.94 kg (2.07 lb)	
Stacking Height	14.375"	
Method of Joining Panels	Glued MFJ	
Mfr's Joint - Flap size	1 ¹ / ₂ "	
Mfr's Joint - Location	5-2 corner (ASTM numbering scheme)	
Top Flap Gap/Meet	Inner 0"	Outer: 0"
Bottom Flap Inner Gap/Meet	Inner 0"	Outer: 0"
Handles:	N/A	
Closure Method/Material Scheme A	Top & Bottom: 48mm (2") clear poly self-adhesive tape (Scotch 3M) extended 2" beyond the long center seam of the box to the short sides 2 and 4 (ASTM numbering format)	
Closure method/material Scheme B	Top: 48mm (2") clear poly self-adhesive tape (Scotch 3M) applied over the center strip long enough so that there is a 2" extension on each end. Bottom: H.B. Fuller Hot Melt Adhesive (PHC-9200) Four 6" x 1/4" strips on each quarter inside flap panel.	

Material Analysis – Box

Standards: • T.A.P.P.I. Method T- 410; "Grammage of Paper and Paperboard".

• T.A.P.P.I. Method T- 411; "Thickness of Paper and Paperboard".

Box	Basis Weight (LB/MSF)	Actual Combined Board Caliper	Actual Mullen
Inside Facing	45.64	0.2475"	Stamp: 275 psi. Actual: 300 psi. Average
Middle Facing	43.65		
Outer Facing	29.76		
Flute: C	31.92		
Flute: B	35.12		

gh Package & Product Testing and Consulting of AZ, Inc
Test Report Number U-5089-11 Report Date: 25 February 2011

Inner Packaging - 4 required (Refer to Section V for drawings)

Type, Grade, & Style	HDPE 4 9-pint round bottle w/attached handle
Manufacturer	PurePak Technology Corp. (Chandler, AZ)
Material	HDPE Resin – Equistar LR7340
Drawing Number	"9 Pint Beta Bottle 38-439 Neck Finish"
Method of Construction	Extrusion blow molding
Thickness – Minimum (Bottom)	Radius: 0.030"
Thickness – Minimum (Body)	0.038" E Wall: 0.090"
Average Thickness (Bottom)	0.077"
Average Thickness (Sides)	0.056"
Neck Finish Size	38 - 439
Thread Type	SPI 38MM – 439 buttress
Thread Style	Buttress
Thread Pitch	6 tpi
T's & E's	T: 1.4515" E: 1.3740"
Neck Opening	1.1355"
Dimensions	12.664" x 6.240" diameter
Capacity (Maximum/Overflow)	1.12 gal x 4 = 4.48 gal
Weight	0.90 kg (1.98 lb)
Handles	Injection Molded HDPE carry handle attached to the neck by friction fit.
Closure Equipment	Injection Molded deep skirt cap
Closure Methods	Torque wrench and adapter to 50 in/LB (for testing purposes only).

Inner Closure 4 required (Refer to Section V for applicable drawing)

Type, Grade, & Style	White Acid Cap, polypropylene deep skirt cap.
Manufacturer	Rexam Plastic Packaging (Brookville, PA)
Specification or Part Number	"38-439 A stock acid closure"
Material	Polypropylene/white ribbed
Dimensions including the Skirt	1.016" x 1.656" top diameter x 1.702" bottom diameter
Thickness – Maximum	0.1465"
Thickness- Minimum	0.0935"
Thread Type	SPI 38MM – 439 buttress
Thread Style	Buttress
Thread Pitch	6 tpi
T's & E's	T 1.3860" E 1.4740"
Weight	0.05 kg (0.11 lb)
Liner Type	Extruded Tri-layer 0.055" thick
Liner Material	Virgin HDPE-LDPE foam-HDPE
Method of Closure	Torque wrench and adapter to 50 in/LB (for testing purposes only).

gh Package & Product Testing and Consulting of AZ, Inc
Test Report Number U-5089-11 Report Date: 25 February 2011

SECTION III TEST DESCRIPTIONS AND RESULTS

Laboratory Conditions: Ambient.

The samples were filled by the customer to a minimum of 98% full and prepared as for shipment prior to testing.

The following gh Package & Product Testing and Consulting of AZ, Inc. personnel were present during testing:

- Michael Greer – President Reviewer – Testing Data
- Jason Sager – Laboratory Technician
- Shane Dexter – Asst. Laboratory Technician
- Frank Reyes – Certifying Officer – Report Writer

The following tables describe testing/conditions/results

Test Specimen Characteristics (Schemes A & B)

Specific Gravity	1.84
State	Liquid
Dummy Load	Glycol /Water mixture
Calculated Weight	32.30 kg (71.06 lb.)

