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SUPERSEDING
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PERFORMANCE SPECIFICATION

PRIMER COATINGS: EPOXY, WATERBORNE

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

1. SCOPE

1.1 Scope. This specification covers the requirements for two types (see 1.2.1) and three classes (see 1.2.2) of waterborne, epoxy primer coatings that are corrosion inhibiting, chemical and solvent resistant, and a maximum volatile organic compound (VOC) content of 340 grams per liter (g/L) (2.8 pounds per gallon (lb./gal)).

1.2 Classification. The primer coatings are of the following types and classes:

1.2.1 Type. The primer coatings consist of the following types:

Type I - Standard pigments
Type II - Low infrared reflective pigments

1.2.2 Class. The primer coatings consist of the following classes:

Class C1 - Barium chromate based corrosion inhibitors
Class C2 - Strontium chromate based corrosion inhibitors
Class N - Non-chromate based corrosion inhibitors.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Air Warfare Center Aircraft Division Code 414100 B120-3, Highway 547, Lakehurst, NJ 08733-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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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 cited 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 cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards 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

QQ-A-250/4	-	Aluminum Alloy 2024, Plate and Sheet
QQ-A-250/5	-	Aluminum Alloy Alclad 2024, Plate and Sheet

DEPARTMENT OF DEFENSE

MIL-A-8625	-	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-PRF-23699	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number 0-156
MIL-R-81294	-	Remover, Paint, Epoxy, Polysulfide and Polyurethane Systems
MIL-C-81706	-	Chemical Conversion Materials For Coating Aluminum and Aluminum Alloys
MIL-PRF-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Metric, NATO Code Number H-537
MIL-PRF-85285	-	Coating: Polyurethane, High-Solids

STANDARDS

FEDERAL

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

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FED-STD-595 - Colors Used in Government Procurement

(Unless otherwise indicated, copies of specifications and standards are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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-B117 - Salt Spray (Fog) Testing, Standard Test Method for (DoD Adopted)
ASTM-D1193 - Reagent Water, Standard Specification for (DoD Adopted)
ASTM-D1200 - Viscosity by Ford Viscosity Cup, Standard Test Method for (DoD Adopted)
ASTM-D1210 - Fineness Of Dispersion Of Pigment-Vehicle Systems By Hegman-Type Gage, Standard Test Method for (DoD Adopted)
ASTM-D1296 - Volatile Solvents and Diluents, Standard Test Method for (DoD Adopted)
ASTM-D1475 - Density of Paint, Varnish, Lacquer and Related Products, Standard Test Method for (DoD Adopted)
ASTM-D1640 - Drying, Curing or Film Formation of Organic Coatings at Room Temperature, Standard Test Method for (DoD Adopted)
ASTM-D1849 - Package Stability of Paint, Standard Test Method for (DoD Adopted)
ASTM-D2243 - Freeze-Thaw Resistance of Water Borne Paints, Standard Test Method for (DoD Adopted)
ASTM-D2369 - Volatile Content of Coatings, Standard Test Method for (DoD Adopted)
ASTM-D2794 - Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) , Standard Test Method for (DoD Adopted)
ASTM-D2803 - Filiform Corrosion Resistance of Organic Coatings on Metal, Standard Test Method for (DoD Adopted)
ASTM-D3335 - Low Concentrations of Lead, Cadmium and Cobalt in Paint by Atomic Absorption Spectroscopy, Standard Test Method for (DoD Adopted)
ASTM-D3718 - Low Concentrations of Chromium in Paint by Atomic Absorption Spectroscopy, Standard Test Method for (DoD Adopted)
ASTM-D3792 - Water Content of Water Reducible Paints by Direct Injection Into a Gas Chromatograph, Standard Test Method for (DoD Adopted)

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ASTM-D3924 - Standard Environment for Conditioning and Testing of Paint, Varnish, Lacquer, and Related Materials, Standard Specification for (DoD Adopted)

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

(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.)

2.4 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. Primer coatings furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.2 and 6.3). Any change in the formulation of a qualified product will necessitate its requalification. The material supplied under contract shall be identical, within manufacturing tolerances to the product receiving qualification.

3.2 Material. Materials used in the manufacture of products supplied under this specification shall be of such a quality as to produce products conforming to the requirements of this specification.

3.3 Composition. Chlorinated solvents (such as methylene chloride, 1,1,1 trichloroethane and trichlorotrifluoroethane), cadmium, and cadmium compounds are prohibited from the formulation of this primer coating. The non-volatile portion shall contain not more than 0.06 percent by weight of lead metal or lead compounds. Component A shall contain the epoxy resin solution and component B shall be the curing agent. When the components are mixed in the proportions specified by the manufacturer and reduced with water conforming to ASTM-D1193, type IV, if required, a product meeting the requirements of this specification shall result.

3.3.1. Solvent content. The volatile organic compound (VOC) content of the admixed primer coating shall be not greater than 340 g/L (2.8 lb./gal) of coating, excluding water.

3.3.2 Pigment. The pigment of the primer coating may be contained in Component A or B.

3.3.2.1 Class C1. Coatings containing barium chromate as the corrosion inhibitor and other pigments, as required, shall be identified as Class C1.

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3.3.2.2 Class C2. Coatings containing strontium chromate as the corrosion inhibitor and other pigments, as required, shall be identified as Class C2.

3.3.2.3 Class N. Coatings containing non-chromium corrosion inhibitors and other pigments, as required, shall be identified as Class N.

