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INCH-POUND

MIL-PRF-4556F
15 December 1998
SUPERSEDING
MIL-C-4556E
14 September 1990

PERFORMANCE SPECIFICATION

COATING KIT, EPOXY, FOR INTERIOR OF STEEL FUEL TANKS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a two-component epoxy coating system for protecting interior surfaces of steel tanks used for the transportation and storage of fuels. The coating, furnished as a kit, is lead and chromate free and has a maximum volatile organic compound (VOC) content of 340 grams/liter.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 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

DEPARTMENT OF DEFENSE

MIL-T-83133 Turbine Fuels, Aviation, Kerosene Types, NATO F-34 (JP-8) and NATO F-35

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Director, U.S. Army Research Laboratory, Weapons and Materials Research Directorate, ATTN: AMSRL-WM-M, Aberdeen Proving Ground, MD 21005-5069 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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STANDARDS

FEDERAL

FED-STD-141 Paint, Varnish, Lacquer and Related Materials: Methods of Inspection, Sampling and Testing

FED-STD-313 Material Safety Data, Transportation Data And Disposal Data For Hazardous Materials Furnished To Government Activities

FED-STD-595 Colors Used In Government Procurement

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Automated Printing Service (DAPS), Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR Part 1910.1200 Preparation and Submission of Material Safety Data Sheet

(Application for copies should be addressed to the Superintendent of Documents, ATTN: New Order, P.O. Box 371954, Pittsburgh, PA 15250-7954.)

2.3 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)

ASTM D562 Consistency of Paints using the Stormer Viscometer (DoD adopted)

ASTM D1640 Drying, Curing, or Film Formation of Organic Coatings at Room Temperature (DoD adopted)

ASTM D1729 Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials (DoD adopted)

ASTM D2371 Pigment Content of Solvent-Reducible Paints (DoD adopted)

ASTM D2794 Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) (DoD adopted)

ASTM D3278 Flash Point of Liquids by Small Scale Closed-Cup Apparatus (DoD adopted)

ASTM D3335 Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy (DoD adopted)

ASTM D3359 Measuring Adhesion by Tape Test (DoD adopted)

ASTM D3960 Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings (DoD adopted)

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(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC-SP5 Surface Preparation Specification No. 5 White Metal Blast Cleaning

(Application for copies should be addressed to the Steel Structures Painting Council, 4400 Fifth Avenue, Pittsburg, PA 15213.)

2.4 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 Qualification. The coatings furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable Qualified Products List at the time set for opening of bids. Any change in the formulation of a qualified product will necessitate its requalification. The material supplied under the contract shall be identical, within manufacturing tolerance, to the product receiving qualification.

3.2 Materials. Materials used to manufacture these coatings are not limited; however, the resulting coatings shall conform to the requirements of this specification.

3.2.1 Toxic products and formulations. The material shall have no adverse effect on the health of the personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the contracting activity to the appropriate departmental medical service which will act as an advisor to the contracting agency.

3.2.2 Material safety data sheet. A material safety data sheet (MSDS) shall be prepared and submitted in acoordance with FED-STD-313 and shall meet the requirements of 29 CFR Part 1910.1200. When FED-STD-313 is at variance with the CFR, 29 CFR Part 1910.1200 shall take precedence, modify and supplement FED-STD-313. The MSDS shal1 be included with each shipment of the material covered by this specification and submitted to pertinent Government agencies as stated in FED-STD-313, appendix B.

3.2.3 Prohibited material. The lead content shall not exceed 0.06 percent of the nonvolatile content. Chromium (hexavalent) compounds shall not be used.

3.3 Color. When tested as specified in 4.3.4, the primer shall be an approximate match to color number 23594 and the topcoat shall not be darker than color number 27780 of FED-STD-595.

3.4 Composition. The coating kit shall consist of a yellow primer and a white topcoat. Each shall be furnished in two parts: Compound A, containing pigmented epoxy resins, and component B, containing the clear curing agent. Mixing four parts by volume of component A with one part by volume of component B shall produce products meeting the applicable requirements of this specification (see 6.2).

3.4.1 Pigments. The pigment portion of the primer, component A, shall consist of titanium dioxide, iron oxide yellow, and extenders. The pigment portion of the topcoat, component A, shall consist of titanium dioxide and extenders.

