AD-A263 500

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UMENTATION PAGE

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11. TITLE (Include Security Classification)

Performance Oriented Packaging (POP) testing of the M621 Plastic Container (4H2).

12. PERSONAL AUTHOR(S)

ter B. Holcombe, Specialist GS-12

13a. TYPE OF REPORT	13b TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM 93/1/25 TO 93/1/28	93/1/28	3

16. SUPPLEMENTARY NOTATION

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17. COSATI CODES		
FIELD	GROUP	SUB-GROUP

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

Container, plastic, M621 Army Dwg. 12013870. POP UN Recommendations on the transport of dangerous goods

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

The U.S. Army Armament Research, Development and Engineering Center (ARDEC), has tested the M621 plastic ammunition:container to verify if an alternative closure is required for this container to meet or exceed the requirements of the united nations "recommendation on the transport of dangerous goods". The boxes were tested by the U.S. Army Defense Ammunition Center and School (USADACS) by performing drop vibration and stacking tests. Five drops were performed from a height of 48 inches. (Flat-top, long side, short side, bottom and one corner). Package gross weight was 55 lbs. (Inert ammunition). The container met the requirements of 4H2.

The packaging for 25MM ammunition in the M621 Container is per SPI ADPLB001 with added closure. Referenced SPI is attached.

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT: NCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION: unclassified
ME OF RESPONSIBLE INDIVIDUAL: alter B. Holcombe Packaging Specialest	22b TELEPHONE (Include Area Code): DSN 793- 8204; 22c OFFICE SYMBOL: SMCAR-ESK

DD Form 1473, JUN 86 Previous editions are obsolete. SECURITY CLASSIFICATION OF THIS PAGE

Part I. Report Cover

A. Report Number: DODPOPHM/AYA/TR93004

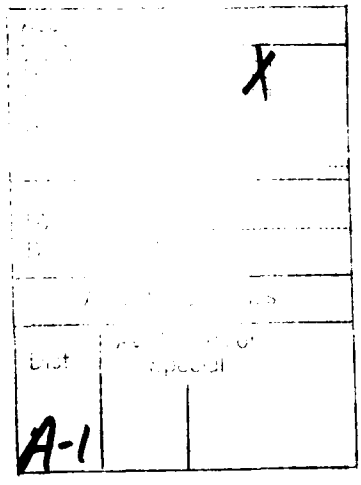
B. Title: Performance Oriented Packaging (POP) testing of the plastic container M621 (inert) loaded with dummy ammunition, packaging group II.

Responsable individual: Walter B. Holcombe
Performing Activity:
U.S. Army Ammunition Center and School
ATTN: SMCAC-DEV
Savanna IL, 61074-9639

Performing activity's reference: Test number
Date: 28 Jan 93
Report: Final

C. Sponsoring Organization:
U.S. Army Armament Research, Development and Engineering Center, ATTN: SMCAR-ESK
Rock Island, IL 61299-7300
Sponsor's reference: AMCCOM Project ESK 5-91

D. Requesting Organization reference: Memorandum SMCAR-ESK, 4 October 1991—POP testing M621 plastic container.



1. Data Sheet

A. Exterior shipping container
UN type: Plastic box UN code: 4H2
Drawing No: 12013879
Date of Mfg: December 1989
Material: Plastic
Tare weight: 10 lbs.
Dimensions: 14.3 inches L x 5.7 inches W x 13.87 inches H.
Closure: Wire counter latch handle with lead seal.

B. Product: 25mm projectiles (various types) box
Packing Drawing No: 12013880
United Nations Identification (serial) number(s) UN 0321, UN 0328 and UN 0339
UN packaging group: II
Physical state: Solid
Quantity per container: 30 each (2-belts of 15 each)
Gross Weight: 60 lbs. 27 kg.

2. Background - This report contains the POP testing results performed on the M621 plastic container with 30 25mm dummy cartridges (maximum load) with wire latch closure and wire lead seals at each of the two closure lids.

3. Performance Oriented Packaging (POP) Tests:

a. DROP - Box was dropped from a height of 1.2 meters (48 inches) in five different orientations on a flat steel plate reinforced by a hard concrete surface. The orientations were as follows:

bottom (lid)
top (lid)
side (long)
end (short side)
bottom corner-hinge end (worse case)

b. LOOSE CARGO VIBRATION - Vibration tests were omitted at this time due to previous vibration testing conducted on the M621 container at the time of development (see test report "TECOM PROJECT NUMBER 1-ES-400-621 & APG REPORT NO. APG-MT-5742) on file at Engineering Support Directorate, SMCAR-ESK, HQ, AMCCOM, Rock Island Arsenal, Rock Island, IL.

c. STACK TEST - A stack test was conducted to a height of 10 feet - 0 inches.

