

**UNITED NATIONS / DOT
PERFORMANCE CERTIFICATION**



4G DESIGN QUALIFICATION

**2 x 2-1/2 Gallon F-Style Plastic Bottle Packaging
Phoenix Closures with Two Liner Options:**

#1: PE Foam

#2: Induction Sealed Liner

TEST REPORT #: 11-7024



4G / Y35.5 / S / **
USA / +AA4377

** Insert year the packaging is manufactured

TESTING PERFORMED FOR:

API KIRK CONTAINERS

2131 Garfield Ave.
Commerce, CA 90040

ATTN: Martin Lara

TESTING PERFORMED BY:

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March 2, 2011

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
NOTES AND COMMENTS

This design qualification report is being issued to qualify Phoenix Closures with Two Liner Options:
#1: PE Foam and #2: Induction Sealed Liner.

SECTION I: CERTIFICATION

**Design Qualification of the API Kirk Containers
2 x 2-1/2 Gallon F-Style Plastic Bottle Packaging Phoenix Closures with Two Liner Options:
#1: PE Foam and #2: Induction Sealed Liner**

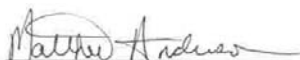
TEN-E PACKAGING SERVICES, INC. certifies that the API Kirk Containers packaging referenced above has passed the standards of the DEPARTMENT OF TRANSPORTATION'S TITLE 49 CFR; Performance Oriented Packaging Standards, Section 178. This package is also certified under IMDG, ICAO/IATA Regulations and the 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 | 1.6m | Methanol / Water | March 2, 2011 | PASS |
| Drop #2 | 178.603 | 1.6m | Methanol / Water | March 1, 2011 | PASS |
| Stacking | 178.606 | 272.1 Kg – 24 Hrs. | Empty | February 9, 2011 | PASS |
| Pressure #1 | 173.27 | 95kPa – 30 Min. | Water | February 10, 2011 | PASS |
| Pressure #2 | 173.27 | 95kPa – 30 Min. | Water | February 10, 2011 | PASS |
| Vibration #1 | 178.608 | 3.5 Hz – 1 Hr. | Water | February 10, 2011 | PASS |
| Vibration #2 | 178.605 | 3.5 Hz – 1 Hr. | Water | February 10, 2011 | PASS |
| Cobb | 178.516 | 30 minutes | --- | February 11, 2011 | PASS |
| TEST REPORT NUMBERS: | | | 11-7024, 09-7006, 06-7169, 04-7167 | | |
| UN MARKING: (CFR 49 - 178.503) | | |  4G / Y35.5 / S / ** USA / +AA4377 | | |
| PACKAGING IDENTIFICATION CODE: | | | 4G - Fiberboard Box (178.516) | | |
| PERFORMANCE STANDARD: | | | Y (Packaging meets Packing Group II and III tests) | | |
| AUTHORIZED GROSS MASS: | | | 35.5 Kg (78.2 Lbs.) | | |
| "S" DESIGNATION: | | | Denotes Inner Packagings | | |
| YEAR OF MANUFACTURE: | | | **Insert year the packaging is manufactured | | |
| STATE AUTHORIZING THE MARK: | | | USA | | |
| PACKAGING CERTIFICATION AGENCY: | | | (+AA) TEN-E Packaging Services, Inc. (Ontario, CA) | | |
| THIRD PARTY PACKAGE IDENTIFICATION: | | | +AA4377 | | |
| PERIODIC RETEST DATE: | | | March 2, 2013 | | |

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 API Kirk Containers for services rendered. In the event of future changes to the above referenced test standard, it is the responsibility of API Kirk Containers 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:

API Kirk Containers
2131 S. Garfield Ave.
Commerce, CA90040



Matthew Anderson
Packaging Engineer
TEN-E Packaging Services, Inc.
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SECTIONS II & V: PACKAGING DESCRIPTION / COMPONENT DRAWINGS

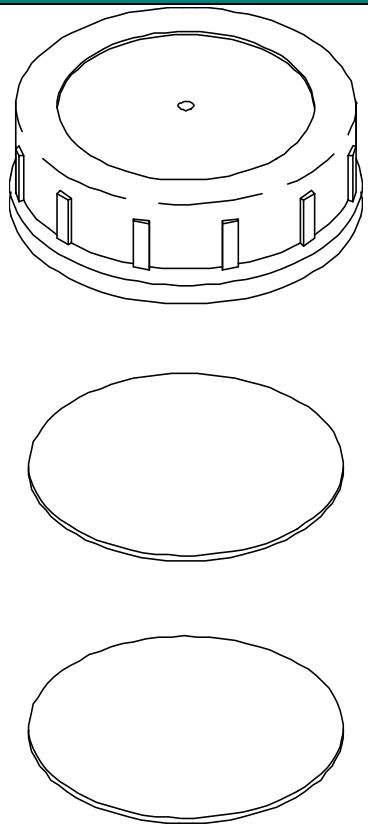
**2 x 2-1/2 Gallon F-Style Plastic Bottle Packaging Phoenix Closures with Two Liner Options:
#1: PE Foam and #2: Induction Sealed Liner**