Drop Test –

Test Method: 49 CFR 178.603

Number of Packages Tested – 10 (5 for each scheme)

The samples were conditioned in accordance with 49 CFR 178.603(c). The temperature was reduced to 0°F (-18° C) prior to tests. The contents consisted of Glycol water mixture.

Drop Height – 1.84 meters (See Section IV for calculations.)

Results

Box	Tested Weight	Orientation	Result
1A	19.05 kg (42.0 lb)	Flat on Top	Pass – No damage
2A	19.05 kg (42.0 lb)	Flat on Short Side	Pass – No damage
3A	19.05 kg (42.0 lb)	Flat on Bottom	Pass – No damage
4A	19.05 kg (42.0 lb)	Flat on Long Side	Pass – No damage
5A	19.05 kg (42.0 lb)	Top Corner	Pass – Corner deflection
1B	19.05 kg (42.0 lb)	Flat on Top	Pass – No damage
2B	19.05 kg (42.0 lb)	Flat on Short Side	Pass – No damage
3B	19.05 kg (42.0 lb)	Flat on Bottom	Pass – No damage
4B	19.05 kg (42.0 lb)	Flat on Long Side	Pass – No damage
5B	19.05 kg (42.0 lb)	Top Corner	Pass – Corner deflection

Pass/Fail Criteria –

A package is considered to successfully pass the drop tests if for each sample tested: There is no damage to the outer packaging likely to adversely affect safety during transport, there is no leakage of the filling substance from the inner packaging and any discharge from a closure is slight and ceases immediately after impact.

gh Package & Product Testing and Consulting of AZ, Inc
Test Report Number U-5089-11 Report Date: 25 February 2011

Stacking Test –

Test Method: 49 CFR 178.606

Number of Packages Tested – 6 (3 for each scheme)

Lab weights were applied to the tops of the packages using platens (load spreaders) as specified by 178.606(c). (24-hour free standing)

See Section IV for calculations.

Results

Box	Required Load	Applied Load	Results
1A	237.35 kg (523.25 lb)	272.16 kg (600 lb)	Passed
2A	237.35 kg (523.25 lb)	272.16 kg (600 lb)	Passed
3A	237.35 kg (523.25 lb)	272.16 kg (600 lb)	Passed
1B	237.35 kg (523.25 lb)	272.16 kg (600 lb)	Passed
2B	237.35 kg (523.25 lb)	272.16 kg (600 lb)	Passed
3B	237.35 kg (523.25 lb)	272.16 kg (600 lb)	Passed

Note: Stacking stability was not assessed since a guided load test was not performed.

Pass/Fail Criteria –

No test sample may leak. There must be no leakage of the filling substance from the inner receptacle, or inner packaging. No test sample may show any deterioration that could adversely affect transportation safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation. The containers must maintain the load without significant deflection.

Vibration Standard –

Test Method: 49 CFR 178.608

Packages Tested – 6 (3 for each scheme).

The packages were placed on a rotary vibration table for one hour with an input of 1.1g @ 4Hertz. Package/vibration table separation was obtained at 222.6 CPM (RPM)

Results

Package 1A	No damage
Package 2A	No damage
Package 3A	No damage
Package 1B	No damage
Package 2B	No damage
Package 3B	No damage

Pass/Fail Criteria –

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 that could adversely affect transportation safety or any distortion liable to reduce packaging strength.

gh Package & Product Testing and Consulting of AZ, Inc
Test Report Number U-5089-11 Report Date: 25 February 2011

Water Resistance –

(Test Method): ISO Standard 535 as required by 49CFR 178.514 (b)(1)

Samples Tested: 5.

The specimens were conditioned in accordance to 50% RH +/- 2% at 73°F for 24 hours prior to material analysis and Cobb testing.

Results

Sample	#1	#2	#3	#4	#5	Average	Passed
g/m ²	100	100	100	100	90	98	Y

Pass/Fail Criteria –

An increase in mass of greater than 155 g/m² over the 30-minute duration of the test represents an unacceptable level of water absorption.

Pressure Test –

Test Method: 49 CFR 173.27(c)

Packages Tested – 3

The containers were subjected to hydraulic pressure for 30 minutes.

See section IV for calculations.

Results:

Sample	Required Pressure	Applied Load	Results
1	100 kPa (14.5 psi)	103.43 kPa (15 psi)	Passed
2	100 kPa (14.5 psi)	103.43 kPa (15 psi)	Passed
3	100 kPa (14.5 psi)	103.43 kPa (15 psi)	Passed

Pass/Fail Criteria:

No test sample may leak while undergoing the test.

SECTION IV CALCULATIONS

Package A and B Gross Weight (4Gcomblig)

Components	Kg	Lb
Box	0.94	2.07
Inner Receptacles	0.90	1.98
Inner Closures	0.05	0.11
Total Tare Weight	1.89	4.16
Lading Weight	30.41	67.05
Gross Weight	32.30	71.21
Marked Weight	32.3	

Lading Weight = max vol x .98 x 8.3 x SG
 4.48 x .98 x 8.3 x 1.84 = 67.05 lb (30.41 Kg.)