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3.4.1.1 Lead and chromate (hexavalent) content. When tested as specified, the lead content shall not exceed 0.06 percent by weight of the total non-volatile content and the test for hexavalent chromium shall be negative.

3.4.2 Vehicle.

3.4.2.1 Component A. Component A shall consist of epoxy resins, pigments, extenders, additives and solvents in any ratio necessary to meet the requirements of this specification.

3.4.2.2 Component B. Component B shall consist of polyamides, polyamidoamines, polyamines, and polyamine adducts in any ratio necessary to meet the requirements of this specification.

3.4.3 Solvents. The coating shall not contain any benzene, chlorinated compounds or ethylene based glycol ethers and their acetates. Solvents used shall meet the requirements of 3.2.3.

3.4.4 Volatile organic content (VOC). When tested according to 4.3.2, the volatile organic content of the mixed coating shall not exceed 340 grams/liter.

3.5 Qualitative Requirements.

3.5.1 Mixed coating. The mixed primer and topcoat shall individually conform to the quantitative requirements of table I when tested as specified in section 4.

TABLE I. Quantitative requirements.

Characteristics	Requirements Minimum	Maximum
Total pigment, percent of nonvolatile		60
Viscosity, KU		90
Flash point, °F	95	
Dry time		
Set-to-touch		5
Dry hard, hours		18

3.6 Qualitative requirements.

3.6.1 Condition in container.

3.6.1.1 Component A. When tested as specified in 4.3.10.1, component A shall be free from grit, seeds, skins, abnormal thickening, livering or other defects in a freshly opened container and shall show no more pigment settling or caking than can be easily and completely reincorporated into a smooth, uniform, homogeneous state.

3.6.1.2 Component B. When tested as specified in 4.3.10.2, component B shall be clear and free from sediment and suspended matter. It shall show no livering, curdling, gelling or skinning in a freshly opened containter.

3.6.2 Storage Stability.

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3.6.2.1 Component A. When tested as specified in 4.3.11.1, component A shall show no skinning, livering, curdling, hard dry caking or tough gummy sediment. It shall remix readily to a smooth homogeneous state and shall meet all other requirements of this specification.

3.6.2.2 Component B. When tested as specified in 4.3.11.2, a can of component B shall be clear and free from sediment and suspended matter. It shall show no livering, curdling, gelling or skinning in a freshly opened container.

3.6.3 Mixing properties. When tested as specified in 4.3.12, smooth homogeneous mixtures shall result, and shall be free from grit, seeds, skins or lumps.

3.6.4 Spraying properties. When tested as specified in 4.3.13, the coatings shall spray satisfactorily in all respects and shall show no running, sagging or streaking. The dried films shall show no dusting, mottling or color seperation and shall present a smooth finish free from any defects.

3.6.5 Brushing properties. When tested as specified in 4.3.14, the coatings shall brush easily. They shall dry to smooth, uniform films free from sags, runs and streaks.

3.6.6 Knife test. When tested as specified in 4.3.15, the coating shall adhere tightly to and not flake or crack from the metal surface. The cut shall show beveled edges and there shall be no delamination between the primer and the topcoat.

3.6.7 Pot life. When tested as specified in 4.3.16, the viscosity of each sample, 4 hours after mixing its two components, shall be 100 krebs units (KU) maximum and it shall meet all of the requirements of 3.6.4.

3.6.8 Fuel and water resistance. When tested as specified in 4.3.17, the panels, upon removal, shall show no softening or loss of adhesion. A moderate darkening of the area immersed in JP-8 fuel is acceptable. There shall be no blistering to a greater extent than three small random blisters. Blister formation within 1/4 inch of the panel edge shall be ignored.

3.6.9 Adhesion. When tested as specified in 4.3.18, both areas of each panel shall have a rating of 3B or higher. There shall be no evidence of film separation between primer and topcoat.

3.6.10 Impact resistance. When tested as specified in 4.3.19, the area showing cracking and a slight loss of adhesion shall be no greater than 15mm diameter.