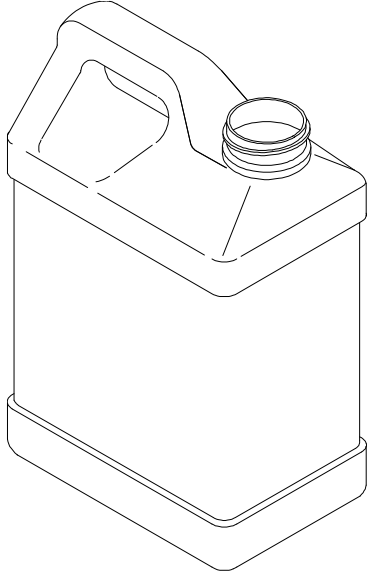
| ASSEMBLY DRAWING | TEST LEVELS | |
|---------------------------------------|---|--|
| | Certification Type: Design Qualification | |
| | Packaging Code Designation: 4G | |
| | Packing Group: II | |
| | Specific Gravity: 1.6 | |
| | Internal Pressure: 95 kPa | |
| | TEST SAMPLE PREPARATION (Refer to Section IV) | |
| | Overall Packaging Tare Weight: 1,462.0 Grams | |
| | Inner Packaging Fill Capacity (98% Maximum Capacity): | |
| | Methanol/Water 10,354.8 Grams | |
| | Water 10,842.8 Grams | |
| | Package Test Weight: | |
| | Methanol/Water 22.1 Kg (48.7 Lbs.) | |
| | Water 23.1 Kg (50.9 Lbs.) | |
| | Authorized Package Gross Mass: 36.1 Kg (79.5 Lbs.) | |
| | CLOSING METHODS – INNER PACKAGING | |
| | Application Torque 75 In-Lbs | |
| | Equipment: Snap on Torque Wrench #702 & Accutek Induction Sealer #716 (for the Induction Sealed Liners) | |
| | CLOSING METHODS – SHIPPER | |
| | Top Flaps: | |
| | Type: 3M #375 Pressure Sensitive Tape | |
| Width: 48mm (2") | | |
| Overlap: 2" Minimum | | |
| Tape Pattern: Center Seam | | |
| Inner Flaps: 4-1/16" Width Gap | | |
| Outer Flaps: Meet | | |
| Bottom Flaps: | | |
| Type: 3M #375 Pressure Sensitive Tape | | |
| Width: 48mm (2") | | |
| Overlap: 2" Minimum | | |
| Tape Pattern: Center Seam | | |
| Inner Flaps: 4-1/16" Width Gap | | |
| Outer Flaps: Meet | | |

For Packagings with an Established Gross Mass:

If the gross mass calculation in this report exceeds the previously established gross mass, the manufacturer may elect to maintain the current gross mass marking (e.g. the gross mass rating of the UN marking on the packaging may be less than the calculated gross mass indicated in this report) or use the newly established gross mass. In no event shall the gross mass marking on the packaging exceed the gross mass to which the packaging was tested.

COMPONENT INFORMATION

| CLOSURE | | Drawing |
|--|--|--|
| Manufacturer: Phoenix Closures: Naperville, IL (Dwg. #: 63-S01-9102U) | |  |
| Description: | 63mm Threaded Buttress Style Closure, Ribbed | |
| Quantity: | 2 | |
| Material: | Polypropylene | |
| Density: | 0.900 g/cc | |
| Tare Weight: | 14.33 Grams | |
| Overall Dimensions: | | |
| • Height | 0.846" ± 0.010" | |
| • Diameter | 2.772" ± 0.010" | |
| Thread: | | |
| • Type | 63mm | |
| Finish Dimensions: | | |
| • T | 2.544" ± 0.010" | |
| • E | 2.392" ± 0.010" | |
| • Thread Pitch | 6 | |
| Markings (QC Audit): | PP 5 11 | |
| LINER OPTION #1 | | |
| Description: | Polyethylene Foam Liner | |
| Tare Weight: | 1.10 Grams | |
| Thickness: | 0.034" | |
| Diameter: | 2.372" | |
| LINER OPTION #2 | | |
| Description: | Pulp / Foil Induction Seal Liner | |
| Tare Weight: | 1.42 Grams | |
| Thickness: | 0.041" | |
| Diameter: | 2.375" | |

