

INCH-POUND
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SUPERSEDING
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MILITARY SPECIFICATION

COATING COMPOUND, SYNTHETIC RUBBER, FOR EXPOSED STEEL SURFACES

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 covers synthetic rubber coating compound used for protecting exposed steel surfaces from corrosion.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

FSC 8030

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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).

SPECIFICATIONS

FEDERAL

PPP-C-96	-	Cans, Metal, 28 Gage and Lighter
PPP-P-704	-	Pails, Metal: Shipping, Steel, 1 Through 12 Gallons

MILITARY

DOD-E-699D	-	Enamel, Exterior, Deck, Gray (Formula No. 20) (Metric)
MIL-P-116	-	Preservation, Methods of

STANDARDS

FEDERAL

FED-STD-601	-	Rubber: Sampling and Testing
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MILITARY

MIL-STD-129	-	Marking for Shipment and Storage
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(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.2 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 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.4.

3.2 Material. The coating material shall be a polymerized chloroprene compound dispersed in a solvent suitable for application by brush to either horizontal or vertical steel surfaces. A primer shall be used as part of the coating system to obtain the required adhesion (see 3.3).

3.3 Physical properties.

3.3.1 Viscosity. The viscosity of the coating compound shall be in accordance with 4.6.1 and shall be not greater than 25% of the first article viscosity value.

3.3.2 Solids. The solids content of the coating compound shall be in accordance with 4.6.2 and shall be not less than 25% of the total. It also shall be not greater than 10% of that of the first article (see 4.4).

3.3.3 Tensile strength. The tensile strength of the coating compound shall be in accordance with 4.6.3 and shall be not less than 600 pounds per square inch (psi).

3.3.4 Ultimate elongation. The ultimate elongation of the coating compound shall be in accordance with 4.6.3 and shall be not less than 250%.

3.3.5 Initial adhesion. The initial adhesion of the coating compound shall be in accordance with 4.6.4.2 and shall be not greater than 3 inches when subjected to stripping for 3 minutes with a 10 pound (lb). load.

3.3.6 Adhesion after aging. The adhesion after oven aging shall be in accordance with 4.6.4.3 and shall be not greater than 3 inches when subjected to stripping for 3 minutes with an 8 lb. load.

3.3.7 Adhesion after water immersion. The adhesion after water immersion shall be in accordance with 4.6.4.4 and shall be not greater than 3 inches when subjected to stripping for 3 minutes with a 10 lb. load.

3.3.8 Color. Unless otherwise specified in the contract or order (see 6.2), the coating material shall be of a gray color conforming to formulate 20 of DOD-E-699D (see 4.6.4.5).

3.4 Workmanship. The coating shall be produced in a manner to insure a product which shall be uniform, in conformance with this specification, and free of dirt, foreign material or other contaminants (see 4.7).

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 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 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in 4.6.

4.4 First article inspection. When specified in the contract or order (see 6.2) a first article sample shall be subjected to first article inspection. The quantity shall be as specified in the contract or order. First article inspection shall consist of all examinations and tests specified herein. Subsequent units shall not be considered for acceptance until Government approval of the first article sample has been obtained. The first article shall have been manufactured using the same production processes, procedures, and equipment which will be used in fulfilling the contract.

4.5 Quality conformance inspection. Quality conformance inspections for acceptance of material shall consist of selected examinations and tests as shown in table I. Failure to pass any of the inspections specified herein constitutes rejection of the lot.

TABLE I. Quality conformance inspection.

INSPECTION	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Viscosity	3.3.1	4.6.1
Solids	3.3.2	4.6.2
Tensile strength	3.3.3	4.6.3
Ultimate elongation	3.3.4	4.6.3
Adhesion, initial	3.3.5	4.6.4.2
Color	3.8	4.6.4.5

4.5.1 Lot. A lot shall consist of all the material submitted for acceptance at the same time, which has been produced by one manufacturer in one continuous operation without change in materials or processes, but shall consist of a quantity not greater than 2500 lbs.

4.5.2 Sampling. Sampling to verify conformance to section 3 requirements shall be performed in accordance with table II. Each container in a lot shall be considered as a unit of product.

TABLE II. Sampling plan.

LOT SIZE	SAMPLE SIZE
1 to 13	100 %
14 to 150	13
151 to 280	20
281 to 500	29
501 to 1200	34
1201 to 3200	42
* In all cases: Acceptance number is ZERO Rejection number is One	

4.6 Test procedures.

4.6.1 Viscosity. Viscosity of the coating compound shall be determined with either a Brookfield or a McMichael viscosimeter, or equivalent. The test shall be run in duplicate using a new sample of material for each determination. Both the sample of coating compound and the apparatus shall be conditioned at the testing temperature of $27^{\circ} \pm 5^{\circ}\text{C}$ for 4 hours before testing (see 3.3.1).

4.6.2 Solids content.

4.6.2.1 Procedure. A covered low-form weighing bottle shall be weighed, and approximately 10 grams of thoroughly mixed coating compound shall be poured into

the tared container, covered and weighed. After removing the cover, the container shall be placed in an oven at $100^{\circ} \pm 1.1^{\circ}\text{C}$ until the sample reaches constant weight. The covered container with the sample shall be cooled in a desiccator before weighing. The test shall be run in duplicate (see 3.3.2).