4. Results - The container passed the required POP tests. The minor damage which occurred during corner drop testing was minor and would not adversely effect the performance of the container in any way. The container is considered safe for international transportation in accordance with POP regulations.

5. Reference Material:

a. United Nations "Transportation of Dangerous Goods" 6th Edition

b. Federal Register Part II, 21 December 1991.

INTERIM TEST REPORT

VALIDATION ENGINEERING DIVISION
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL
SAVANNA, ILLINOIS 61074-9639

1. TEST TITLE: M621 25MM Plastic Container Performance Oriented Packaging (POP) Test

2. TEST NUMBER: DODPOPHM/AYA/Tk93004

3. DATES OF TEST: 20 Jan 1993

4. TEST ENGINEER: Jason B. Solberg

5. TEST OBSERVER(S): William Meyer USADACS SMCAC-DEV

6. TEST(S) CONDUCTED:

   a. Stacking test.

   b. Vibration test.

   c. Drop test.

7. TEST OBSERVATION(S):

   a. During the stacking test, two M621 25mm containers were subjected to 730 pounds compression to the upright standing container to simulate an equivalent 16-foot-high stacking height. One container was subjected to 1,960 pounds to its side to attempt to simulate a 'worst case' orientation. The 1,960-pound load was also used to simulate a 16-foot-high stacking height. No damage was noted during the stacking test.

   b. During the vibration test, three M621 containers were vibrated for 1 hour each at 250 revolutions per minute (rpm) to provide a .063-inch gap under the containers. Each container was oriented with a different face against the vibration table. No damage was noted during the vibration test.

   c. Five containers were then drop tested at 0 degrees Fahrenheit oriented to impact the top, bottom, wide side, narrow side, and a corner of the containers from a height of 3.9 feet. Only the corner drop showed some damage. This damage occurred to three out of eight hinge attachment points. One of the damaged attachment points failed completely, and two of the points had partial cracks. Damage did not functionally effect the container lid, nor did it cause any damage to the lid's seal.

8. TEST CONCLUSION(S): As tested, the M621 25mm container passed POP tests. The damage which occurred during the corner drop test was not enough to adversely affect the performance of the container.

APPLICABLE NSNs - M621 Plastic Container

1305-01-286-5183-A940
1305-01-105-4095-A967
1305-01-092-0428-A974
1305-01-094-1025-A975
1305-01-092-0429-A976

SPECIAL PACKAGING INSTRUCTIONS (AMCCOM Suppl 1 to AR 700-15)			1. NATIONAL STOCK NO **
2. SPI NO ADPLB001		3. REVISION A	4. DATE 92159
5. PART OR DRAWING NO PN 1201 3870		6. FSCM AMCCOM 59678	7. MIL-P-116 CLEANING, DRYING NA
8. QUP UNIT OF ISSUE 30/Ea.	9. ICQ --	10. UNIT PACK WEIGHT (APPROX LB) 50 lbs.	11. UNIT PACK CUBE (EXT) (APPROX FT)	12. UNIT PACK SIZE (EXT) (APPROX FT) 1.19 x 1.15 x .48

13. LEVEL A UNIT PACK REQUIREMENTS

MIL-P-116 METHOD --	STEPS	DRAWING OR SPECIFICATION	STYLE	TYPE	GRADE	CLASS	SIZE (INSIDE DIMENSIONS IN INCHES) AND REMARKS
Container	1	12013870					13.75" x 13.25" x 5.25"
Load Seal	2	8794342					2 required
Closure	3	PPP-T-97					1" wide (as reqd)

14a. LEVEL B: METHOD _____ [--] NOT APPLICABLE [ ] SEE NOTE _____

14b. LEVEL C: METHOD _____ [X] NOT APPLICABLE [ ] SEE NOTE _____

15. INTERMEDIATE PACKAGING AND PACKING WILL BE IN ACCORDANCE WITH SPECIFICATION MIL-STD-2073-1 OR AS OTHERWISE SPECIFIED HEREON.

16. MARKING WILL BE IN ACCORDANCE WITH MIL-STD-129.

17. SPECIFICATIONS, STANDARDS, AND DRAWINGS LISTED HEREON OF THE ISSUE IN EFFECT ON DATE OF INVITATION FOR BID FORM A PART OF THIS DATA SHEET. THE APPLICABLE GENERAL AND REFERENCED REQUIREMENTS OF SPECIFICATION MIL-STD-2073-1 FORM PART OF THIS DATA SHEET. UNLESS OTHERWISE SPECIFIED, MATERIALS WILL BE MINIMUM SIZE IAW MIL-STD-2073-1.

