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19. ABSTRACT (Continue on reverse if necessary and identify by block number)
This report covers the annual retest of POP Requirements of wirebound box, part No. 5581378 used as shipping container for small caliber ammunition. The exterior wirebound box contains four M19A1 metal inner containers containing 7.62mm small arms ammunition of different quantities and weights. The tests were conducted using the highest gross weight to insure the integrity of the shipping container.

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DODPOPHMTR/AYD 93-028

ANNUAL RETEST OF

PERFORMANCE ORIENTED PACKAGING REQUIREMENTS

OF

WIREBOUND BOX FOR SMALL CALIBER AMMUNITION

PACKED IN M19A1 METAL CONTAINER

FOR

PACKING GROUP II
SOLID HAZARDOUS MATERIALS

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FINAL

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INTRODUCTION

The Department of Transportation (DOT) per CFR 49, Parts 100-179, dated 1 October 91, requires that hazardous materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests. Furthermore, these tests are to be repeated on an annual basis for items in production.

Wirebound box, part number 5581378, is being used as shipping container for 7.62 small caliber ammunition. This box contains four(4) M19A1 metal containers containing 7.62mm small arms ammunition. This box contains a maximum gross weight of 41 kg.

The tests were conducted in accordance with the referenced sections of CFR 49 and are valid only when approved ammunition is packed in the M19A1 container for the DOD(see Table). This wirebound box was tested previously and certified for 41 Kg of gross weight of Packing Group II Item. This report represents the annual retest of the wirebound box for M19A1 for POP certification.

TESTS PERFORMED

1. Drop Test

Section 178.603 of CFR 49 specifies that one box each should be used for each drop orientation. Five (5) boxes were used for five different orientations. Containers were tested to Packing Group II requirements.

One box each was dropped from a height of 1.2 meters (3.9 ft.) in the following orientations: flat on bottom, flat on top, flat on long-side, flat on short-side and on a corner.

2. Vibration Test

Three (3) boxes were placed on the vibrating platform and vibrated for a duration of one hour. The boxes were unrestrained except horizontally to prevent them from falling off of the platform. The peak-to-peak displacement was one inch and the frequency was 4.6 Hertz/sec. This frequency was sufficient enough to allow the package to become completely airborne, enabling a 1/16 inch (.16 cm) thick piece of strapping material to be slid underneath the package during testing.

3. Stacking Test

Section 178.606 of CFR 49 requires that the minimum height of the stack including the test sample must be 3.0 meters (10 ft). Three test samples are required.

A 3.0 meter stack height of samples is equivalent to 1,239 lbs. (563 kg) of stack weight. Three different test samples were each subjected to a stack weight of 1,239 lbs for a period of 24 hours. The samples were then inspected and examined for any damage or distortion.

PASS/FAIL (DOT CRITERIA)

A package for explosives is considered to successfully pass the drop tests if for each sample tested, no rupture of the packaging occurs.

A packaging passes the vibration test if there is no rupture or leakage from any of the packages.

A test sample passes the stacking test when no test sample leaks. No test sample may show any deterioration which could adveresly affect transportation safety or any distortion likely to reduce its strength or cause instability in stacks of packages.

TEST RESULTS

1. Drop Test - Result: pass, no spillage.

The first four drops did not do any damage on any of the four boxes. On the edge drop, one of the long side of the box cracked but there was no spillage.

2. Vibration Test - Result: pass, no spillage or damage.

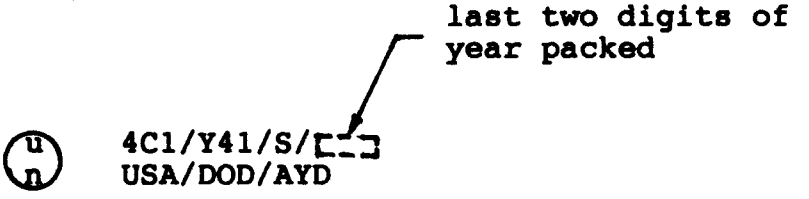
All three boxes were removed from the platform after one hour vibration. Each of the boxes was turned on its side and inspected for any damage and leakage. The packages were all tightly intact and showed no evidence of deterioration.

3. Stacking Test - Result: pass, no evidence of distortion.

The stacking test was performed with the use of a forklift to apply a dead load of 1,239 lbs on top of each of the three boxes. Each of the boxes adequately supported the applied load. No evidence of box distortion was noted.

REMARK

Based on the successful POP testing outlined in this report, the following POP symbol:



shall be applied to containers manufactured in accordance with drawing 5581378 when used to package the NSN's listed in Tables I and II for ammunition packed from October 1993 through October 1994.