| PLASTIC BOTTLE (200 SERIES) | | Drawing |
|--|---|--|
| Manufacturer: API Kirk Containers: Commerce, CA | |  |
| Description: | 2-1/2 Gallon F-Style Plastic Bottle | |
| Quantity: | 2 | |
| Material: | High Density Polyethylene / White | |
| Method of Mfg: | Blow Molded | |
| Density: | 0.945 g/cc | |
| Tare Weight: | 360 Grams | |
| Capacity: | | |
| • Rated | 2-1/2 Gallon | |
| • Overflow | 11,064 Grams (2.9 Gallons) | |
| Overall Dimensions: | | |
| • Height | 14.43" | |
| • Width | 6.60" | |
| • Depth | 8.90" | |
| Finish Dimensions: | | |
| • T | 2.51" | |
| • E | 2.30" | |
| • Thread Pitch | 0.1623" | |
| Wall Thickness: | | |
| • Minimum | 0.022" | |
| Markings (QC Audit): | SPI "2" HDPE Recycling Symbol NO.203 10 LITER 2.5 U.S. GALLONS API KIRK CONTAINERS COMMERCE, CA 90040 | |

| SHIPPER | | |
|---|---|-------------------------------|
| Manufacturer: Temple-Inland: Ontario, CA (Design #: 031019415) | | |
| Description: | Regular Slotted Container | |
| Die-Cut Hand Holes: | | |
| • Dimensions (Length x Width) | 3.-1/2" x 1-1/8" | |
| • Location | Short Side of Shipper | |
| Material/Flute (Inner to Outer): | 51 ECT Double Wall Mottled White Corrugated Fiberboard; B/C-Flute | |
| Basis Weight (Outer to Inner) Lbs./MSF: | | |
| • Specification | 42/26/35/26/42 | |
| • Measured | 43.3/25.5/38.1/25.2/43.1 | |
| Combined Wt. of Facings: | 124.5 | |
| Tare Weight: | 711 Grams | |
| Dimensions | | |
| | Specification Dimensions (Inside) | Measured Dimensions (Outside) |
| • Length | 13.5" | 14" |
| • Width | 9.125" | 9-5/8" |
| • Height | 14.4375" | 15-1/2" |
| Board Caliper (Nominal): | 0.264" | |
| Manufacturer's Joint: | Inside Glued, 1-3/8" Lap | |
| Markings (QC Audit): | <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-right: 5px;">u n</div> <div> <p>4G/Y35.5/S/11 USA/+AA4377</p> </div> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>GUARANTEED EDGE CRUSH TEST (ECT) 51 LBS/IN MFG. BY TEMPLE-INLAND ONTARIO, CA U.S.A.</p> </div> | |







SECTION III: TEST PROCEDURES AND RESULTS

DROP TESTS

PE FOAM

| TEST INFORMATION | CRITERIA FOR PASSING THE TEST |
|--|---|
| <p>TEST CONTENTS: Methanol/Water Solution (0.955 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: 1.6 Meters (63") (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. (§178.603) |







DROP ORIENTATIONS & TEST RESULTS

| Sample #1: Flat on Bottom | Sample #2: Flat on Top | Sample #3: Flat on Long Side |
|---|---|---|
|  |  |  |
| <p>PASS: No leakage or damage.</p> | <p>PASS: No leakage or damage.</p> | <p>PASS: No leakage or damage.</p> |
| Sample #4: Flat on Short Side | Sample #5: Bottom Corner | *Sample #1: Top Corner |
|  |  |  |
| <p>PASS: No leakage or damage.</p> | <p>PASS: No leakage or damage.</p> | <p>PASS: No leakage or damage.</p> |

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

| | |
|-------------------|-------------------------------|
| DROP TESTS | INDUCTION SEALED LINER |
|-------------------|-------------------------------|

| TEST INFORMATION | CRITERIA FOR PASSING THE TEST |
|---|--|
| TEST CONTENTS: Methanol/Water Solution (0.955 SG) SAMPLE PREPARATION: Refer to Section II CONDITIONING: -18°C (0°F), Chamber #201 TEST CONTENTS TEMP.: -18.1° (-0.58°F) DROP HEIGHT: 1.6 Meters (63") (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 TESTS

| 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: | 272.1 Kg (600.0 Lbs.) (Refer to Section IV) | |
| TEST DURATION: | 24 Hours | |
| TEST EQUIPMENT: | Dead Load Weights | |

