MILITARY STANDARD

RADIOGRAPHIC TESTING REQUIREMENTS FOR

SOLID PROPELLANTS

To all holders of MIL-STD-1166:

1. The following pages of MIL-STD-1166 have been revised and supersede the pages listed:

New Page	Date	Superseded Page	Date
i	14 January 1983	i	3 May 1963
ii	3 May 1963	(Reprinted without change)	
1	14 January 1983	1	3 May 1963
2	14 January 1983	2	3 May 1963

2. Retain this notice and insert before Table of Contents.

3. Holders of MIL-STD-1166 will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the Military Standard is completely revised or cancelled.

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DEPARTMENT OF DEFENSE

WASHINGTON, DC 20360

Radiographic Testing Requirements for Solid Propellants

MIL-STD-1166(MI)

1. This Military Standard is approved for use by the US Army Missile Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Missile Command, ATTN: DRSMI-RSDS, Redstone Arsenal, AL 35898.

Supersedes page i of 3 May 1963

FOREWORD

This standard contains the requirements for radiographic testing of solid propellants. It has been developed as a separate entity for ease in future integration with other radiographic testing methods.

Radiographic testing is a major management area deserving separate standardization coverage. Such a standard should contain all radiographic testing methods identified under materials and process topics, e.g. metals, graphite, weldments, etc. Only in this manner can redundancy be prevented and the utility of radiographic methods facilitated.

1. SCOPE

1.1 Scope. This standard covers the requirements for quality level and testing sensitivity in radiographic inspection of solid propellants to determine the presence of unacceptable voids and other discontinuities.

2. REFERENCED DOCUMENTS.

2.1 Issues of documents. (Not applicable)

2.2 Other publications. The following documents form a part of this standard to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Welding Society

AWS A2.2 Nondestructive Testing Symbols

(Applications for copies should be addressed to the American Welding Society, 2501 NW 7th Street, Miami, FL 33125)

National Bureau of Standards Handbook-National Committee on Radiation Protection

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402)

3. DEFINITIONS

3.1 The following definitions are applicable to this standard.

3.1.1 Radiographic inspection. The use of x-rays and nuclear radiation to detect discontinuities in material and present their images on a recording medium.

3.1.2 Recording medium. Film or a detector which converts radiation into visible images or onto any other recording media whereby the internal integrity of the object through which the radiation has passed may be deduced. The recording medium may be permanent, having a visible image retention characteristic of three years or more, or it may be an image examined visually without permanent recording, as required by the applicable detail specification.

3.1.3 Radiograph. A permanent visible image on film produced by penetrating radiation passing through the material being tested.

3.1.4 Penetrameter. A device used as a standard of reference in determining satisfactory radiographic quality.

3.1.5 Source. A machine or radioactive material which emits penetrating radiation.

3.1.6 Source - film distance. The distance from the center of the radiation producing area of the source to the film.

3.1.7 Film density. A quantitative measure of photographic blackening obtained from inspection of the radiographic image with a suitable densitometer. It is defined by the equation:

$$D = \log_{10} \frac{Io}{I}$$

D = Film Density
Io = Incident light intensity
I = Transmitted light intensity

4. GENERAL REQUIREMENTS

4.1 General. The radiographic method of testing is used for determining the presence of unacceptable voids and discontinuities in solid propellants. Radiographic inspection specified herein is intended to apply to all items requiring radiographic inspection in compliance with applicable specifications, drawings, contracts, purchase orders, and shall include the use of X-ray, gamma-ray and neutron sources.

4.1.1 Quantity for inspection. The number of items and areas to be radiographed shall be in accordance with the applicable detail specification. Radiographic location markings shall be incorporated on all applicable drawings, and shall be in accordance with AWS A2.2 or the detailed radiographic procedure approved by the procuring activity.