

**UNITED NATIONS**

Performance Oriented Package Tests  
U.S. Department of Transportation 49 CFR, HM - 181  
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 : Description of outside fiberboard container :

Style : Regular Slotted Container ( **RSC** ), weight: 1 lb.

Certification stamp: A-Kobak, Hinckley, OH    Cad #05081-0 dated: 5-8-20

Facing Liner Weights :    42.4 # / msf    -    35.1 # / msf    -    42.6 # / msf

Medium Weights :    22.9 # / msf - 23.8 # / msf      Board Test Grade : 275#      Flute : CB

Carton Dimensions :    Length 12.75 " x    Width 10.125 " x    Depth 6.25 "    Inside Dimensions  
   Length 13.125 " x    Width 10.625 " x    Depth 7.625 "    Outside Dimensions

Manufactures Joint : 3" wide fiberglass reinforced paper tape

**Outer box closure instructions:** 3M St. Paul MN, #372-2MC, 48 mm wide - 1.5 mil transparent, pressure sensitive sealing tape. Quantity of two, 1-Top    and    1-Bottom , 17" long strips positioned at the center intersection of the two major flaps and 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) 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: .4 lbs., basis weight: 41.5#-23.1#C-26.2#-23.4#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: .2 lbs. 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. 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. Solid fiber tube manufactured by **A Precision Products Group Co., Apple Creek OH.**  
Number per Package: Twelve

UN Test Report Number: 80720

## TEST PROCEDURES and RESULTS

### Preparation of Packagings for Testing

( U.N. Orange Book 9.7.3, HM - 181 178.602)

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 ° F and 50 % Relative Humidity for 24 hours

Special preparation of plastic inside containers at 0 ° F performed? **N/A**

### Drop Test ( U.N. Orange Book 9.7.3, HM - 181 178.603 )

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

#### Test Results:

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

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 ( U.N. Orange Book 9.7.6, HM - 178.606 ) **Static**

( 3 - empty ) samples were subjected to a weight of **483 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:  $120/7.625=15.7-1=14.7 \times 10.56=155.6 \times 3=466.9$  lbs.

Required compression: 466.9 lbs.

Actual compression: **483 lbs.**

#### Test Results:

Sample # 1	<b>PASSED</b>	.2 "	Deflection
Sample # 2	<b>PASSED</b>	.2 "	Deflection
Sample # 3	<b>PASSED</b>	.2 "	Deflection

Comments : No rupture, leaking or deformation occurred

UN Test Report Number: 80720

## TEST PROCEDURES and RESULTS

### **Cobb Test** ( U.N. Orange Book 9.6.11.1, HM -181 178.516 )

Quantity of ( 5 ) 5" x 5" square samples from outside shipping container

Water absorbed

- 1) 119 g/m<sup>2</sup>
- 2) 120 g/m<sup>2</sup>
- 3) 118 g/m<sup>2</sup>
- 4) 121 g/m<sup>2</sup>
- 5) 121 g/m<sup>2</sup>

Mass increase cannot exceed 155 g/m<sup>2</sup> after a 30 minute testing period

### **Vibration Test** ( HM - 181 178.608 )

( 3 ) 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

Gaynes-Vibration tester # 1250

Gaynes-Drop tester # DT-125

Testing Machines Inc. Compression tester # 17-37 with a 50,000 lbs. Capacity

Testing Machines Inc. Cobb tester

GBC Temperature and Humidity Chamber

A&D Electronic Balance # EK-120 A

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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 HM - 181 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 use classification assumed as a basis for these test or to any part of this combination package, such as a different inner container, a different 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 Internal Pressure (Hydraulic) test or 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/20**      \*\* Last two digits of date of manufacture of fiberboard box, i.e., **20**  
**n USA /A-Kobak Container**  
**Hinckley, OH**

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

Date Tested: 8-6 through 8-7-20      UN Test Report Number: 80720

Tested for:      Company : A-Kobak Container  
Address : 701 West 130<sup>th</sup> Street  
City : Hinckley  
State : OH  
Zip : 44233-0490  
Phone : 330.225.7791

Test Performed by:      RAK Testing, LLC  
777 3<sup>rd</sup> NW  
Massillon, Ohio 44648  
Phone : 740-624-1314  
Richard Kovalesski, CPLT