3.6.11 Identification marking. In addition to the markings specified, all containers shall be legibly marked or labeled with the following (see 6.2):

CAUTION: The Surgeon General requires airline respirators to be used unless air sampling shows exposure to be below standards, then either chemical cartridge respirators or airline respirators are required. Avoid contact with skin and eyes. Use with adequate ventilation. Keep containers tightly closed. For other safety recommendations refer to the material safety data sheet.

4. VERIFICATION

4.1 Verification alternatives. Alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost effective sampling procedures may be proposed by the contractor. Acceptable alternative verification approaches shall be identified in the contract.

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4.2 Conformance inspection. Conformance inspection for acceptance of material shall be conducted on a recurring basis and include the examinations and tests listed below.

4.2.1 Responsibility for compliance. All items shall meet all requirements of section 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 assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2.2 Material Safety Data Sheet. A material safety data sheet not prepared in accordance with the FED-STD-313 and 29 CFR Part 1910.1200 shall be cause for rejection. The contractor shall pack a copy of the MSDS with each shipment of material.

4.2.3 Sampling, inspection, and testing. Unless otherwise specified, sampling inspection and testing shall be performed in accordance with FED-STD-141, section 1000.

4.2.4 Classification of tests. Testing under this specification shall be for the following:

a. Qualification (see 4.2.4.1 and 6.4)
b. Acceptance (see 4.2.4.2)
c. Quality conformance (see 4.2.4.3)

4.2.4.1 Qualification testing. Qualification testing shall be conducted by the qualifying activity (see 6.4). Qualification inspection shall consist of tests for all requirements specified in section 3. The results of each test shall be compared with the applicable requirements in section 3. Failure to conform to any requirement shall be counted as a defect, and the paint represented by the sample tested shall not be approved for inclusion in the Qualified Products List (QPL) under this specification.

4.2.4.2 Acceptance testing. Acceptance testing of individual lots shall consist of viscosity, fineness of grind, VOC, drying time, condition in container, mixing properties, spraying properties, percent total pigment and flash points as specified in section 3.

4.2.4.3 Quality conformance testing. When approved by the cognizant activity, acceptance of lots for use as a component of an end item shall be based on conformance with specified requirements for the following characteristics: condition in container, color, drying time, pot life, adhesion, and fuel and water resistance as specified in section 3.

4.3 Test methods.

4.3.1 Test conditions. The testing conditions shall be in accordance with FED-STD-141, section 9 or in accordance with the appropriate ASTM method except as otherwise specified herein. For referee testing, all test specimens shall be prepared and tested at a temperature of 20 to 32°C (68 to 90°F) and a relative humidity of 45-65 percent. Failure of any test result to fall within the ranges specified in section 3 as applicable, shall constitute failure of the applicable test.

4.3.2 Test procedures. The following tests (see table II) shall be conducted in accordance with FED-STD-141, ASTM, or as specified herein. The right is reserved

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to make additional tests deemed necessary to determine that the coating meets the requirments of this specification.

TABLE II. Index.

Test	Test Paragraph	Requirement Paragraph	ASTM Method	FED-STD-141 Method
Color	4.3.4	3.3	D1729	-
Pigment content	-	3.5.1	D2371	-
Pigment analysis	-	3.4.1	D2371	-
Lead content	4.3.5	3.4.1.1	D3335	-
Chromium content	4.3.6	3.4.1.1	-	-
Volatile organic content	-	3.4.4	D3960	-
Viscosity	4.3.7	3.5.1	D562	-
Flash point	4.3.8	3.5.1	D3278	-
Drying time	4.3.9	3.5.1	D1640	-
Condition in container	4.3.10	3.6.1	-	-
Storage stability	4.3.11	3.6.2	-	3011, 4261
Mixing properties	4.3.12	3.6.3	-	3011, 4261
Spraying properties	4.3.13	3.6.4	-	4331
Brushing properties	4.3.14	3.6.5	-	4321
Knife test	4.3.15	3.6.6	-	6304
Pot life	4.3.16	3.6.7	-	-
Fuel and water resistance	4.3.17	3.6.8	-	-
Adhesion	4.3.18	3.6.9	-	-
Impact resistance	4.3.19	3.6.10	D2794	-
Solvents	4.3.20	3.4.3	-	-

4.3.3 Test panels. Except as otherwise specified, test panels shall be cold rolled steel, SAE 1010 low carbon, 3 by 6 inches, 0.032 inch thick.[1] They shall be abrasive blasted with fresh sand to a smooth uniform appearance in compliance with SSPC-SP5. Sand blast only the side that has been abrasive ground by the manufacturer. Sand blast prior to testing only and store in a desiccator.