Drop Test Height –

Specific Gravity of Certification 1.84
 Packing Group of Certification II
 Drop Test Height (performed by height): 72.44" (6.04 ft.) (1.84m)
 Dummy Load: Glycol Water Mixture

Stack Test

STACK TEST FORMULA			
REPORT #	U-5089-11	Load=[(120/H)-1]*[W+(S*V*8.3*98%)] 98% = in fill factor 8.3 = wt of 1 gal of water	
H =	14.38	Height of Container (inches)	
W =	4.16	Tare Weight of Package (lbs)	
S =	1.84	Specific Gravity of Lading	
V =	4.48	Max Volume of Liquid (gals)	
Applied	600.00	Applied Weight (lbs)	
	Required	523.25 lbs	237.35 kgs
	Applied	600.00 lbs	272.16 kgs
	Lading Wt	67.05 lbs	30.41 kgs

SECTION V DRAWINGS

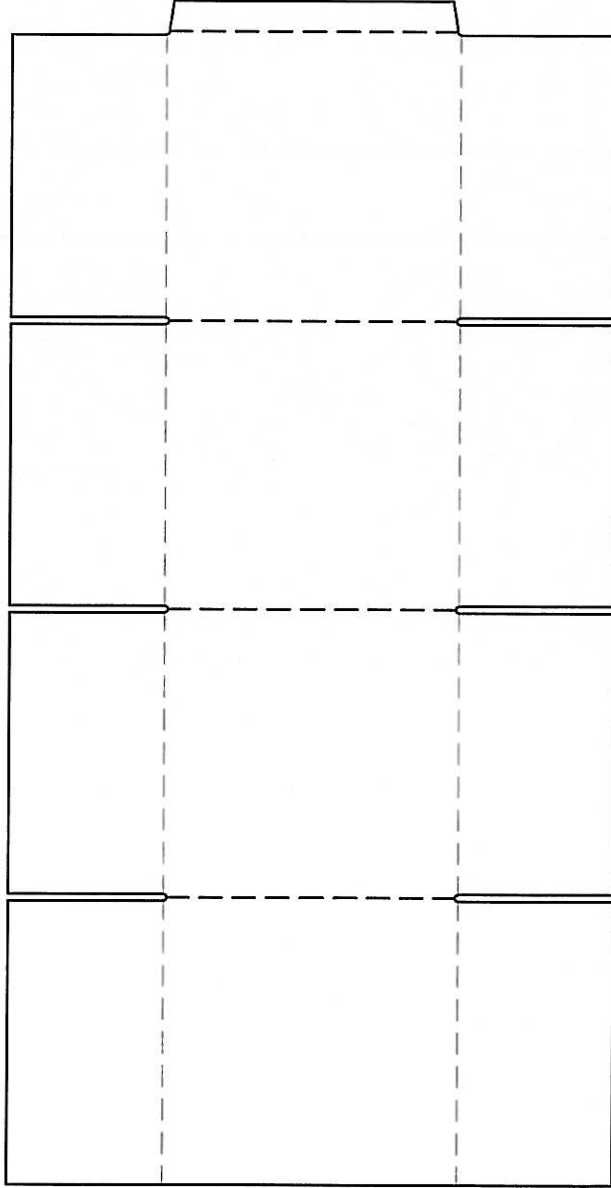
The following drawings and sketches apply to this report:

Outer Packaging

Inner Packaging

Inner Packaging Closures

Inner Packaging Handle



12 3/4 W X 12 3/4 D X 13 H
INSIDE DIMENSIONS

PurePak Technology Corporation

324 South Bracken Lane, Suite 3, Chandler, AZ 85224

DESCRIPTION:

4X RESHIPPER CARTON
for BETA BOTTLE

ALL DIMENSIONS IN INCHES
UNLESS OTHERWISE SPECIFIED:

DECIMALS: X.XX ±.010
ANGLES: X.X ±.500
X.XXXX ±.005
X.XXXX ±.002

APPRD.

