UNITED NATIONS

Performance Oriented Package Tests
U.S. Department of Transportation 49 CFR
4G Certified Fiberboard Box, Combination Type Packagings
Qualification

UN Code: **4G** Fiberboard Boxes Packing Group: **I** Overall Package Gross Mass**: 4.8 Kg**

Reference: Gebauer, 12 - Four Ounce Glass Bottles
Ethyl Chloride UN1037

Description of outside fiberboard container:
Style: Regular Slotted Container **(RSC),** weight: 442 grams.
Certification stamp: A-Kobak, Hinckley, OH-Cad for 12 bottles, dated: 8-20-25

Facing Liner Weights: 35.7 # / msf - 36.8 # / msf - 35.2# / msf

Medium Weights: 24.1 # / msf – 24.3 # / msf Board Test Grade: 48 ECT Flute: BC

Carton Dimensions: Length 12.75" x Width 10.125" x Depth 5.75" Inside Dimensions
Length 13.125" x Width 10.875" x Depth 7.375" Outside Dimensions

Manufactures Joint: 1.5” wide inside glue joint

Outer box closure instructions: two pieces (one top and one bottom) of **Intertape Polymer Corp. Sarasota, FL #8100 CLR 48mmx1371M IPG-IPG 6**, 48 mm wide x 17” long - 1.4 mil transparent, pressure sensitive sealing tape.
The tape was positioned at the center intersection of the two major flaps (1/4” or less flap gap) and a minimum of 1.5” onto the sides of the outer box.

Description of Inner Packaging Materials: Each bottle was packed inside a Nosco #931070 auto bottom tuck top kla white die-cut folding carton, size: 2.3125” x 2.3125” x 6” O.D. (.57mm thick) weight: 21 grams with inside glue joint. Six folding cartons were inserted into each of the two cells of the 275# CB double-wall 1.25” air-celled partitions, cell size: 7” x 4.75” x 6.125” tall, weight: 189 grams, basis weight: 43.1#-24.1#C-28.6#-24.1#B-41.8# cad#012803-0 dated: 1-28-20. The folding cartons and partitions were provided by **A-Kobak, Hinckley, OH**.

Description of inside Receptacles: Twelve 4-ounce plastic coated amber round glass bottles, manufactured by **O-I Toano, VA**, size: 2.15” diameter x 4.84” tall without closure cap, weight: 142.5 grams. See Gebauer SPEC-100170R2, dated 2-28-12. One **Jaco Mfg. Bera, OH** closure cap: 24mm black twist-on plastic cap (torqued to 20 inch/ lbs.) with metal lever, plastic nozzle and rubber nozzle seal, size:1.125” diameter x 1.3125”, weight: 10.5 grams. The cap was protected by a 1.25” diameter x 1.75” tall solid fiber tube with a ¼” x 1.625” slot on the side, weight: 6 grams. Solid fiber tube manufactured by **A Precision Products Group Co., Apple Creek OH.**

Number per Package: Twelve

UN Test Report Number: 101425

TEST PROCEDURES and RESULTS

Preparation of Packagings for Testing
(49 CFR-178.602)

Each Inner receptacle was filled to 98% of capacity with: **water**

Total Gross Mass Weight = 10.56 lbs. / 4.8 kg
Tare Weight (packaging, including receptacles) = 6.2 lbs.
Net "product" Weight (liquid or solid) = 4.36 lbs.

The fiberboard outer packaging was conditioned at 73 ^{O} F and 50% Relative Humidity for 24 hours.

Special preparation of plastic inside containers at 0 ^{O} F performed? **N/A**

Drop Test (49 CFR-178.603)

Number of drops **5**, Height of drops **72", Packing Group I, Great Danger Level.**

Test Results:

1st drop, flat on bottom	**PASSED**
2nd drop, flat on top	**PASSED**
3rd drop, flat on long side	**PASSED**
4th drop, flat on short side	**PASSED**
5th drop, bottom corner	**PASSED**

Comments: No leaks occurred from any inner receptacle
The outer fiberboard container did not exhibit any damage liable to affect safety during transit

Stacking Test (49 CFR-178.606) **Static**

Three samples were subjected to a weight of **500 lbs.** which is equal to or greater than identical packages of the same weight stacked to the height of 3-meters (9.84 feet) for 24 hours.
Formula used for compression: 120/7.375=15.27-1=14.27x10.56=150.7x3=452 lbs.
Required compression: 452 lbs.
Actual compression: **500 lbs.**

Test Results:

Sample	#1	**PASSED**	.3 "	Deflection
Sample	#2	**PASSED**	.3 "	Deflection
Sample	#3	**PASSED**	.3 "	Deflection

Comments: No rupture, leaking or deformation occurred

TEST PROCEDURES and RESULTS

Cobb Test (49 CFR-178.516)

Quantity of (five) 5” x 5” square samples from outside shipping container.

Water absorbed
1) 116 **g/m2**
2) 118 **g/m2**
3) 118 **g/m2**
4) 116 **g/m2**
5) 119 **g/m2**

Mass increase cannot exceed 155 g/m2 after a 30-minute testing period.

Vibration Test (49 CFR-178.608)

Three samples were tested for a **60-minute duration @ 240 Cycles Per Minute** Frequency.
Mechanical Rotary Motion with a 1" peak to peak Amplitude.

Comments: Container and contents were not affected by the vibrations, no leakage of contents.

TESTING EQUIPMENT used during the Performance Testing

L.A.B- V400 mechanical rotary vibration machine
Dongguan Kejian Instrument Co.-Drop tester
General Tools and Instruments #147 digital micrometer
TMI Cobb Tester and weighted roller #61-04-00-0004
U.S. Solid digital lab scale #JFDBS00081-210G
Haida-HD-A502S-1200 Compression Tester

UN Test Report Number: 101425

RAK Testing, LLC certifies that the previously described testing services have been performed in accordance with standard good laboratory practices. The packaging tested has **PASSED** the standards of the United Nations Transport of Dangerous Goods and the Department of Transportation Title 49 CFR in accordance with recommendations for UN packaging, Code 4G, Fiberboard Boxes, Combination Type Packages, **Packing Group I**, **Great** Danger Level Hazardous Materials with overall gross weight not exceeding **4.8 Kg** for a **Quantity of (twelve) 4-ounce glass bottles with closures.**

In the event that any changes are made to the classification assumed as a basis for these, test or to any part of this combination package, such as a different inner container, a closure method or any other variation, these test results will be deemed invalid and are not to be relied upon. RAK Testing, LLC does not perform compatibility test on inside containers. These test if needed should be performed by your inside container supplier.

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 RAK Testing, LLC LIABILITY EXCEED THE AMOUNT PAID BY THE CUSTOMER FOR TESTING SERVICES.

The appropriate certification markings to be displayed on the outside of the fiberboard container:
(Lower case “un” letters circled)

u **4G/X4.8/S/25** ** Last two digits of date of manufacture of fiberboard box, i.e., **25**

n **USA /A-Kobak Container**
Hinckley, OH

Re-Testing **MUST** be scheduled before **24-month** anniversary from the last testing date.

Date Tested: 10-13 through 10-14-25
UN Test Report Number: 101425

Tested for:
Company: A-Kobak Container
Address: 701 West 130th Street
City: Hinckley
State: OH
Zip: 44233-0490
Phone: 330.225.7791
Contact: Pat Sullivan

Test Performed by:
RAK Testing, LLC
7635 Supreme Ave. NW
North Canton, Ohio 44720
Phone: 740-624-1314
Richard Kovaleski, CPLT
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