

UNITED NATIONS

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

UN Code: **4G** Fiberboard Boxes Packing Group: **I** Overall Package Gross Mass: **2.5 Kg**

Reference: Gebauer, 12x4.7ounce Aerosol Cans, Ethyl Chloride UN1037

Description of outside fiberboard container:

Style: Regular Slotted Container (RSC) weight: 260 grams
Certification stamp: **A-Kobak Container, Hinckley, OH**
Part #100189R2

Facing Liner Weigh: 42.7# / msf - 41.8# / msf

Medium Weights: 33.1# / msf Board Test Grade: **200#** Flute: **C**

Carton Dimensions:	Length	11.125"	x	Width	9.125"	x	Depth	5.125"	Inside Dimensions
	Length	11.5"	x	Width	9.5"	x	Depth	6"	Outside Dimensions

Manufactures Joint: 1.5" inside glue

Outer box closure instructions: two pieces of **Intertape Polymer Corp. Sarasota, FL #8100 CLR 48mmx1371M IPG-IPG 6**, 48 mm wide, 1.5 mil transparent water-proof, pressure sensitive sealing tape. Two 48 mm wide x 18" long strips (one top and one bottom) were positioned onto the major flaps at the center intersection (1/4" or less flap gap) and a minimum of 1.5" onto the sides of the outer box.

Description of Inner Packaging Materials: The cans were inserted into an **A-Kobak, Hinckley, OH 200# C flute (basis weight: 42.7#-24.1#C-42.7#)** 12 cell partition with .5625" & .75" perimeter air-cells. Can cell size: 2.3125" x 2.3125" x 5.125" tall. Total weight of assembled partitions: 166 grams. See **A-Kobak, Hinckley, OH**, drawing for part#100186R1.

Description of inside receptacles: Twelve 4.7ounce round metal aerosol cans. Can size with safety cap: 1.77" diameter x 5.06" tall, total weight empty: 51.16 grams. The can was manufactured by **Crown Aerosol Packaging, Philadelphia, PA**, see specification #100167R1 exhibit 4.1& 4.2 for part #CR-3007706-D dated 7-11-08. The aerosol sprayer was protected by a plastic cap. The cap was snapped in place over the top chime of the aerosol can. Cap size: 1.75" diameter x 1.5 " tall, weight: 4.49 grams. The safety cap was manufactured by **Berry Plastics Corp. Evansville, IN**, see specification C1443-1 for details.

Number per Package: Twelve (4x3 arrangement)

UN Test Report Number: 111224

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TEST PROCEDURES and RESULTS

Preparation of Packagings for Testing
(49 CFR-178.602)

Each Inner receptacle was filled with: water

Total Gross Mass Weight= 5.5 lbs. / 2.5 kg
Tare Weight (packaging, including receptacles) = 3.4 lb.
Net “ product “ Weight (liquid or solid) = 2.2 lbs.

The fiberboard outer packaging was conditioned at 73 ° F and 50% Relative Humidity.

Special preparation of plastic inside containers at 0 ° 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)

Three samples were subjected to a weight of **350 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: $120/6=20-1=19 \times 5.5=104.5 \times 3=313.5$ lbs.
Required compression: 313.5 lbs.
Actual compression: **350 lbs.**

Test Results:

Sample # 1	PASSED	.1 "	Deflection
Sample # 2	PASSED	.1 "	Deflection
Sample # 3	PASSED	.1 "	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) 142 g/m²
- 2) 145 g/m²
- 3) 143 g/m²
- 4) 142 g/m²
- 5) 145 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 @ 200 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

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 **2.5 Kg** for a **Quantity of (twelve) 4.7 ounce aerosol cans 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/X2.5/S/24 ** Last two digits of date of manufacture of fiberboard box, i.e., **24**
n USA / A-Kobak Container
Hinckley, OH

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

Date Tested: 11-8 through 11-12-24
UN Test Report Number: 111224

Tested for:

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

Test Performed by:

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