Qualification tests were performed to determine whether the in-service CNU-287/E Shipping and Storage Container could be utilized to contain properly dunnaged solid type hazardous materials weighing up to a gross weight of 589 kg (1,300 pounds). The tests were conducted in accordance with Performance Oriented Packaging (POP) requirements specified by the United Nations Recommendations on the Transportation of Dangerous Goods, ST/SG/AC.10/1 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178. The container has not conformed to the POP performance requirements; i.e., the container did not successfully retain its contents throughout the specified tests.
PERFORMANCE ORIENTED PACKAGING TESTING
OF CONTAINER, SHIPPING AND STORAGE, CNU-287/E
FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS

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Performing Activity:
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23 March 1992

FINAL

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Sponsoring Organization:
Commander, Naval Air Support Center (AIR-41822B)
Department of the Navy
Washington, DC 20361-8050

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INTRODUCTION

This Performance Oriented Packaging (POP) test was performed to ascertain whether the CNU-287/E Shipping and Storage Container (Packing Group II) meets the requirements specified by the United Nations Recommendation on the Transportation of Dangerous Goods Document, ST/SG/AC.10/1, Revision 6, Chapters 4 and 9 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 1 October 1991. The container's contents consisted of four steel pipe sections each weighing 93 kg (205 pounds). Gross weight of the container was 589 kg (1,300 pounds).

Due to unavailability only one container was used for testing. This is less than the number required by the regulations. Approval for this deviation has been granted by the Under Secretary of Defense, Memorandum for the Joint Logistics Commanders dated 22 February 1990.

TESTS PERFORMED

1. Base Level Vibration Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.608. The container was placed on the repetitive shock platform. The container was restrained during vibration in all but the vertical direction. The frequency of the platform was increased until the container left the platform 1/16 of an inch at some instant during each cycle. Test time was 1 hour.

2. Stacking Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.606. The container was subjected to a force applied to its top surface equivalent to the total weight of identical packages stacked to a minimum height of 3 meters (including the test container). A weight of 3,537 (7,800 pounds) was stacked on the test container. The test was performed for 24 hours. The weight was then removed and the container examined.

3. Drop Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.603. Five drops were to be performed from a height of 1.2 meters (4 feet), impacting the following surfaces:

a. Flat bottom
b. Flat top
c. Flat on long side
d. Flat on short side
e. One corner
PASS/FAIL

1. Base Level Vibration Test

The criteria for passing the base level vibration test is outlined in Title 49 CFR, Sec. 178.608(c): No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

2. Stacking Test

The criteria for passing the stacking test is outlined in Title 49 CFR, Sec. 178.606(d): No test sample may show any deterioration which could adversely affect transport safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

3. Drop Test

The criteria for passing the drop test is outlined in Title 49 CFR, Sec. 178.603(f): A package is considered to successfully pass the drop tests if for each sample tested, no rupture occurs which would permit spillage of loose explosive substances or articles from the outer packaging.

TEST RESULTS

1. Base Level Vibration Test

Satisfactory.

2. Stacking Test

Satisfactory.

3. Drop Test

Unsatisfactory.

DISCUSSION

1. Base Level Vibration Test

Immediately after the vibration test was completed, each container was removed from the platform, turned on its side and inspected. No unfavorable distortion or deterioration was observed.
2. Stacking Test

Each container was inspected after the 24-hour period was over. No unfavorable distortion or deterioration was observed.

3. Drop Test

After each drop, the containers were inspected. During the flat drop on the long side, the lid of the container opened, allowing the dummy shapes to strike into each other. After the test, the shapes were lying on the ground. Further testing was aborted.

REFERENCE MATERIAL


C. Bureau of Explosives Tariff No. BOE 6000K Hazardous Materials Regulations of the Department of Transportation by Air, Rail, Highway, Water including Specifications for Shipping Containers.

DISTRIBUTION LIST

Defense Technical Information Center (2 copies)
ATTN: DTIC/FDA
Bldg. 5, Cameron Station
Alexandria, VA 22304-6145

Defense General Supply Center (1 copy)
ATTN: DDRV-TMPA, D. Gray
Richmond, VA 23219

Commander, Naval Air Systems Command
ATTN: AIR-41811F
Washington, DC 20361

Commander, Naval Air Systems Command
ATTN: AIR-41821D
Washington, DC 20361
# TEST DATA SHEET

## DATA SHEET:

<table>
<thead>
<tr>
<th>Container:</th>
<th>CNU-287/E Shipping and Storage Container</th>
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<tbody>
<tr>
<td>Type:</td>
<td>6HA2</td>
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<tr>
<td>Specification Number:</td>
<td>PN639AS2750</td>
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<tr>
<td>Container P/N or NSN:</td>
<td>NSN 8E 8140-01-072-3593</td>
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<td>Material:</td>
<td>Plastic Receptacle</td>
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<tr>
<td>Gross Weight:</td>
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<td>Dimensions:</td>
<td>136.0&quot; x 35.38&quot; W x 18.63&quot; H</td>
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<td>Closure (Method/Type):</td>
<td>Removable Lid</td>
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<td>Tare Weight:</td>
<td>218.2 kg (480 pounds)</td>
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## PRODUCT:

| Name: | See table |
| NSN(s): | See table |
| United Nations Number: | See table |
| United Nations Packing Group: | II |
| Physical State (Solid, Liquid, or Gas): | Solid |
| Vapor Pressure (Liquids Only): | N/A |
| Consistency/Viscosity: | N/A |
| Amount Per Container: | 4 |
| Net Weight: | See table |

## TEST PRODUCT:

<p>| Name: | SIDEWINDER, AIM-9G/H/L/M |
| Physical State: | Solid |
| Consistency: | N/A |
| Density/Specific Gravity: | N/A |
| Test Pressure (Liquids Only): | N/A |
| Amount Per Container: | N/A |
| Net Weight: | 372.7 kg (820 pounds) |</p>
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