SHEET 1 OF 1

DATE: 8/15/07

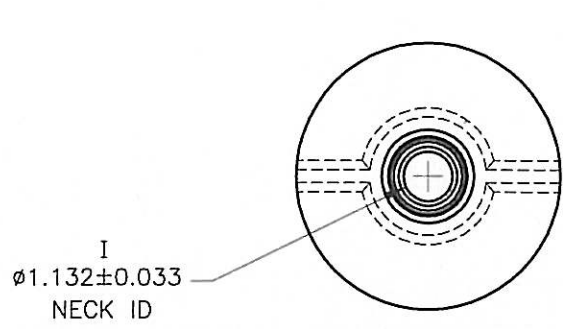
DRAWN BY: MSR

SCALE: 1:B

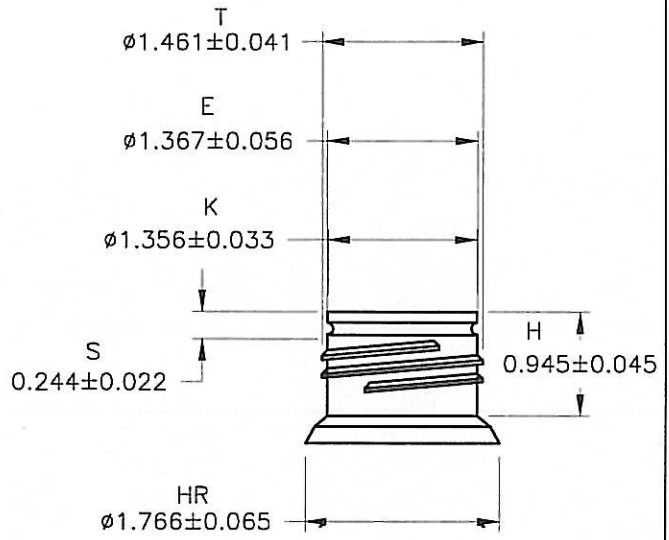
REV	DATE	DESCRIPTION	APPROVAL

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REV	DATE	DESCRIPTION
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I
 $\phi 1.132 \pm 0.033$
 NECK ID



T
 $\phi 1.461 \pm 0.041$

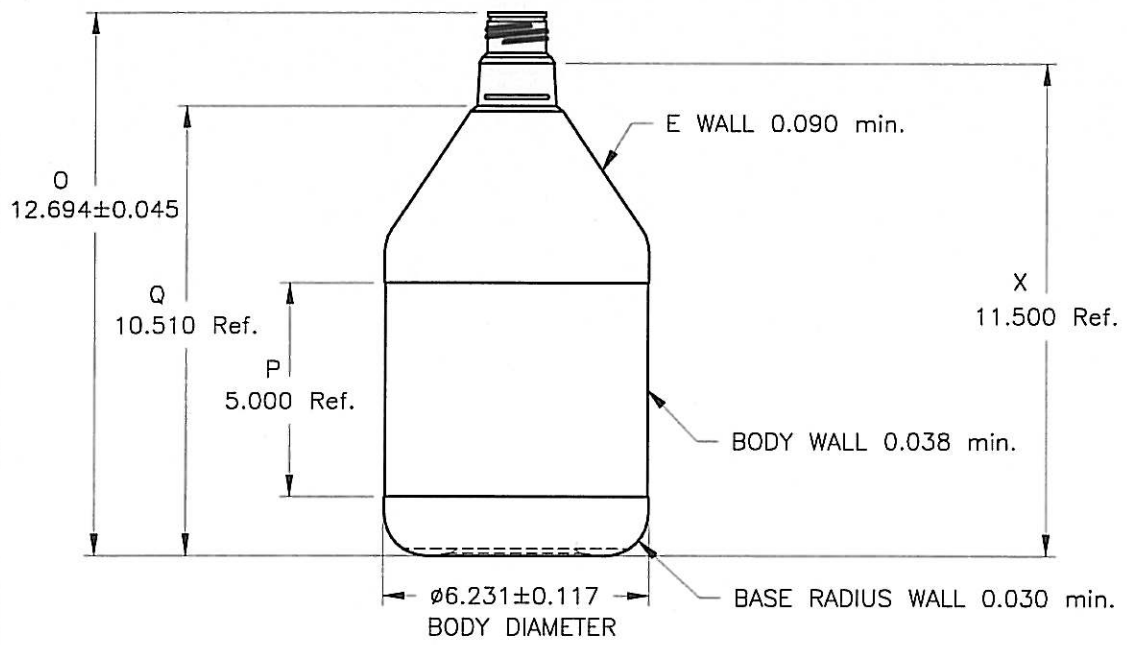
E
 $\phi 1.367 \pm 0.056$

K
 $\phi 1.356 \pm 0.033$

S
 0.244 ± 0.022

H
 0.945 ± 0.045

HR
 $\phi 1.766 \pm 0.065$



O
 12.694 ± 0.045

Q
 10.510 Ref.

P
 5.000 Ref.

X
 11.500 Ref.

E WALL 0.090 min.

BODY WALL 0.038 min.

