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11 TITLE (Include Security Classification)
 Performance Oriented Package Testing of the M205, M218, M219, & M220 Propelling Charges

12 PERSONAL AUTHOR(S)
 James Newcombe

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18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
 Performance Oriented Package Testing of Charges, Propelling: M205, M218, M219, M220 packed IAW DWG 9313721

19 ABSTRACT (Continue on reverse if necessary and identify by block number)
 This report contains the testing and test results of Performance Oriented Package Testing on Charges, Propelling: M205, M218, M219, M220 packed in accordance with ARDEC DWG. 9313721 (672 per fiberboard box).

20 DISTRIBUTION STATEMENT (ABSTRACT)
 UNCLASSIFIED UNLIMITED SAME AS RPT DTIC USERS

21 ABSTRACT SECURITY CLASSIFICATION

22a NAME OF RESPONSIBLE INDIVIDUAL
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22c OFFICE SYMBOL
 SMCAR-AEP

I. Report Number: DOD POP HM TR/AYD 92-026

II. Title: Performance Oriented Packaging Testing for M205,
M218, M219, M220 Propelling Charges.
Packed 672 per fiberboard box in accordance with
ARDEC DWG. 9313721.

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Performing Activity: ARDEC

Address: Department of the Army
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Date: December 1992

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1. Data:

Container:

Type: Box, Fiberboard
UN Code: 4G
Specification Number: PPP-B-636
Material: Fiberboard
Capacity: 154.5 liters
Dimensions: 70cm x 55.4cm x 39.84cm
(27 9/16" x 21 13/16" x 15 11/16")

Product:

Name: **M205**
Part Number: 9280588
United Nations Number: UN 0161
United Nations Packaging Group: II
United Nations Nomenclature: POWDER, SMOKELESS
Physical State: Solid
Amount per Container: 672 Propelling Charges
NSN: 1315-01-050-8882

Name: **M218**
Part Number: 9300234
United Nations Number: UN 0242
United Nations Packaging Group: II
United Nations Nomenclature: CHARGES, PROPELLING FOR
CANNON
Physical State: Solid
Amount per Container: 672 Propelling Charges
NSN: 1315-01-290-1598

Name: **M219**
Part Number: 9378134
United Nations Number: UN 0242
United Nations Packaging Group: II
United Nations Nomenclature: CHARGES, PROPELLING FOR
CANNON
Physical State: Solid
Amount per Container: 672 Propelling Charges
NSN: 1315-01-290-1597

Name: **M220**
Part Number: 9381510
United Nations Number: UN 0242
United Nations Packaging Group: II
United Nations Nomenclature: CHARGES, PROPELLING FOR
CANNON
Physical State: Solid
Amount per Container: 672 Propelling Charges
NSN: 1315-01-329-2575

2. Background:

This report contains the testing and test results performed on propelling charges packed in a fiberboard box manufactured in accordance with PPP-B-636, Style CSSC, Type CF, Class water-resistant, Grade V3C. 672 Propelling charge containers were utilized to simulate the proper content weights. The weight of the single packed out box was 88 lbs. The method of packing was consistent with ARDEC DWG. 9313721.

3. Testing

Note: All testing was performed in accordance with referenced sections of CFR 49, except that one complete pack was used in lieu of multiple packs for each test due to the limited supply of propelling charges at the time of testing.

a. Drop Test (178.603)

Procedure:

One container was dropped in the following orientations: flat on bottom, flat on top, flat on long-side, flat on short-side, and the top-right-rear corner. The height for all five drops was 1.2 meters.

Results:

There was no visible damage on the first four drops. The final corner drop produced a slight tear on the edge of the outer box, however, the contents did not spill and the container was easily capable of being handled without danger of spillage. The container configuration satisfied the passing criteria of CFR 49 for the 1.2 meter Drop test.

b. Vibration Test (178.608)

Procedure:

One container was allowed to vibrate unrestrained for a period of one hour on a "loose cargo" machine with a peak to peak displacement of one inch and a frequency of 210 cycles/minute. This frequency and displacement were sufficient enough to allow a 1/16" thick piece of metal strapping to slide underneath the box.

Results:

Besides some minor abrasions to the bottom and sides of the box, there was no notable damage as a result of the vibration. The container configuration satisfied the passing criteria of CFR 49 for the Vibration test.

c. Stack Test (178.606)

Procedure:

A dead load of 704 lbs. was applied to the top of the packed out fiberboard box for a period of 24 hours. This load represents the weight imposed on the bottom container for a stacking height of 10 feet.

Results:

Although there was a uniform compression of approximately 1/16" on the container, it still adequately supported the imposed load. The container configuration satisfied the passing criteria of CFR 49 for the Stack test.

5. References:

a. Federal Register, "49 CFR Part 107, 1991"

6. Based on the above test results, the criteria for Performance Oriented Packaging for this item as specified in CFR 49 have been either met or exceeded. The following POP symbol shall be applied to containers that are packed IAW ARDEC DWG. 9313721.

(u) 4G/Y40/S/**
(n) USA/DOD/AYD

** Insert last two digits of year in which container is packed out