4.6.2.2 Calculation. The percentage of total solids (see 3.3.2) shall be calculated as follows:

$$\text{Total solids, percent} = \frac{\text{weight of residue}}{\text{weight of sample}} \times 100$$

4.6.3 Tensile strength and ultimate elongation.

4.6.3.1 Specimen preparation. Specimens shall be prepared by casting or applying multiple coats of the material approximately 3 inches wide by 8 inches long on silicone treated paper or other suitable release material. Film shall be allowed to dry at $27^{\circ} \pm 5^{\circ}\text{C}$ for 24 ± 0.25 hours, then stripped from the backing and placed in a circulating air oven at $70^{\circ} \pm 1.1^{\circ}\text{C}$ for 24 ± 0.25 hours. The final thickness of the strips shall be 0.020 to 0.035 inch thick. After removing the strips from the oven, condition the specimens at least 16 hours at $27^{\circ} \pm 5^{\circ}\text{C}$ before testing (see 3.3.3).

4.6.3.2 Testing. Tensile strength and ultimate elongation of the strips shall be determined using methods 4111 and 4121 of FED-STD-601 and die III specimens (see 3.3.3).

4.6.4 Adhesion.

4.6.4.1 Specimen preparation. The adhesion specimens shall be prepared as follows: Clean the surfaces of nine steel panels, 3 by 6 by 0.16 inches either by grinding, wire brushing or sandblasting and then with solvent. Cut nine strips of cotton canvas, 2 by 6 inches. Apply two brush coats of the material over the steel panels (primed as necessary) and 5 to 6 inches of the canvas strips. Allow each coat to air dry 0.50 hour. Apply a third coat of the material to the steel and to the canvas and roll the two surfaces together while wet to insure good contact between the canvas and the coating applied on the panel. After drying for one hour, apply two additional coats over the assembly allowing 0.50 hour drying between coats. Allow all assembled specimens to air cure at $27^{\circ} \pm 5^{\circ}\text{C}$ for 96 ± 0.50 hours before further treatment.

4.6.4.2 Initial adhesion. Initial adhesion tests shall be conducted on three of the specimens prepared as specified in 4.6.4.1. Just prior to testing, the specimens shall be cut through to the metal along 2 parallel lines, leaving a strip 1.00 ± 0.01 inch in width running lengthwise through the center of the specimen. The portion outside of the one-inch strip shall be removed before testing. One end of the canvas shall be separated from the metal to permit the attachment of the weight specified in 3.3.5. The steel panel shall be supported at the ends in a horizontal position. The weight shall be attached to the free end of the canvas. Amount of stripping in inches in three minutes shall be noted and the results averaged.

4.6.4.3 Adhesion after oven aging. Adhesion of three of the specimens shall be determined as specified in 4.6.4.2, after oven aging for 46 ± 0.25 hours at $90^\circ \pm 1.1^\circ\text{C}$. Allow specimens to cool to room temperature before testing adhesion (see 3.3.6).

4.6.4.4 Adhesion after immersion. Three specimens shall be immersed in distilled water at $27^\circ \pm 1.1^\circ\text{C}$ for 46 ± 0.25 hours, removed, surface dried with paper towels, and then tested as specified in 4.6.4.2 (see 3.3.7).

4.6.4.5 Color. The color shall be in accordance with examinations and tests in DOD-E-699D (see 3.3.8).

4.7 Workmanship. The coating covered by this specification shall be homogeneous and free of foreign materials. Containers shall be clean, uniformly filled, well-sealed and legibly marked (see 3.4).

4.8 Inspection of packaging. Except when commercial packaging is specified, the sampling and inspection of the preservation and interior package marking shall be in accordance with groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification shown in section 5. The inspection of marking for shipment and storage shall be in accordance with MIL-STD-129. The inspection of commercial packaging shall be as specified in the contract (see 6.2).

5. PACKAGING

5.1 Preservation, packaging and packing. Unless otherwise specified in the contract or order (see 6.2), the compound or primer may be furnished in 1 quart, 1 gallon, or 5 gallon containers. The 1 quart containers shall conform to type V, class 2 of PPP-C-96. The 1 and 5 gallon pails shall conform to type II, class 1 of PPP-P-704. If gallon cans are specified, a wire handle on a formed bridge type handle shall be affixed to the top of the containers. The size of the container shall be as specified in the contract or order (see 6.2). The compound or primer shall be prepared for shipment in a manner that will prevent damage during shipment and storage.

5.2 Marking. In addition to any special marking required by the contract, or order (see 3.5 and 6.2) interior and exterior shipping containers shall be marked in accordance with MIL-STD-129 and shall include the month and year of manufacture and the lot number. Each container of material shall be labeled giving adequate instructions for use and application of contents and safety precautions necessary.

6. NOTES

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

6.1 Intended use. The material covered by this specification is intended for use as a coating to protect exposed steel surfaces from corrosion.

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 and 2.2)
- c. When a first article sample is required (see 3.1)
- d. Color if other than specified (see 3.4)
- e. First article size required (see 4.4)
- f. Sampling plan if other than specified (see 4.5.2)
- g. Preservation, packaging and packing required (see 5.1)
- h. Container size (see 5.1)
- i. Special marking requirements (see 5.2).

6.3 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerers whether the item(s) should be a first article sample, a first production item, or a number of items to be tested as specified in 4.4. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who

wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

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

6.5 Subject term (keyword) listing.

Covering material
Deck paint
Rubberized paint

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

Review activity:
Army - MR

Project No. 8030-0626

User activities:
Army - AR, CR, ER, GL, ME