4.3.4 Color. Mix the components of the primer and the topcoat as specified in 4.3.7 and determine the color in accordance with ASTM D1729 by applying the coatings on black and white hiding charts[2] to full hiding. Allow to air dry for 24 hours and evaluate for compliance with 3.3.

4.3.5 Lead content. Determine the percent of lead in the primer and the topcoat by any of the following methods. Mix as specified in 4.3.7 and evaluate for compliance with 3.4.1.1.

4.3.5.1 Determination of lead by atomic absorption spectroscopy. Determine percent of lead on the mixed samples in accordance with ASTM D3335.

[1] Q Panel Company, Cleveland, OH, S-36 or equivalent.
[2] Leneta Company, Ho-Ho-Kus, NJ, Form 2A or equivalent.

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4.3.5.2 Determination of lead by X-ray emission spectroscopy analysis (alternate method).

4.3.5.2.1 Test panel preparation. Using 100 grams of a known lead free primer and topcoat, prepare standard aliquots containing 0.00, 0.03, 0.06, and 0.09 percent lead metal, based on total nonvolatile paint, by adding calculated amounts of lead naphthenate of a known lead content. Thoroughly mix the aliquots to incorporate the lead and draw down the standards and coatings to be tested on duplicate black and white charts[2] using a 0.0020 inch (0.004 inch gap clearance) film applicator. Air dry for 48 hours under dust free conditions. Cut the drawdowns into a suitable size and shape to fit the sample holder of the X-ray fluorescence spectrometer.

4.3.5.2.2 X-ray analytical procedure. Lead content shall be determined using an X-ray fluorescence spectrometer capable of determining lead content at a minimum level of 0.03 percent by weight of the total nonvolatile paint. The parameters of angle, crystal, pulse height selection, counting time, collimator, X-ray tube, voltage and amperage, shall be established for a wave length dispersive fluorescence spectrometer according to conventional X-ray analytical procedures. The analytical line Pb L-Alpha or Pb L-Beta shall be used. To calibrate, place the known standards in the X-ray unit and measure the count rates of lead, lead background and the Compton scattered background from the X-ray tube. The ratio R, of the net lead intensity and Compton scattered background is calculated as follows:

$$R = \frac{I_{pb} - \frac{(I_{pb\ \text{background I}} + I_{pb\ \text{background II}})}{2}}{I_{\text{compton line}}}$$

Where I = gross intensity, and the background is taken on each side of the Pb line. Establish a lead calibration curve using these results. Determine the lead content of the test coatings using the above procedure and calibration curve. When using an energy dispersive fluorescence spectrometer, it shall be set up in accordance with the manufacturer's manual.

4.3.6 Chromium (hexavalent) content.

a. Reagents:
   (1) 25 percent aqueous KOH.

b. Procedure:
   (1) Add 5 ml of 25 percent aqueous KOH to 1/2 gm of the extracted pigment contained in a 15 ml centrifuge tube.
   (2) Agitate by shaking the tube for a few minutes then centrifuge.
   (3) The supernatant liquid should be colorless. A yellow color indicates the presence of chromate.

4.3.7 Viscosity. Mix four parts, by volume, of component A with one part, by volume, of the appropriate component B for both primer and topcoat. Allow each mixture to stand for thirty minutes in sealed containers and measure viscosity according to ASTM D562. Evaluate for compliance with table I. Make sure that components of the primer are not mixed with those of the topcoat.

4.3.8 Flash point. Mix samples as specified in 4.3.7 and determine flash points according to ASTM D3278. Check for compliance with table I.

4.3.9 Drying time. Mix samples as specified in 4.3.7 and prepare drawdowns using 0.004 inch (0.008 inch gap clearance) film applicator on a glass panel and air dry

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for the specified time. Check the drying time in accordance with ASTM D1640 and evaluate for compliance with table I.