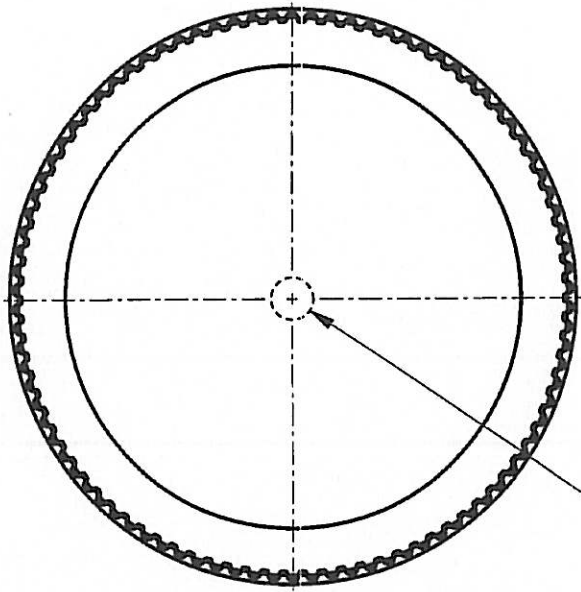
BASE RADIUS WALL 0.030 min.

$\phi 6.231 \pm 0.117$
 BODY DIAMETER

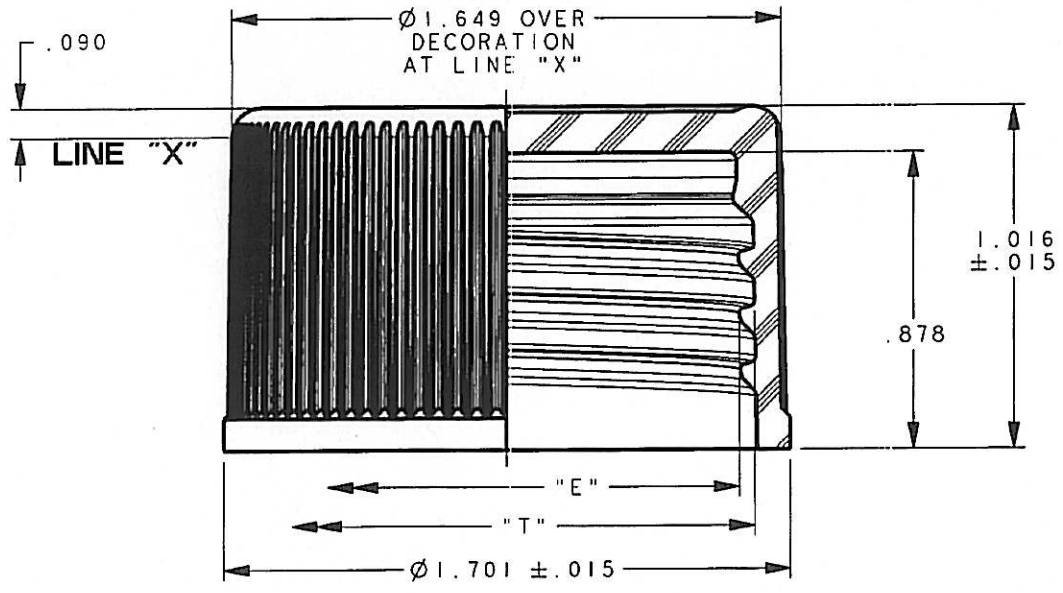
- NOTES:
1. CONTAINER WEIGHT: 190 GRAMS \pm 5 GRAMS
 2. MATERIAL: EQUSTAR LR 7340, NATURAL
 3. OVERFLOW CAPACITY: 4.409 L
 4. LAND FLATNESS 0.015 max.
 5. TAIL SCAR 0.075 min.

THIS DRAWING AND THE INFORMATION CONTAINED THERE IN IS THE SOLE PROPERTY OF PUREPAK TECH. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF PUREPAK TECH. IS PROHIBITED.	REVISION	PurePak Technology Corporation 324 South Bracken Lane, Suite 3, Chandler, AZ 85224			
	REV. _____				
	DATE: _____	ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED: DECIMALS: X.XX \pm .010 ANGLES: X.X \pm .500° X.XXX \pm .005 X.XXXX \pm .002	DESCRIPTION: 9 PINT BETA BOTTLE 38-439 NECK FINISH		
APPRD. _____	APPRD. _____	SHEET 1 OF 1	SCALE: 1:4	DRAWN BY: MSR	DATE: 9/5/07

2 | 1



$\varnothing .125^{+.000}_{-.015}$
OPTIONAL VENT HOLE



"REFERENCE PRODUCT CENTER FOR CURRENT DRAWING"

UNSCREWING LUG IMPRESSIONS TO APPEAR IN BOTTOM SKIRT OF THE CLOSURE

DIMENSIONS ARE REPRESENTATIVE ONLY. FINAL SIZES TO BE DETERMINED AFTER PART IS MANUFACTURED

[F#] = FUNCTIONAL DIMENSION

NOTICE: THIS DRAWING CONTAINS INFORMATION DEEMED PROPRIETARY TO REXAM PLASTIC PACKAGING. THE INFORMATION CONTAINED HEREIN SHALL NOT BE COPIED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION FIRST OBTAINED FROM REXAM PLASTIC PACKAGING.

