

DTIC FILE COPY

1

I REPORT NUMBER: DOD POP TR/AYD 89-003

II TITLE: Performance Oriented Packaging Testing of Cap, Blasting
Electric M6, Packed 10 per M19A1 Metal Ammunition
Box, 4 per Wirebound Box

AUTHOR: William Healy
PERFORMING ACTIVITY: ARDEC
ADDRESS: Department of the Army
ARDEC
HQ, U.S. Army Armament, Munitions, and Chemical Command
Picatinny Arsenal, NJ 07806-5000
ATTN: SMCAR-AEP
DATE: 6 April 1990

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

AD-A220 972

DTIC
ELECTE
APR 24 1990
S D
Co D

90 04 24 001

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION / AVAILABILITY OF REPORT		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE			UNLIMITED		
4. PERFORMING ORGANIZATION REPORT NUMBER(S) DODPOPTR/AYD 89-003			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION PACKAGING DIVISION - AED		6b. OFFICE SYMBOL (If applicable) SMCAR-AEP	7a. NAME OF MONITORING ORGANIZATION U.S. ARMY, ARDEC PACKAGING DIVISION - AED		
6c. ADDRESS (City, State, and ZIP Code) PICATINNY ARSENAL, NJ 07806-5000			7b. ADDRESS (City, State, and ZIP Code) PICATINNY ARSENAL, NJ 07806-5000		
8a. NAME OF FUNDING / SPONSORING ORGANIZATION AMCCOM		8b. OFFICE SYMBOL (If applicable) SMCAR-ESW-F	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER		
8c. ADDRESS (City, State, and ZIP Code) Rock Island, IL 61299			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
					WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) PERFORMANCE ORIENTED PACKAGING TESTING OF CAP, BLASTING ELECTRIC M6, PACKED 10 PER M19A1 METAL AMMUNITION BOX, FOUR BOXES PER WIREBOUND BOX.					
12. PERSONAL AUTHOR(S) WILLIAM HEALY					
13a. TYPE OF REPORT FINAL		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 90-04-06	
15. PAGE COUNT					
16. SUPPLEMENTARY NOTATION SEE ATTACHED SHEET					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	PERFORMANCE ORIENTED PACKAGING (POP); CAP, BLASTING ELECTRIC M6 in M19A1		
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
This report contains the testing and test results performed on the Cap, Blasting Electric M6 packed 10 per M19A1 metal ammunition container, four M19A1 metal containers per wirebound box for Performance Oriented Packaging Certification. The packed, wirebound boxes were dropped once each from 2.1 meters (7 feet) in lieu of UN requirements of 1.2 meters (4 feet). The wirebound boxes were dropped on a solid steel plate in 6 different orientations. (Six (6) total wirebound boxes were tested.) The orientations were as follows: Top, Bottom, Side, Side 90° off previous, Top Edge and Bottom Edge. This exceeds the UN requirement which is 5 containers dropped once each in 5 orientations (top, bottom, long side, short side and corner) at 4 feet and ambient temperature. A test was conducted on wirebound boxes with steel ammunition containers inside (a supporting load) at Rochester Institute of Technology (Report No. DOD POP 4m/JWG/TR 87005) in which steel ammunition containers similar to the M19A1 packed in wirebound boxes were dropped and were compression loaded in excess of 1,000 lbs., which exceeded 3 meter high stacking test. No					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION		
22a. NAME OF RESPONSIBLE INDIVIDUAL			22b. TELEPHONE (Include Area Code)		22c. OFFICE SYMBOL

DD Form 1473, JUN 86

Previous editions are obsolete.

SECURITY CLASSIFICATION OF THIS PAGE

UNCLASSIFIED

19. Abstract (continued)

damage was observed to the boxes after each of the tests were completed. By analogy, the above-mentioned tests exceed the requirements specified in "United Nations Transport of Dangerous Goods".

1. DATA SHEET:

Container:

Type: Box

UN Code: 4C1

Specification Number: PPP-B-585

Material: Wood and wire

Capacity: 1834.5 CU. IN

Dimensions: I.D. Inches - 15-7/8 x 11-1/8 x 7-1/4

Tolerance: + 1/8

Closure (Method/Type): Bent wire

Tare Weight: 3.4 lbs.

Product:

Name: Cap, Blasting Electric M6

Drawing Number: 8830972

United Nations Number: 0456

United Nations Packing Group: II

Physical State: Solid

Amount Per Container: 10

Accession For	
NTIS (GPO)	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	A - 1

2. BACKGROUND:

This report contains the testing and test results performed on Cap, Blasting Electric M6, packed ten (10) per M19A1 metal ammunition container, four (4) M19A1's per wirebound box in accordance with drawing 12913871 for Performance Oriented Packaging Certification. Tests were performed in accordance with Performance Oriented Packaging test regulations.

3. TEST:

3a) Containers were dropped once each from 2.1 meters (7 feet) in lieu of UN requirements of 1.2 meters (4 feet). The containers were dropped on a 3-inch solid-steel plate reinforced by 18 inches of crushed rock in 6 different orientations. The tests were conducted at 3 temperatures (6 total containers were tested). The orientations were as follows:

Top
Bottom
Side
Side 90° off previous
Top Edge
Bottom Edge

The three temperatures were 71°C (160° F), 24°C (75°F) and -51°C (-60°F). Note: this exceeds the UN requirement which is 5 containers dropped once each in 5 orientations (top, bottom, long side, short side, and corner) of four feet and ambient temperature.

3b) Stacking tests were done on similar wood boxes with no damage observed. These results could be found in test report DOD POP HM/JWG/TR 87005, entitled: "Performance Oriented Packaging Testing on Wirebound Box."

4. RESULTS:

The container passed all tests cited in 3a. None of the contents was lost due to spillage or detonation. They are considered safe for international transportation and in accordance with Performance Oriented Packaging regulations.

REFERENCE MATERIAL:

- a. United Nations "Transport of Dangerous Goods", Third Edition.
- b. Report Number: DOD POP HM/JWG/TR 87005, Title: "Performance Oriented Packaging Testing of Wirebound Box", D. Goodwin, Rochester Institute of Technology.