4.3.10 Condition in container.

4.3.10.1 Component A. For the primer and the topcoat, determine package condition of component A in accordance with FED-STD-141, method 3011 and observe for compliance with 3.6.1.1. Determine pigment settled by proceeding as specified in FED-STD-141, method 3011, but do not stir. Reseal and then agitate the cans for 3 minutes on a paint shaker[3]. On reexamination of the contents, the disclosure of any gel bodies or undispersed pigment indicates unsatisfactory settling properties.

4.3.10.2 Component B. For the primer and the topcoat, determine package condition of component B in accordance with FED-STD-141, method 4261 and observe for compliance with 3.6.1.2.

4.3.11 Storage stability.

4.3.11.1 Component A. Allow full quart cans of component A, primer and topcoat, to stand undisturbed for 12 months at 21 to 32°C (70 to 90°F) and then examine the contents. Evaluate the pigment settling as specified in 4.3.10.1 except agitate the can for 5 minutes on the paint shaker prior to reexamination. Determine viscosity and other applicable tests for compliance with 3.6.2.1.

4.3.11.2 Component B. Allow full quart cans of component B, primer and topcoat, to stand undisturbed for 12 months at 21 to 32°C (70 to 90°F). At the end of this period, examine the contents in accordance with FED-STD-141, method 4261 for compliance with 3.6.2.2.

4.3.12 Mixing properties. Thoroughly mix 4 parts, by volume, of each component A with one part, by volume, of the appropriate component B. Place 150 ml of each mixed material in separate glass jars. Do not agitate or disturb for 4 hours. At the end of this period, examine with a spatula for compliance with 3.6.3.

4.3.13 Spraying properties. Mix the components of the primer and the topcoat as specified in 4.3.7 and spray each separately on steel panels to dry film thickness of 0.003 to 0.004 inches according to FED-STD-141, method 4331. Allow to air dry for 24 hours and observe for compliance with 3.6.4.

4.3.14 Brushing properties. Mix the components of the primer and the topcoat as specified in 4.3.7 and brush each separately on metal panels according to FED-STD-141, method 4321. Allow to air dry for 24 hours and observe for compliance with 3.6.5.

4.3.15 Knife test. Panels used for this test shall be solvent cleaned and sand blasted with fresh sand to a smooth uniform appearance in accordance with SSPC-SP5. Spray the primer, mixed as specified in 4.3.7, on two 3 by 6 inch steel panels (sand blasted side), to a dry film thickness of 0.003 to 0.004 inches. Air dry the panels for 24 hours and spray them with the topcoat, mixed as specified in 4.3.7 to a dry film thickness of 0.003 to 0.004 inches. Total film thickness of the panels should be 0.006 to 0.008 inches. Air dry the panels for 7 days and perform the knife test according to FED-STD-141, method 6304 and observe for compliance with 3.6.6.

4.3.16 Pot life. Mix the components of the primer and topcoat as specified in 4.3.7 and allow each to stand undisturbed for 4 hours. Measure viscosity according to ASTM D562 and evaluate for compliance with 3.6.7.

[3] An apparatus of this type, powered by a 1/4 HP motor, operates at a rate of 1350 shakes per minute and is manufactured by Red Devil Tools, Irvington, NJ.

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4.3.17 Fuel and water resistance. Panels used for this test shall be solvent cleaned and sand blasted with fresh sand to a smooth uniform appearance in accordance with SSPC-SP5. Spray the primer, mixed as specified in 4.3.7, on three 3 by 6 inch steel panels (sand blasted side), to a dry film thickness of 0.003 to 0.004 inches. Air dry the panels for 24 hours and spray them with the topcoat, mixed as specified in 4.3.7, to a dry film thickness of 0.003 to 0.004 inches. Total film thickness of the panels should be 0.006 to 0.008 inches. Coat the backs and edges of these panels in a similar manner. Air dry the panels for 7 days and immerse them in wide mouth glass jars, liter size, each containing 350 ml of JP-8 fuel conforming to MIL-T-83133 (Jet A-1 may be used in place of JP-8), and 350 ml of distilled water. Seal the jars and place in a water bath maintained at 51 to 53°C (124 to 127°F) for 21 days. At the end of the test period, remove and examine the panels for compliance with 3.6.8.