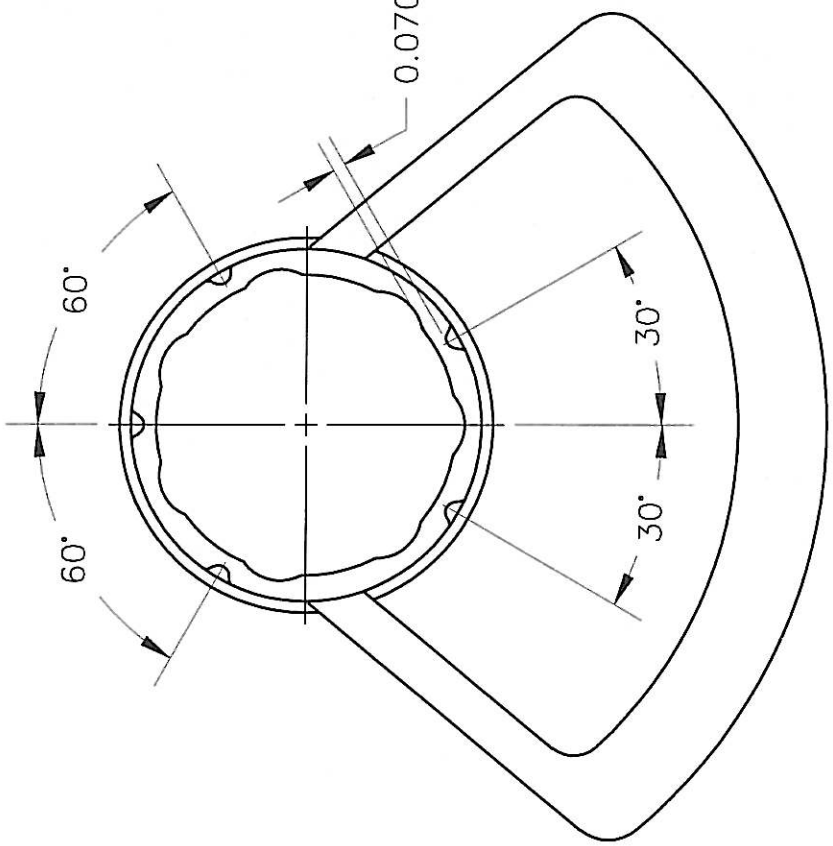
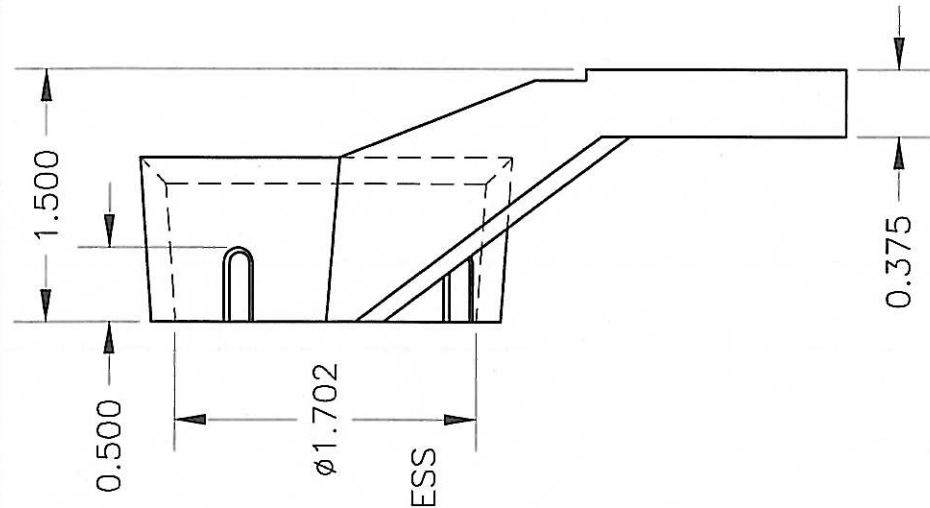
MATERIAL POLYPRO	TOLERANCES UNLESS SPECIFIED DEC. $\pm .010$ DEGREES $\pm 1^\circ$	LINE "C" IS .367 DOWN FROM INSIDE TOP.
GRAM WEIGHT 10.3 REF ONLY CI#		"T" at "C" 1.483 $\pm .007$
		"E" at "C" 1.389 $\pm .007$
Mold No.	PROD. MJ-410-1A SAMPLE	TITLE CUSTOMER DRAWING 38-439 A STOCK ACID CLOSURE
SCALE 2:1 DATE 9/25/2000	DRAWN E. F. HAFFNER CHECKED	FOR STOCK
REXAM PLASTIC PACKAGING		DRAWING NUMBER QIM-317-4937 REVISION

