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

SUBJECT: Release of Performance-Oriented Packaging Compliance Report

1. The attached report, (DOD POP HM TR/AYD 94-004), entitled: "Performance-Oriented Packaging (POP) testing of M879 Practice Cartridge for 81mm Mortar Packed in a Wood Wirebound Box", is hereby submitted for formal release. Notification of the release should be sent to the letterhead address.

2. Address any questions or comments regarding this report to Mr. Yuen H. Lam, telephone: 1-201-724-2228 (DSN 880-2228).

EUGENE FARRELL
Acting Chief, Pkg Div

This document has been approved for public release and sale; its distribution is unlimited.
Best Available Copy
This report contains test results conducted on the M879 Practice Cartridge for 81mm Mortar packaged in wood wirebound box per drawing 12630601. The tests were conducted in accordance with the requirements of 49 CFR part 107 subpart M (18.600 et. al.). The packaging is submitted for Performance-Oriented Packaging certification.
I. Report Number: DOD POP HM TR/AYD 94-004

II. Title: Performance-Oriented Packaging (POP) testing of M879 Practice Cartridge for 81mm Mortar Packed in a Wood Wirebound Box

Drawing Number: 12630601

Author: Yuen H. Lam

Performing Activity: U.S. Army Armament Research, Development and Engineering Center (ARDEC)

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Date: February 1993

Distribution Statement A.
Approved for public release; distribution is unlimited.
1. Data:

Container:

Type: Box, Wirebound  
UN Code: 4C1  
Specification: MIL-B-46506  
Drawing Number: 12630601  
Material: Wood  
Maximum net mass: 17.5 kg (38.5 lbs)  
Dimensions: 63.8 cm X 33.0 cm X 13.5 cm  
(25 1/8 in X 13 in X 5 5/16 in)  
Gross Weight: 21.4 kg (47 lbs)

Product:

Name: Cartridge, 81mm: Practice, M879 with Fuze, M751  
(Inner packaged in jungle wrap)  
Drawing Number: 12944145  
Cage Code: 19200  
United Nations Proper Shipping Name: Cartridges for  
Weapons, Inert Projectiles  
United Nations Identification Number: 0328  
United Nations Packaging Group: II  
Physical State: Solid  
Number of Cartridges per Container: 3  
National Stock Number (NSN): 1315-01-352-0392  
DOD Identification Code: C875

2. Reference Material:

a. Federal Register, "49 CFR Part 107-179"


3. Background:

This report details Performance-Oriented Packaging (POP) tests conducted on the 81mm M879 Practice Cartridge for 81mm mortar packed in a wood wirebound container in accordance with drawing 12630601. Each cartridge weighs approximately 9.0 lb. A package contains three cartridges. The POP tests were conducted using packages containing additional weights to insure container integrity. The weight of the packed out tested container was 58 lbs (26 kg). Tests were performed according to POP test regulations.
4. Test:

The following POP tests were performed at ambient temperature:

a. Vibration Test (178.608)

Procedure:

Three wirebound boxes (No. 1, 2, and 3) were individually vibrated on a vibrating platform unrestrained for a one hour period each. The double-amplitude (peak-to-peak displacement) was one inch and the frequency was 300 cycles per minute. The frequency was sufficient to allow the package to become completely airborne and enable a 1/16" piece of strapping material to be slid underneath the package during vibration.

Results:

After the tests, none of the wirebound boxes experienced any structural damage; there was no spillage of contents; the passing criteria was met.

b. Drop Test (178.603)

Procedure:

Five new packages (No. 4, 5, 6, 7, and 8) were used for the five orientation drop tests: flat on the bottom, flat on the top, flat on the long side, flat on the short side, and on the corner. The height for all five drops was 4.0 ft (1.22 m). Each container was only dropped once in accordance with the requirements of CFR 49.

Results:

There was no visible damage on the containers (No. 4, 5, 6, and 7) after the first four drops (flat on the bottom, flat on the top, flat on the long side, and flat on the short side). On the fifth drop (on the corner), the container (No. 8) received minor indentation at the impact corner. However, the container was in a sound condition. All contents remained inside the container and the package was capable of being handled without danger of spillage. It was determined that the container met the passing criteria of CFR 49.
c. Stacking Test (178.606)

Procedure:

A new wirebound box (No. 9) was used for the stacking test. A dead load of 1,276 lbs was applied to the top of the container for a 24 hour period. This simulated a stack height of 10 ft (23 layers) of identical packages.

Results:

During the test, the container supported the load adequately. After the test, the container received a uniform compression of 1/16 of an inch. No structural damage was found on the container. The passing criteria was met.

5. Based on the above POP testing, the following POP symbol has been applied to wood wirebound containers in accordance with drawing 12630601.

\[ \text{Insert the last two digits of year packed.} \]

\[ 4C1/Y26/S/** \]

\[ \text{USA/DOD/AYD} \]