REFERENCE MATERIAL

1. Federal Register, "49 CFR Part 107, 1 Oct 91

2. Federal Specification PPP-B-585

TEST DATA

DATA

Container(Outer):

Type: Box, wirebound
Part No.: 5581378
UN Code : 4C1
Spec No.: PPP-B-585
Material: Wood
Capacity: 21.0 liters
Dimensions
Inside: 39.29 cm x 28.26 cm x 18.73 cm
(15 1/4+7/32 in x 11+1/8 in x 7 1/4+1/8 in)

Outside: 44.13 cm x 29.21 cm x 20.64 cm
(17 3/8 in x 11 1/2 in x 8 1/8 in)

Weight(empty) : 2.0 kg (4.3 lbs)

Container(inner):

Type : Box
Model No : M19A1
Spec No: : MIL-B3060
Material : Metal
Capacity : 3.8 liters
Dimensions:

Inside : 25.68 cm x 8.76 cm x 16.66 cm
(10 5/64+1/32 in x 3 7/16+1/64 in x 6 15/32+3/32 in)

Outside : 27.94 cm x 9.68 cm x 18.42 cm)
(11 in max x 3 13/16 in max x 7 1/4 in max)

Weight : 1.8 kg (4.0 lbs)
Closure(Method/Closure}: Hinged Lid

PRODUCTS :

Identification No.	:	See Tables
UN Packing Group	:	II
Physical State	:	Solid
Amount per Container	:	See Tables

TEST MATERIALS:

Name	:	Simulated Weights and Sand
Physical State	:	Solid
Size	:	2 in dia x 7/8 in thick or granulated sand
Quantity	:	24 lead tablets or 70 lbs
Dunnage	:	Polyethylene foam per PPP-C-1752
Gross Weight	:	90 lbs(41 kg)

TABLE I

Line No.	DODIC or NALC	NSN	HM Item	Type	HC	UN No.	LBS/W.BX	KG/W.BX
1	A111	1305-00-166-6371	7.62mm	Blank	1.4S	0014	59	27
2	A124	00-301-1679	7.62mm	Tracer	1.4S	0012	77	35
3	A129	00-580-0131	7.62mm	HPT	1.4S	0012	79	36
4	A111	00-752-8087	7.62mm	Blank	1.4S	0014	59	27
5	A151	00-889-2169	7.62mm	O.F. Ball	1.4S	0012	77	35
6	131	00-892-2150	7.62mm	Ball TR	1.4S	0012	77	35
7	A143	00-892-2330	7.62mm	Ball	1.4S	0012	77	35
8	A146	00-892-2335	7.62mm	Tracer	1.4S	0012	77	35
9	A147	00-892-4242	7.62mm	Frang B	1.4S	0012	70	32
10	A136	00-926-9436	7.62mm	Ball	1.4S	0012	79	36
11	A111	01-181-1750	7.62mm	Blank	1.4S	None	59	27

TABLE II

Line No.	DODIC or NALC	NSN	HM Item	Type	HC	UN No.	LBS/W.BX	KG/W.BX
1	A201	1305-00-926-3933	Cal .30	AP	1.4S	0012	90	41
2	A205	00-126-3856	Cal .30	AP	1.4S	0012	92	42
3	A207	00-028-6186	Cal .30	AP	1.4S	0012	88	40
4	A209	00-028-6159	Cal .30	APT	1.4S	0012	88	40
5	A209	00-028-6514	Cal .30	APT	1.4S	0012	92	42
6	A209	00-028-6516	Cal .30	APT	1.4S	0012	90	41
7	A209	00-028-6517	Cal .30	AP	1.4S	0012	90	41
8	A217	00-028-6537	Cal ,30	Ball	1.4s	0012	88	40
9	A218	00-028-6542	Cal .30	B/TR	1.4S	0012	88	40
10	A231	00-143-7151	Cal .30	TR	1.4S	0012	86	39
11	A236	00-028-6551	Cal .30	TR	1.4S	0012	88	40
12	241	00-344-2389	Cal .30	B/TR	1.4S	0012	90	41
13	A247	00-546-5830	Cal .30	Ball	1.4S	0012	87	40
14	A201	00-063-5747	Cal .30	AP	1.4S	0012	77	35
15	A205	00-301-1664	Cal .30	AP	1.4S	0012	74	34
16	A216	00-301-1665	Cal .30	Ball	1.4S	0012	74	34
17	A230	00-935-9298	Cal .30	TR	1.4S	0012	87	40
18	A222	00-602-2193	Cal .30	Blnk	1.4S	0014	59	27
19	A224	00-542-0420	Cal .30	Blnk	1.4S	0014	64	29
20	A225	00-028-6558	Cal .30	Blnk	1.4S	0014	62	28