MODEL NAME: im-317-4937

DIRECTORY: stock/prod

2 | 1

Stock



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

DESCRIPTION:

ALL DIMENSIONS IN INCHES
 UNLESS OTHERWISE SPECIFIED:
 DECIMALS: X.XX ±.010
 ANGLES: X.X ±.500°
 X.XXX ±.005
 X.XXXX ±.002

APPROD. SCALE: 1:1
 DRAWN BY: MSR
 SHEET 1 OF 1
 DATE: 8/9/07

REV	DATE	DESCRIPTION	APPROVAL
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DESCRIPTION:
 OVAL HANDLE
 for BETA BOTTLE

APPENDIX A – Test Equipment and Instrumentation

Caliper: Mitutoyo Corp. Model: CD-6" B s/n: 0010699

COBB Tester: TMI

Compression Machine: 120,000 lb: Tinius Olsen s/n 89611; recorder: DC-12-SIC s/n M9410202

Drop Testers:

- 1) ASTM Electric Quick release (Large Item)
- 2) Gaynes m/n: 104 s/n 4585 (150 lb.)
- 3) Mrad Swing Arm pneumatic m/n 3636(200)DT s/n 564-75 (200 lb.)

Environmental Chamber:

- 1) Despatch Ecosphere Environmental Chamber m/n EC635 s/n 162695 with Watlow Ramping Controller m/n F4S/D
- 2) Master-Built Products s/n MBA10346-5 with Johnson Controls controller m/n A19ABC-24 s/n LR948 and Cooper Instrument Corp thermo-hygrometer m/n TM99A
- 3) General Electric Chest style freezer
- 4) Rain Spray Chamber (per ASTM D951 specification) with choke valves to control spray amount per hour. Custom designed and built

HPT Tester: WIKA (gauge) Press. +/- 60 PSI m/n: 9699117

Impact Shock Tester: MTS Dual Programmable m/n 846-361 s/n: 922-55 (1,000 lb.)

Incline Impact Machine: Custom built by Advanced Machinery asset number gh001

Mullen Tester: B.F. Perkin & Sons Burst Strength Tester w/Wika Gauge s/n: 15138

Scales:

- 1) AND brand electronic. Model: HL-2000 (2000 g)
- 2) Ohaus Triple Beam Balance m/n 700 (610 g)
- 3) Pelouze m/n 4040 s/n DC2804 (400 lb.)
- 4) Accuweigh m/n 25 (25 lb.)
- 5) GSE m/n 350 s/n 968537 (5,000 lb.)

Shock Recorder: Lansmont Test Partner II version 2.27

Tensile/Compression/ECT Machine: Chatillon ET-1100 s/n 03292

Torque Meter: Secure Bak m/n 50 s/n 503635MRA (0-50 in./lbs)

Vacuum Chamber: Fast Vac m/n DV-85. Reptech (gauge) Pressure/vacuum +/- 30 PSI

Vibration Table:

Oscillatory: Gaynes Engineering V250 s/n G17680-3 (250 lb.)
LAB- 4000-SVML s/n 813024 (4,000 lb.)

Random: Zonic/Dactron System 306875 s/n: 794435 (4,000 lb.)

Velocimeter: GHI Systems m/n: VS200 s/n 082787-1

APPENDIX B – Understanding and Disclaimer Notice

This notice advises package manufacturers and package users regarding the use of United Nations Approved Certification Packs.

A "pack" as used herein, means the specific package or container submitted to gh Package & Product Testing and Consulting of Arizona, Inc. for testing and UN certification that the package or container meets the requirements of the Code of Federal Regulations, Title 49, §100 through §180. A pack, therefore, has specific components, including the package in which the containers are arranged for shipping, the containers, the contents of the containers, and all internal packaging elements designed to prevent the containers from moving and/or damage. Each component has unique specifications and characteristics, including, but not limited to, the material, shape, and weight of the package and containers and the internal packaging elements, and the material, specific gravity/density, shape, etc. of the contents of each container.

Herein, the use of singular means plural and the use of plural means singular.

Each pack type (complete individual specification pack) when successfully tested pursuant to the appropriate regulations (Code of Federal Regulations, Title 49, IATA/ICAO, IMDG) is assigned a certification number specifically for the submitted pack. This number represents the report that references the tested pack's specifications and the characteristics of the hazardous material (i.e. specific gravity, particle size) to be placed in the package. gh Testing disclaims any and all responsibility for any substitutions and/or changes in the package or each component thereof, and for any and all variations of use of the package and its contents made by any user/client/customer/other party from the package and its components and contents as tested by gh Testing. The regulations require that design type qualification testing be performed on "identical" and "virtually identical" packs. gh Testing shall not be responsible for any use of variations not tested by gh Testing.