STACKING TEST SET-UP AND RESULTS

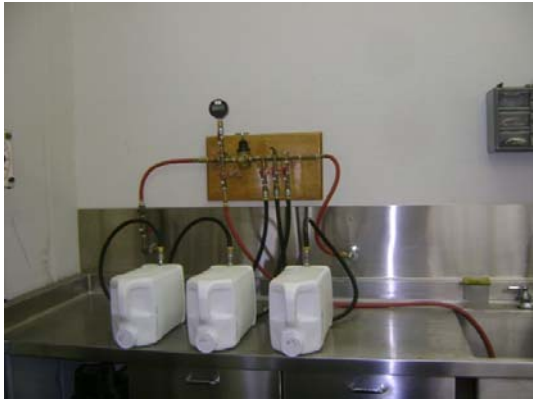
|  | Sample # | Maximum Deflection After 24 Hours | Results |
|---|----------|---|---------|
| | 6 | 0" | PASS |
| | 7 | 1/8" | PASS |
| | 8 | 1/16" | PASS |
| Stacking Stability: | | Not conducted; required only for guided load tests. | |

PRESSURE DIFFERENTIAL TEST

PE FOAM

| 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: | 95 kPa | |
| TEST DURATION: | 30 Minutes | |
| AREA OF PRESSURIZATION: | Through the Bottom Sidewall | |
| TEST EQUIPMENT: | Regulated Water Source Gauge #605 | |

HYDROSTATIC PRESSURE TEST SET-UP & RESULTS


|  | Sample # | Results | Comments / Observations |
|---|----------|---------|---|
| | 1 | PASS | All three samples maintained the 95 kPa test pressure for 30 minutes without leakage. |
| | 2 | PASS | |
| | 3 | PASS | |

PRESSURE DIFFERENTIAL TEST

INDUCTION SEALED LINER

| 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: | 95 kPa | |
| TEST DURATION: | 30 Minutes | |
| AREA OF PRESSURIZATION: | Through the Bottom Sidewall | |
| TEST EQUIPMENT: | Regulated Water Source Gauge #605 | |

HYDROSTATIC PRESSURE TEST SET-UP & RESULTS

|  | Sample # | Results | Comments / Observations |
|---|----------|---------|---|
| | 1 | PASS | All three samples maintained the 95 kPa test pressure for 30 minutes without leakage. |
| | 2 | PASS | |
| | 3 | PASS | |

REPETITIVE SHOCK VIBRATION TESTS

PE FOAM

| 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 |
|----------|---------|-------------------------|
| 6 | PASS | No leakage or damage. |
| 7 | PASS | |
| 8 | PASS | |

REPETITIVE SHOCK VIBRATION TESTS

INDUCTION SEALED LINER

| 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 |
|----------|---------|-------------------------|
| 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 | 101 g/m ² |
| 2 | 98 g/m ² |
| 3 | 109 g/m ² |
| 4 | 105 g/m ² |
| 5 | 99 g/m ² |
| AVERAGE: | 102.4 g/m² |
| RESULT | PASS |

REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES

| TEST | 49 CFR ^① 2010 Edition | UN ^② 16th Edition | IMDG ^③ 2010 Edition | ICAO ^④ 2011-2012 Edition | IATA ^⑤ 52nd 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

| INFORMATION USED FOR CALCULATIONS | | |
|--|----------------|--------------------------|
| Overall Packaging Tare Weight (PTW): | 1,462.0 Grams | |
| Overflow Capacity (OFC): | | <u>Methanol/Water SG</u> |
| Methanol/Water | 10,566.1 Grams | SG: 0.955 |
| Water | 11,064.0 Grams | |
| Number of Inner Packagings (# IP): | 2 | |
| Packing Group | II | |
| Product Specific Gravity (PSG): | 1.6 | |
| Packing Group Multiplication Factor (MF): | 1.00 | |
| Overall Height of one Package (OH): | 15.50 Inches | |
| Stack Test-# of Samples Tested Simultaneously: | 3 | |

| 98% OF OVERFLOW | | | | |
|-------------------------------|---|------------|-----------------------|----------------|
| Overflow Capacity (OFC) x 98% | | | | |
| <u>OFC</u> | x | <u>98%</u> | | |
| 10,566.1 | x | 98% = | 10,354.8 Grams | Methanol/Water |
| 11,064.0 | x | 98% = | 10,842.8 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> |
| 1,462 | + | 10,355 | x | 2 |
| | | | | Methanol/Water |
| 1,462 | + | 10,843 | x | 2 |
| | | | | Water |
| Methanol/Water: | | 22.1 | Kg | 48.7 Lbs. |
| Water: | | 23.1 | Kg | 50.9 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> |
| 1,462 | + | 1.6 | x | 10,843 | x | 2 |
| | | 36.1 | Kg | 79.5 | 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 |
| 1.6 | x | 1.00 | | |
| | | 1.60 | Meter | |
| | | | Required Drop Height | Actual Drop Height |
| | | | 63.0 Inches | 63 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 | / | 15.50 | -1 | = | 6.6 |

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> | |
| 36.1 | x | 6.6 | |
| | | 238.3 Kg | 525.4 Lbs. |