

AD-A237 875



ION PAGE

Form Approved

OMB No 0704-0188

Age. For order response, including the time for reviewing instructions, obtaining existing data sources, collection of information, send comments regarding this burden estimate or any other aspect of this Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503

1. REPORT DATE 06/19/91		3. REPORT TYPE AND DATES COVERED POP Test (05/91)	
4. TITLE AND SUBTITLE Performance Oriented Packaging Testing of Container, Shipping and Storage, Mk 129 Mod 0 for Packing Group II Solid Hazardous Materials		5. FUNDING NUMBERS	
6. AUTHOR(S) James M. Dwyer		8. PERFORMING ORGANIZATION REPORT NUMBER DODPOPHM/USA/DOD/ NADTR91013	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Weapons Station Earle Test and Evaluation Division (Code 403) Colts Neck, NJ 07722-5000		10. SPONSORING / MONITORING AGENCY REPORT NUMBER Same as above	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Naval Air Systems Command Washington, DC 20361-0001		11. SUPPLEMENTARY NOTES N/A	
12a. DISTRIBUTION / AVAILABILITY STATEMENT DISTRIBUTION STATEMENT A Approved for public release; Distribution Unlimited		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) Qualification tests were performed to determine whether the in-service Mk 129 Mod 0 Shipping and Storage Container could be utilized to contain properly dunnaged solid type hazardous materials weighing up to a gross weight of 34.9 kg (77 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 and the Department of Transportation's Title 49 CFR and the Final Rulings published in the Federal Register, Vol. 55 on 21 Dec 90. The container has conformed to the POP performance requirements; i.e., the container successfully retained its contents throughout the specified tests.			
14. SUBJECT TERMS POP Test of Mk 129 Mod 0 Shipping and Storage Container		15. NUMBER OF PAGES 5	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED		16. PRICE CODE	
18. SECURITY CLASSIFICATION OF THIS PAGE UL		19. SECURITY CLASSIFICATION OF ABSTRACT UL	
20. LIMITATION OF ABSTRACT UL			

GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to **stay within the lines to meet optical scanning requirements.**

Block 1. Agency Use Only (Leave Blank)

Block 2. Report Date. Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

Block 3. Type of Report and Dates Covered. State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

Block 4. Title and Subtitle. A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

Block 5. Funding Numbers. To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

C - Contract	PR - Project
G - Grant	TA - Task
PE - Program Element	WU - Work Unit Accession No.

Block 6. Author(s). Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

Block 7. Performing Organization Name(s) and Address(es). Self-explanatory.

Block 8. Performing Organization Report Number. Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es). Self-explanatory.

Block 10. Sponsoring/Monitoring Agency Report Number. (If known)

Block 11. Supplementary Notes. Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of ..., To be published in When a report is revised, include a statement whether the new report supersedes or supplements the older report.

Block 12a. Distribution/Availability Statement.

Denote public availability or limitation. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR)

DOD - See DoDD 5230.24, "Distribution Statements on Technical Documents."

DOE - See authorities

NASA - See Handbook NHB 2200.2.

NTIS - Leave blank.

Block 12b. Distribution Code.

DOD - DOD - Leave blank

DOE - DOE - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports

NASA - NASA - Leave blank

NTIS - NTIS - Leave blank.

Block 13. Abstract. Include a brief (Maximum 200 words) factual summary of the most significant information contained in the report.

Block 14. Subject Terms. Keywords or phrases identifying major subjects in the report.

Block 15. Number of Pages. Enter the total number of pages.

Block 16. Price Code. Enter appropriate price code (NTIS only).

Blocks 17. - 19. Security Classifications. Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

Block 20. Limitation of Abstract. This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

DODPOPHM/USA/DOD/NADTR91013

**PERFORMANCE ORIENTED PACKAGING TESTING
OF
CONTAINER, SHIPPING AND STORAGE, MK 129 MOD 0
FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS**

Author:
James M. Dwyer
Mechanical Engineering Technician

Performing Activity:
Naval Weapons Station Earle
Colts Neck, New Jersey 07722-5000

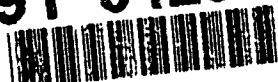
19 June 1991

FINAL

DISTRIBUTION UNLIMITED

Sponsoring Organization:
Naval Air Systems Command
Washington, DC 20361-0001

91 7 05 219

91-04260


INTRODUCTION

The Mk 129 Mod 0 Shipping and Storage Container tested, contained a simulated load of 23 pounds of sand representing the worst case of loading. Overall weight of the container was 77 pounds. This Performance Oriented Packaging (POP) test was performed to ascertain whether this standard container (Packing Group II) would meet the requirements as specified by the United Nations Recommendation on the Transportation of Dangerous Goods Document, ST/SG/AC.10/1, Revision 6, Chapters 4 and 9. A base level vibration test was also conducted in accordance with the final rulings specified in the Department of Transportation's Performance Oriented Packaging Standards in the Federal Register Volume 55.

The objectives of these tests were to minimize the risk of personnel or environmental exposure to the hazards associated with the contents in the advent of a transportation or handling accident.