The original tests are based on submitted pack/specifications of submitted packs. It is the shipper's responsibility to ensure that the packs have the same liner board combinations as the pack that was tested and that each pack shipped is capable of meeting the Cobb Test, Drop Test, Hydraulic Pressure Test, Leakproof Test, Stack Test and all other required criteria set forth in the regulations once the pack certification is being used. All inner packs must be the same as those specifications submitted and tested.

Only the materials originally certified are approved for use. If the shipper changes manufacturers, it must ensure that the pack is virtually identical to the pack previously tested. If changes or substitutions become necessary, it is at the discretion of the shipper if a variation applies – gh Testing does not endorse the use of untested variations.

Material Safety Data Sheets (MSDS), submitted pack descriptions, specifications and drawings will be retained by gh Testing. Alterations to the pack invalidate the certification.

It is the shipper's responsibility to ensure that any combination packs it ships are recertified every two years. Composite and Single packages must be recertified every year.

The responsibility of the container markings, compatibility testing between the hazard and packaging, shipping documentation, packing and closing of the packaging are that of the shipper.

Permitted and prohibited uses of the UN Marking assigned by gh Package & Product Testing and Consulting, Inc.

APPENDIX B – Understanding and Disclaimer Notice

The Certification Number(s) issued by gh Package/Product Testing & Consulting, Inc. ("gh Testing") shall be used only by gh Testing's customer on hazardous packages certified by gh Testing and shall remain applicable only so long as the certification remains current, through the re-certification at gh Testing, and has not expired, or only so long as gh Testing's customer prepares and uses packages prepared for shipment in virtually and substantially identical packages to those tested and listed by gh Testing in this test report and certification.

Any use of Certification Number(s) issued by gh Testing in this report by its customer which is inconsistent with such permitted use (such as, and including where any part of the package is changed according to CFR 49, subtitle B, Chapter 1, Subchapter C, Parts 171-180) or by persons or entities who are not gh Testing's customer for whom this report and certification were made, whether in a recertification or otherwise, is strictly prohibited, and gh Testing, for itself, its successors, officers, shareholders, directors, and all others acting on its behalf, hereby disclaims any and all liability for claims, causes of action, damages and demands of whatsoever nature arising directly or indirectly out of or in any way based upon any such prohibited use. The certification Number(s) issued by gh Testing in this report shall expire and terminate immediately whereas and if a prohibited use occurs.

All reasonable efforts will have been exercised to provide accurate data from resultant tests or consultation. Test methods utilized and followed in conducting various tests involve standards established by ASTM, TAPPI, DOT, IATA/ICAO, Federal Spec., Mil-Spec., ISTA, as well as private company test standards and procedures. gh Testing assumes no responsibility for nor does it guarantee or warrant any specifically expressed or implied performance and only assumes responsibility for the test data presented by it as derived from specifications, drawings, and information submitted to it for testing. Responsibilities involving alterations and/or changes to the packages and/or product beyond item(s) originally tested are those solely of the user/supplier/client, of which, gh testing assumes no responsibility.

gh Testing will hold submitted material for a period of one (1) week after testing is completed (unless otherwise instructed by the client). After this time, gh Testing may dispose of the material or equipment to its discretion or a storage charge at a rate of \$3.25 per square foot per month will be charged.

gh Testing shall not be liable for any incomplete, inaccurate, misrepresented, or inadequate specifications, drawings, details, or other information pertinent to the proper testing and description of the pack or contents. Should lack of such information supplied to gh Testing

give cause to penalty, gh Testing may seek financial reimbursement for any fines, legal fees, and lost billing and the undersigned shall indemnify gh Testing for all such fines and costs.

The completed testing above was in compliance with the customer requested test(s) and requirements. All reference and data logging materials used in the above testing are traceable to NIST. The testing performed above was performed at gh Package & Product Testing and Consulting of Arizona, Inc., in Phoenix Arizona. This test report cannot be reproduced, except in full, without written permission from gh Package & Product Testing and Consulting of Arizona, Inc. If the measurement uncertainty calculations are listed in the report, the measurement uncertainties represent an expanded uncertainties expressed at approximately 95% confidence level using a coverage factor of K=2.

Test Criteria and Understanding

All reasonable efforts have been exercised to provide accurate data from resultant tests or consultation. Test methods utilized and followed in conducting various tests involve standards established by A.S.T.M., T.A.P.P.I., D.O.T., Federal Spec. and Mil-Spec., I.S.T.A. as well as private company test standards and procedures. gh Testing assumes no responsibility or guarantees/warranties regarding (specifically stated or implied) performance and only assumes responsibility for the test data presented by it. Responsibilities involving alterations and/or changes to the packages and/or product beyond item(s) originally tested are those of the user/supplier/client, of which, gh testing assumes no responsibility.