4.3.18 Adhesion. Use the panels that have been subjected to the fuel and water resistance test specified in 4.3.17. Allow to air dry for 24 hours and evaluate for adhesion according to ASTM D3359, method B. Test areas of each panel that were exposed to JP-8 fuel and to distilled water. Observe for compliance with 3.6.9.

4.3.19 Impact resistance. Prepare panels as specified in 4.3.15 and test according to ASTM D2794 using the 0.625 inch hemispherical head steel punch. Panels shall be subjected to a reverse impact of 10 inch-pounds, with the coating under test facing away from the punch. Observe for compliance with 3.6.10.

4.3.20 Solvents. The manufacturer shall certify that the coatings contain no benzene, chlorinated compounds or ethylene based glycol ethers and their acetates. Nonconformance to 3.4.3 constitutes failure of this requirement.

4.4 Identification marking. Verify the presence of the required markings and caution notice.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point’s packaging activity within the Military Department or Defense Agency, or within the Military Department’s System Command. Packaging data retrieval is available from the managing Military Department’s or Defense Agency’s automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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 two component epoxy system is military unique to the soldier in combat (in the field) for refurbishing of combat stored fuels and lubricants. It is intended for use on sand blasted interior surfaces of mobile and stationary mild steel cargo tanks and auxiliary handling equipment used for the storage and transportaion of military fuels and oils without contributing to contamination of the cargo. It consists of a two-component yellow primer and a two-component white topcoat, each having a maximun VOC of not more than 2.8 pounds per gallon (340 grams/liter) at application.

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6.2 Acquisition requirements. Acquisition documents should 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 2.2.1 and 2.3).
c. Kit size (or sizes) required (see 3.4 and 6.3).
d. Specify identification markings and caution notice (see 3.6.11).
e. Packaging requirements (see 5.1).

6.3 Basis of purchase. The coating covered by this specification should be purchased by volume, the unit being a kit comprised of a primer and a topcoat, each consisting of one quart of 57.75 cubic inches (component B) and one gallon of 2331 cubic inches (component A).

6.4 Qualification. With respect to products requiring qualification, awards will be made only for such products which are, at the time set for opening of bids, qualified for inclusion in the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of contractor is called to this requirement and manufacturers are urged to arrange to have the products that they propose to offer to the Government be tested for qualification in order to be eligible for contracts or product orders covered by this specification. The activity responsible for Qualified Products List is the U.S. Army Research Laboratory, Weapons and Materials Research Directorate, ATTN: AMSRL-WM-M, Aberdeen Proving Ground, MD 21005-5069.

6.5 Coating application. To insure adequate cure, the temperature of the substrate being coated should be above 10°C (50°F). The pot life of a mixed sample will be reduced by higher temperatures and increased by lower temperatures. To avoid solvent entrapment and a subsequent loss of resistance properties, there should be a minimum of 18 hours drying time between the primer and the topcoat. A total film thickness should be 0.006 to 0.008 inches.

6.6 Subject term (key word) listing.

Chromate
Lead
Primer
Topcoat
VOC

CONCLUDING MATERIAL

Custodians:
Army - MR
Navy - YD2

Preparing activity:
Army - MR

(Project 8010-0929)

Review activities:
Army - MI
Navy - AS, CG, SH
GSA/FSS - 10FTE

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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.

I RECOMMEND A CHANGE:	**1. DOCUMENT NUMBER** MIL-PRF-4556F	**2. DOCUMENT DATE (YYMMDD)** 981215

3. DOCUMENT TITLE COATING KIT, EPOXY, FOR INTERIOR OF STEEL FUEL TANKS

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) (1) Commercial (2) AUTOVON *(if applicable)*	**7. DATE SUBMITTED** (YYMMDD)

8. PREPARING ACTIVITY

a. NAME U.S. ARMY RESEARCH LABORATORY	b. TELEPHONE *Include Area Code)* (1) Commercial 410-306-0725 (2) AUTOVON 458-0725
c. ADDRESS *(Include Zip Code)* WEAPONS & MATERIALS RESEARCH DIRECTORATE ATTN: AMSRL-WM-M ABERDEEN PROVING GROUND, MD 21005-5069	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** DEFENSE QUALITY AND STANDARDIZATION OFFICE 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22401-3466 Telephone (703) 756-2340 AUTOVON 289-2340