

INCH - POUND

MIL-C-47246A (MI)

26 November 1990

SUPERSEDING

MIL-C-47246 (MI)

26 JULY 1974

MILITARY SPECIFICATION COATINGS, ABLATIVE, APPLICATION OF

This specification is approved for use by the U.S. Army Missile Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements for the application of ablative coating primer and ablative coating.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Missile Command, ATTN: AMSMI-RD-SE-TD-ST, Redstone Arsenal, AL 35898-5270 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

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unlimited.

FSC 8030

Approved for public release; distribution is

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SPECIFICATIONS

MILITARY

- MIL-P-47215 - Primer, Ablative Resistant Coating
- MIL-C-47244 - Coating, Ablative Resistant

(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS

- ASTM D 740 - Standard Specification for Methyl Ethyl Ketone
- ASTM D 2240 - Standard Test Method for Rubber Property-Durometer Hardness

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Equipment.

3.1.1 Fabrication facility. The fabrication facility for application of the ablative coating shall provide the following:

- a. Protection of the cleaned surfaces and the coating materials from dust, dirt and water.

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b. Normal ambient conditions consisting of an atmospheric pressure between 28 and 32 inches of mercury, a temperature between +15° and +35° Celsius (C), and a relative humidity not greater than 95 percent.

3.1.2 Balance. The balance shall be capable of maintaining accuracy within 1 percent over its entire range. The balance shall be calibrated and certified to the prescribed accuracy not less than once every 90 days.

3.1.3 Heat source. Any suitable heat source such as a heat gun, oven, hot plate, or application tooling containing heating elements may be used to heat the material.

3.1.4 Miscellaneous equipment. Miscellaneous equipment used in the mixing, stirring, application, or other handling of the coating materials shall be made from materials having no detrimental effect on the coating and visibly free of dust or other contamination. Use of metal spatulas, containers, and mixing equipment shall be suitable, but use of porous and absorbent materials such as paper and wood shall be avoided.

3.1.5 Tooling. The tooling, such as edge and grid strips, metal masks, and form templates, shall be capable of producing finished parts conforming to the requirements of this specification and related engineering drawings. The form templates shall be inspected for correct dimensions not less than once every 90 days.

3.2 Materials.

3.2.1 Direct.

3.2.1.1 Ablative coating. Ablative coating shall be as specified on the engineering drawing and shall conform to MIL-C-47244.

3.2.1.2 Ablative coating primer. Primer used with the ablative coating shall be as specified on the engineering drawing and shall conform to MIL-P-47215.

3.2.2 Indirect.

3.2.2.1 Abrasive paper. Abrasive paper shall be silicon carbide, garnet, or aluminum oxide, 80 to 180 grit.

3.2.2.2 Wire brushes. Wire brushes shall have bristles made from corrosion-resistant steel.

3.2.2.3 Cheesecloth. Cheesecloth shall be clean, white and lint-free.

3.2.2.4 Masking tape. Masking tape shall be pressure-sensitive.

3.2.2.5 Mold release. The mold release shall be a nonblocking material for free release of fixtures. Silicone or other transferable materials shall not be used.

3.2.2.6 Cleaning solvent. Cleaning solvent shall be methyl ethyl ketone conforming to ASTM D 740 or equal.

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3.3 Procedure.

3.3.1 Solvent-cleaning. The area to be coated (as specified on the engineering drawing) shall be solvent-cleaned as follows:

- a. Remove grease, oil, or other contamination by wiping with cheesecloth (see 3.2.2.3) saturated with cleaning solvent (see 3.2.2.6).
- b. Wipe dry with clean, dry cheesecloth.
- c. Allow to air-dry for not less than 15 minutes. Repeat 3.3.1a and 3.3.1b until all visible evidence of grease, oil, or other contamination is removed.

Warning: All safety regulations regarding the handling of flammable and toxic materials shall be observed.

3.3.2 Application of mold release. A thin, uniform coat of mold release (see 3.2.2.5) shall be applied over those areas of the tooling fixtures which will be in contact with the ablative coating.

3.3.3 Masking. Areas to remain uncoated shall be masked with metal or plastic masks or tape (see 3.2.2.4) as required.

3.3.4 Abrasion. All surfaces to be coated shall be abraded with abrasive paper (see 3.2.2.1), wire brush (see 3.2.2.2), or non-ferrous abrasive blasting until clean, bare metal is exposed and recleaned in accordance with 3.3.1.