18. TOLERANCES SHALL BE IN ACCORDANCE WITH MATERIAL SPECIFICATIONS. QUALITY PERFORMANCE AND TESTING REQUIREMENTS SHALL BE IN CONFORMANCE WITH MIL-P-116 OR AS OTHERWISE SPECIFIED HEREON.

19. NOTES/DRAWINGS

A. This SPI is designed to utilize one container (M621-plastic) without overpack for shipment of less than full pallet crate and applies to any NSN that is cataloged as being packed in this container.

B. The light box marking requirements in appendix G, paragraph 50.2 (b) of MIL-STD-129 applies to this package. Mark each container "LIGHT BOX" in orange.

C. The United Nations Markings, Performance Oriented Packaging are as follows:

1. UN Performance Oriented Packaging (POP) Markings are:

(un) 4H2/Y30/S/*
USA/DOD/AYA

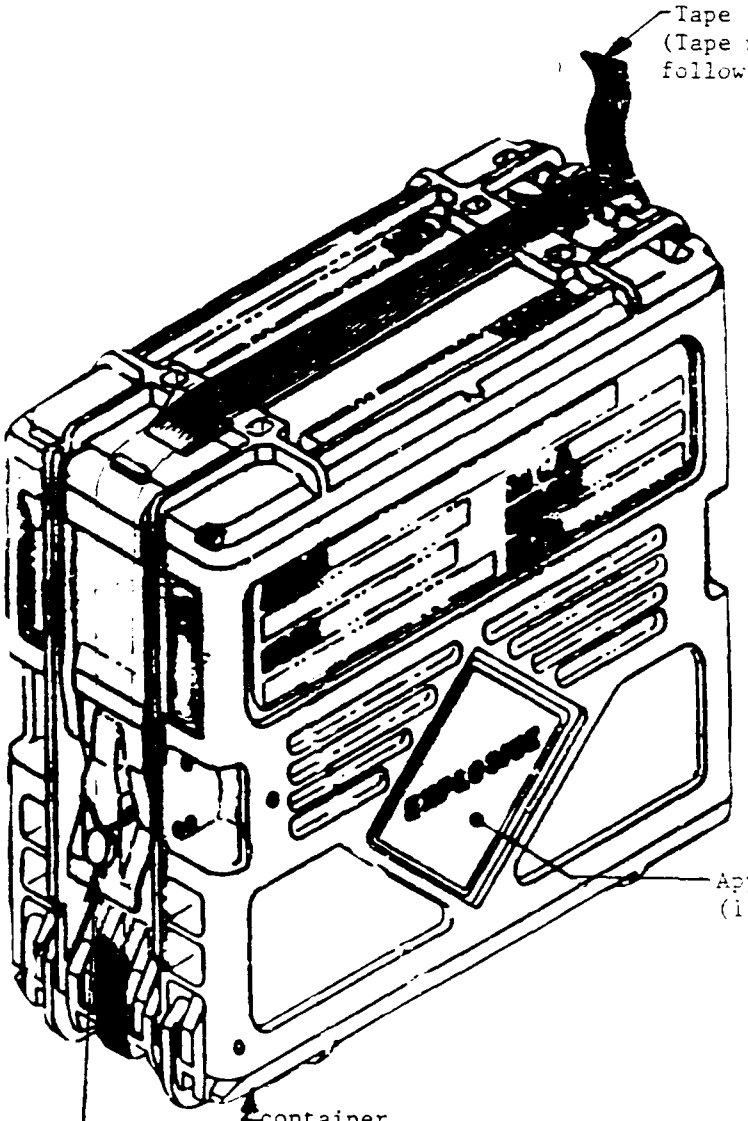
* Enter the last 2 digits of the year packed. EG., 86.

20. ITEM IDENTIFICATION CODE(S) -	21. ITEM SIZE 8.63" x 1.5" Dia.	22. ITEM WT 11.1 lbs	23. APPROVED Darrell Richards
24. NOMENCLATURE M621 Plastic 25MM Container		25. PAGE 1 OF 2 PAGES	

SPECIAL PACKAGING INSTRUCTION (Continued)

NATIONAL STOCK NUMBER	SPI NUMBER (PN)
**	ADPLB001

** Use any applicable NSN that applys to the M621 container



NOMENCLATURE	PAGE NUMBER	NUMBER OF PAGES
Container, M621, Plastic for 30-25MM CEg's	2	2