

# REPORT DOCUMENTATION PAGE

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1b RESTRICTIVE MARKINGS

2a SECURITY CLASSIFICATION AUTHORITY

3 DISTRIBUTION / AVAILABILITY OF REPORT

2b. DECLASSIFICATION / DOWNGRADING SCHEDULE

PERFORMING ORGANIZATION REPORT NUMBER(S)

DOD POP HMT/AYD 89-005

5 MONITORING ORGANIZATION REPORT NUMBER(S)

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SMCAR-AEP

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ADDRESS (City, State, and ZIP Code)

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Performance Oriented Packaging Testing of Bulk Propellant in New Fiber Drum

12. PERSONAL AUTHOR(S)

NAJAFI, NEZAM

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Performance Oriented Packaging, POP, 21 Gal  
Fiber Drum Container

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

This report contains the testing and test results performed on  
bulk propellant in New Fiber Drum.

## DISTRIBUTION STATEMENT A

Approved for public release  
Distribution Unlimited

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NAJAFI, NEZAM

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SECURITY CLASSIFICATION OF THIS PAGE

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I. REPORT NUMBER: DODPOHMTTR/AYD89-005

II. TITLE: PERFORMANCE ORIENTED PACKAGING TESTING OF BULK PROPELLANT  
IN 21 GAL FIBER DRUM CONTAINER

AUTHOR: NEZAM NAJAFI

PERFORMING ACTIVITY: ARDEC

ADDRESS: Department of the Army  
Armament Research, Development and Engineering Center  
HQ, US Army Armament, Munitions and Chemical Command  
Picatinny Arsenal, New Jersey 07806-5000

DATE: 19 July 1989

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1. DATA SHEET

CONTAINER:

TYPE: FIBER DRUM

UN CODE: 1G

NOMENCLATURE: DRUM, FIBER (FOR BULK PROPELLANT)

SPECIFICATION: N/A

DRAWING NUMBER: 9342857

MATERIAL: CONVOLUTED FIBER WALLS/STEEL CHIMES

CAPACITY: 21 GALLONS

DIMENSION: 16.380 INCHES - OD X 27.63 INCHES - LENGTH

PRODUCT:

NAME: BULK PROPELLANT (M30)

SPECIFICATION NUMBER: MIL-STD-652D

STOCK NUMBER: 1376010539359

PHYSICAL STATE: SOLID

## 2. BACKGROUND

→ This report contains the testing and test results performed on M30 bulk cannon propellant packed in a 21-gallon fiber drum. The testing was performed exclusively using live M30 bulk propellant packed into a fiber drum for Performance Oriented Packaging (POP) certification. Live propellant was used in lieu of inert propellant or sand, etc, since this live propellant would more closely represent the actual materials to be packed in this drum. For example, this propellant is representative of all bulk cannon propellant in accordance with MIL-STD-652. Therefore, based upon these tests, it is intended to qualify all bulk cannon propellant per MIL-STD-652 by analogy in this new 21-gallon fiber drum. Tests were performed in accordance with Performance Oriented Packaging test regulations. ←

## 3. TEST

Six fiber drums packed with M30 bulk propellant were dropped from 4 feet (1.2 meters) in accordance with UN requirements. Drums were dropped on a 5-inch solid steel plate reinforced by 33 inches of concrete at two different orientations. The first 3 packed fiber drums were dropped once each from 4 feet (1.2 meters) at 45 degrees on the bottom chime at ambient. Then, the 3 remaining fiber drums were dropped once each from 4 feet (1.2 meters) at 45 degrees on the bottom chime at ambient.

## 4. RESULTS

The fiber drums passed all tests. None of the contents of the drums were discharged or spilled. They are considered safe for international transportation in accordance with Performance Oriented Packaging Regulations.

REFERENCE MATERIAL: United Nations "Transport of Dangerous Goods", Fourth Edition