



DEPARTMENT OF THE ARMY
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PICATINNY ARSENAL, NEW JERSEY 07806-5000



REPLY TO
ATTENTION OF

AD-A257 779



SMCAR-AEP (340d)

28 OCT 1992

MEMORANDUM FOR Commander, Defense Technical Information Center,
Building 5, Cameron Station, Alexandria, VA,
22304-6145

SUBJECT: Release of Performance Oriented Packaging Compliance
Reports

1. The enclosed report, DOD POP HMTR/AYD 92-019, is hereby submitted to the Defense Technical Information Center for formal release. Notification of the formal release should be made to the letterhead address.
2. POC for this matter is Robert Promin, SMCAR-AEP, 201-724-2181, DSN 880-2181.

Robert J. Kuper
 ROBERT J. KUPER
 Chief, Packaging Division

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Performance Oriented Packaging (POP), Expulsion Charge, MIL-B-2427 Wood Box

19. ABSTRACT (Continue on reverse if necessary and identify by block number)
This report contains the testing and test results performed on packaging for expulsion charges used in 155MM and 8 inch artillery projectiles. The packaging is for interplant shipment only. This report superceeds report DOD POP HMTR/AYD 90-004 as the box and contents are identical except the max gross weight has been increased.

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I. REPORT NUMBER: DOD POP HMTR/AYD 92-019

II. TITLE: Performance Oriented Packaging Report for Expulsion Charge, 12513794 and 9391003, Container 12598436 and 12913794

AUTHOR: Robert M. Promin

PERFORMING ACTIVITY: ARDEC

ADDRESS: Department of the Army
ARDEC, SMCAR-AEP
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PERFORMANCE ORIENTED PACKAGING (POP) TESTING FOR
EXPULSION CHARGE 12513794 AND 9391003,
CONTAINER 12598436 AND 12913794

1. DATA:

Container:

Type: Box, Wood, Strapped
Packaging Identification Code: 4C1
Nomenclature: Box, Packing
Specification Number: MIL-B-2427, Type I, Class 1, Grade C
Drawing Number: 12598436 And 12913794
Material: Natural Wood
Capacity: 20 kg (43 lbs) And 17 kg (38 lbs) Approx
Outside Dimensions: 51.9 x 47.0 x 32.4 cm (20 7/16 x 18 1/2
x 12 3/4 in.)
And 51.9 x 47.0 x 29.2 cm (20 7/16 x 18 1/2 x 11 1/2 in.)
Gross Weight: 37 kg (82 lbs)

Product:

Name: Expulsion Charge
Drawing Number: 12576776 And 9391003
Proper Shipping Name: Powder, Smokeless
Identification Number: UN 0160
Packing Group: II
Physical State: Solid
Quantity Per Container: 100 Expulsion Charges

2. Background: This report contains test procedure and test results of POP testing to qualify wood box 12598436 and 12913794 for the transport of dangerous goods in accordance with 49 CFR and United Nations POP requirements. Only box 12598436 was tested as both boxes are of the same construction and are packed in the same manner. The difference being that box 12913794 is approx 2.5 cm lower. Both boxes contain 100 expulsion charges in a single layer in a 10 x 10 pattern. The expulsion charges are identical in construction except one is approx 2.5 cm shorter accounting for the one slightly smaller box. Only the larger box was tested as in accordance with 49 CFR, paragraph 178.601(c)(4) and 178.601(d) changing only the height of the box does not constitute "different packaging" and consequently does not have to be retested.

3. TESTS: Tests were performed in accordance with 49 CFR POP test regulations. The following tests were performed:

a. Stacking Test - The shipping container had a weight 523 kg (1151 lbs) placed on top of the container and maintained for a period of 24 hrs. This weight is in excess of that which would be applied if either of the boxes were stacked 10 ft high. The test was conducted three times using different containers.

b. Drop Test: Three packed shipping containers were dropped from a height of 1.2 meters (4 ft). The strike surface was a 3 inch thick steel plate backed by a minimum of 18 inches of crushed stone. The drop orientations were: Bottom, Top, Long Side, Short Side and Bottom Corner. All tests were performed at ambient temperature. Two containers were dropped once each and the third 3 times making a total of 5 drops.

c. Loose Cargo Vibration Test - Each of three packed containers were vibrated in the loose cargo vibration mode, i. e. the container was unrestrained on the vibrating surface except for horizontal constraint to prevent the container from falling off the platform. The container was free to move vertically, bounce and rotate. Vibration was 1 inch double amplitude at a speed to permit passing a 1.6 mm (.063 inch) plate under the vibrating container. The test was performed for 1 hour for each container

4. RESULTS: The container passed all tests. The containers were intact and none of the contents were spilled. The packages remained capable of safely transporting the contents and there was no deformation that would adversely affect the stacking ability.

5. REFERENCED MATERIAL: U. S. Department of Transportation, 49 CFR; United Nations, "Transport Of Dangerous Goods", 6th edition. This report superceeds report DOD POP HMTR/AYD 90 - 004 as the container is the same except the gross weight was increased.