TESTS PERFORMED

1. Base Level Vibration Test

This test was performed in accordance with paragraph 178.608 of the Performance Oriented Packaging Standards, Final Ruling, published in the Federal Register, Vol. 55, No. 246, December 21, 1990. Three sample containers were placed on the repetitive shock platform. The containers were 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 at a frequency of 3.5 Hz.

2. Stacking Test

This test was performed in accordance with ST/SG/AC.10/1, chapter 9, paragraph 9.7.6. Three containers were used for this test. Each container was subjected to a force applied to its top surface equivalent to the total weight of identical packages stacked to a height of 3 meters (including the test sample). A weight of 770 pounds was stacked on each sample container. The test was performed for 24 hours. After the allowed time, the weight was removed and the containers examined.

3. Drop Test

This test was performed in accordance with ST/SG/AC.10/1, chapter 9, paragraph 9.7.3. Five containers were used throughout the test. The drops were 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

All tests were performed at an ambient temperature of $+70 \pm 20$ °F.

PASS/FAIL (UN CRITERIA)

1. Base Level Vibration Test (HM-181 CRITERIA)

The criteria for passing the base level vibration test is outlined in paragraph 178.608 of the Title 49 CFR Final Ruling and states the following: "immediately following the period of vibration, each package shall be removed from the platform, turned on its side and observed for any evidence of leakage. Rupture or leakage from any of the packages constitutes failure of the test."

2. Stacking Test (UN CRITERIA)

The criteria for passing the drop test is outlined in paragraph 9.7.6.3 of ST/SG/AC.10/1 and states the following: "... no test sample should leak. No test sample should show any deterioration which could adversely affect transport safety or any distortion liable to reduce its strength or cause instability in stacks of packages."

3. Drop Test (UN CRITERIA)

The criteria for passing the drop test is outlined in paragraph 9.7.3.5 of ST/SG/AC.10/1 and states the following: "Where a packaging for solids undergoes a drop test and its upper face strikes the target, the test sample passes the test if the entire contents are retained by an inner packaging or inner receptacle; e.g., a plastic bag, even if the closure is no longer sift-proof. A slight discharge from the closure(s) upon impact should not be considered to be a failure of the packaging provided that no further leakage occurs."

TEST RESULTS

1. Base Level Vibration Test

Satisfactory.

2. Stacking Test

Satisfactory.

3. Drop Test

Satisfactory.

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 observed for any evidence of leakage. There was no leakage to the containers as a result of this test.

2. Stacking Test

Each container was visibly checked after the 24-hour period was over. There was no leakage, distortion, or deterioration to any of the containers as a result of this test.

3. Drop Test

After each drop, the containers were inspected for any damage which would be a cause for rejection. Final inspection indicated damage was minimal with only minor denting noted. The containers remained intact and functional upon completion of the tests.

REFERENCE MATERIAL

A. United Nation's "Recommendation on the Transportation of Dangerous Goods," ST/SG/AC.10/1, Revision 6

B. Title 49 CFR 107, et al., Performance Oriented Packaging Standard; Changes to Classification, Hazard Communication, Packaging and Handling Requirements Based on UN Standards and Agency Initiative; Final Rule, Federal Register, Vol. 55, No. 246 of December 21, 1990.

DISTRIBUTION LIST

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

Headquarters, Military Traffic Management Command (2 copies)
ATTN: MT-SS, James Gibson
5611 Columbia Pike
Falls Church, VA 22041-5050

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

TEST DATA SHEET

DATA SHEET:	
Container: Mk 129 Mod 0 Shipping and Storage Container	
Type: 4B	Container P/N or NSN: NSN 8140-00-563-0204
Specification Number:	Material: Cast/folded aluminum
Gross Weight: 34.92 kg (77 pounds)	Dimensions: 11" H x 11" W x 29" L
Closure (Method/Type): Removable cover	Tare Weight: 8.16 kg (18 pounds)
Additional Description: Also as part of test product 23 pounds of sand was used	
PRODUCT: See table	
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 At 50 °C: N/A At 55 °C: N/A	
Consistency/Viscosity: N/A	Density/Specific Gravity: N/A
Amount Per Container: 4	Flash Point: N/A
Net Weight: See table	
TEST PRODUCT:	
Name: Sand	Physical State: Solid
Consistency: N/A	
Density/Specific Gravity: N/A	
Test Pressure (Liquids Only): N/A	
Amount Per Container: N/A	Net Weight: 17.2 kg (38 pounds)

TABLE 1
Mk 129 Mod 0 Shipping and Storage Container

NALC	NSN	Type	Packing Drawing	UN Code	UN Number	#/ Cntr	Weight (lb)
V590	1336-01-080-3049	Target Detecting Device, Fuze, DSU-21/A	LD 269014	1.1D	0408	4	71.5
V590	1336-01-269-1166	Target Detecting Device, Fuze, DSU-21/B	LD 269014	1.1D	0408	4	71.5

MK 129 MOD 0
SHIPPING AND STORAGE CONTAINER
POP MARKING

UN 4B/Y34/S/*/USA/DOD/NAD**

***** YEAR LAST PACKED OR MANUFACTURED**