3.3.5 Application of coating primer. Coating primer (see 3.2.1.2) shall be applied in a single coat by brushing, spraying, or wiping. The coating primer shall be allowed to dry for not less than 30 minutes prior to application of the ablative coating.

3.3.6 Application of ablative coating. The ablative coating (see 3.2.1.1) shall be applied as follows:

- a. Install edge and grid strips as necessary to control the coating depth, using double-backed adhesive tape or clamps.
- b. The two-component coating material (see MIL-C-47244) shall be mixed in accordance with the manufacturer's instructions.

NOTE: The application life of the mixed coating is as specified by the manufacturer. If the temperature is lowered, the application life will be lengthened.

- c. Apply the coating over the primed areas, as specified on the applicable engineering drawing, by troweling. Work the coating into small areas, exercising care to prevent voids and air pockets and to maintain the coating thickness compatible with the depth control strips installed and the form templates used. Heat may be applied to the

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coating material or tooling (see 3.1.3) to facilitate material flow and improve finish smoothness but care shall be taken to avoid excessive reduction of material application life (see 6.1). Open any existing air pockets and fill voids with additional coating material.

d. At temperatures ranging from +16° to +38°C, expose the coating for not less than 8 hours of curing.

e. Upon completion of the curing cycle, remove all edge and grid strips and miscellaneous tooling. The uncoated areas exposed by the removal of the grid strips shall then be processed in accordance with 3.3.1 through 3.3.5, 3.3.6c, and 3.3.6d.

3.3.7 Rework. Defective areas may be reworked by cleaning the area and applying additional primer and coating as required. Eroded areas may be reworked as follows:

a. Remove any charred ablative coating with abrasive paper or wire brush and solvent-clean as specified in 3.3.1.

b. Apply additional coating (see 3.2.1.1) as required.

c. Cure as specified in 3.3.6d.

Note: Use coating primer (see 3.2.1.2) whenever the erosion extends to the metal structure.

3.3.8 Coating hardness. The hardness of the coating after curing as specified in 3.3.6d, shall be not less than 45 Shore D.

3.4 Workmanship. The coating shall conform to the requirements of the engineering drawing. The coating shall be continuous, uniform, free from foreign material, and free of excessive pits or blisters. Due to coating material viscosity, the entrapment of small air bubbles during application cannot be avoided, but pits or bubbles with a dimension in excess of 0.19 inch shall be reworked as specified in 3.3.7.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection

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system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Inspection records. Suitable inspection records substantiating that requirements of 3.1, 3.2, 3.3, and 3.4 have been complied with shall be maintained and shall be available to the procuring activity.

4.3 Acceptance testing. Each coated part shall be subjected to the visual inspection and coating hardness test specified herein. Failure to meet the test requirements shall be cause for part rejection.

4.3.1 Visual inspection. Unless otherwise specified by the procuring activity, each coated part shall be visually inspected 100 percent and shall conform to the requirements of 3.4. The thickness of coating may be verified by demonstrating compatibility with the depth control established by grid and edge strips and form templates used in the application techniques of 3.3.6.

4.3.2 Coating hardness test. The coating hardness shall be determined in accordance with ASTM D 2240, and shall be as specified in 3.3.8.

5. PACKAGING.

This section is not applicable to this specification.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This specification is intended to be used to establish the requirements for the application of ablative coating primer and ablative coating.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).

6.3 Metriation. Metric equivalents in accordance with FED-STD-376 are acceptable for use in this specification.

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6.4 Subject term (keyword) listing.

Covering, protective
Primer
Shielding material

6.5 Application life reduction. Curing of the ablative coating material is rapidly accelerated by heat, with full cure occurring in approximately 30 minutes at +66°C. Therefore, the use of heat in processing should be conditioned by the detrimental effects of reduced application life of the heated material.

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:
Army-MI

Preparing Activity:
Army-MI

Civilian Coordinating Activity:
GSA-FSS

Project 8030-A130

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

1 RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-C-47246A (MI)

2. DOCUMENT DATE (YYMMDD)

26 November 1990

3. DOCUMENT TITLE

COATINGS, ABLATIVE, APPLICATION OF

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

7. DATE SUBMITTED

(1) Commercial

(YYMMDD)

(2) AUTOVON

(If applicable)

8. PREPARING ACTIVITY

a. NAME

COMMANDER

U.S. ARMY MISSILE COMMAND

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(2) AUTOVON

746-6980

c. ADDRESS (Include Zip Code)

ATTN: AMSMI-RD-SE-TD-ST

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