3.4 Physical properties - liquid.

3.4.1 Color.

3.4.1.1 Type I. The color of the admixed type I primer coating shall be the natural color of the corrosion inhibiting pigments used or darker.

3.4.1.2 Type II. The color of the admixed type II primer coating shall be dark green.

3.4.2 Odor. The odor of the primer coating, as packaged components or as a film after application, shall be characteristic of the thinners used and shall not be obnoxious.

3.4.3 Fineness of grind. The fineness of grind of the admixed primer coating at application viscosity shall be not less than 5 on the Hegman scale.

3.4.4 Pot life. The viscosity of the admixed primer coating, when thinned in accordance with the manufacturers instructions and stirred constantly at 140 ±30 revolutions per minute (rpm) in an open or closed container, shall not increase by more than 8 seconds through a number 4 Ford cup after 4 hours at 23° ±2°C (73° ±5°F). At the end of the 4 hour period, the applied primer coating shall meet all of the requirements of 3.5 through 3.6.4.

3.4.5 Condition in container. Components A and B shall be free from grit, seeds, lumps, abnormal thickening, or livering, nor shall it show pigment flotation or excessive settling. They shall be capable of being mixed together to a smooth, homogeneous, and pourable condition.

3.4.6 Storage stability. The primer coating components, as packaged by the manufacturer, shall meet all requirements specified herein for a period of one year, when stored at a daily ambient air temperature of 1.7° to 46°C (35° to 115°F).

3.4.7 Accelerated storage stability. The primer coating components, as packaged by the manufacturer, shall meet all the requirements specified herein, when tested in accordance with ASTM-D1849 (see 4.5 and table I).

3.4.8 Freeze-thaw stability. The primer coating components, as packaged by the manufacturer, shall meet all the requirements specified herein after being subjected to five cycles of freezing and thawing.

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3.5 Physical properties - film.

3.5.1 Surface appearance. The admixed primer coating, applied to a vertical surface, shall exhibit no sagging, running or streaking. The dried film shall be free from grit, seeds, craters, blisters or any other surface irregularities.

3.5.2 Drying time. The applied primer coating shall be tack-free in not more than 60 minutes and shall be dry-hard in not more than 6 hours.

3.5.3 Lifting. There shall be no evidence of lifting or any other film irregularity upon the application of gloss polyurethane coating conforming to MIL-PRF-85285 to primer coating that has air dried for 2, 4, and 18 hours, respectively.

3.5.4 Adhesion - wet tape. The primer coating shall not peel from the substrate, nor shall the topcoat delaminate from the primer coating.

3.5.5 Flexibility. The primer coating shall exhibit an impact elongation of not less than 10 percent.

3.5.6 Stripability. Not less than 90 percent of the primer coating, with and without a topcoat, shall be stripped within 15 minutes with the use of remover conforming to MIL-R-81294, type I, at room temperature, 18° to 29.5°C (65° to 85°F).

3.5.7 Infrared reflectance (type II primer coating only). The total reflectance (specular and diffuse) of the type II primer coating, relative to barium sulfate, shall be not greater than ten percent throughout the range of 700 to 2600 nanometers (nm).

3.6 Resistance properties.

3.6.1 Water resistance. The primer coating, with and without a topcoat, shall withstand immersion in distilled water maintained at 49° ±3°C (120° ±5°F) for four days without exhibiting any evidence of softening, wrinkling, blistering, or any other coating deficiency.

3.6.2 Corrosion resistance.

3.6.2.1 Salt spray. The primer coating, with and without a topcoat, shall not exhibit blistering, lifting of either coating, nor substrate corrosion after exposure to a 5 percent salt spray for 2000 hours.

3.6.2.2 Filiform. The primer coating shall not exhibit filiform corrosion extending beyond 0.25 inch from the scribe, and the majority of the filaments shall be less than 1/8 inch in length.

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3.6.3 Fluid resistance. The primer coating shall withstand immersion for 24 hours in each of the following:

a) lubricating oil, conforming to MIL-PRF-23699, maintained at 121° ±3°C (250° ±5°F);
b) hydraulic fluid, conforming to MIL-PRF-83282, maintained at 66° ±3°C (150° ±5°F).

Four hours after removal from the respective fluid, the coating shall not exhibit any softening, blistering, loss of adhesion nor any other coating deficiency. Discoloration of the coating is acceptable and shall not be cause for rejection.

3.6.4 Solvent resistance (cure). The primer coating shall withstand repeated rubbing by a cloth rag soaked in methyl ethyl ketone (MEK) solvent. Rubbing through to bare substrate constitutes failure of the primer coating to properly cure.

3.7 Working properties.

3.7.1 Mixing and dilution. The components of the primer coating shall homogeneously blend when mixed by a mechanical mixer in the volume mixing ratio specified by the manufacturer. When the admixed primer coating is diluted to application viscosity with water (according to the manufacturer's instructions), there shall be no evidence of incompatibility and the material shall be capable of application by spray methods (see 3.7.2). Transient incompatibility exhibited during the first half of water addition is allowed. The primer coating shall not separate into visually distinct layers within one hour after water dilution.

3.7.2 Application. The admixed primer coating shall be capable of being applied by conventional, airless, HVLP (high volume, low pressure), or electrostatic spray equipment installed for water systems. Application shall yield a smooth, uniform film with no runs or sags at a dry-film thickness of 0.6 to 0.9 mils (15 to 23 microns µm).

4. VERIFICATION

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

a. Qualification inspection (see 4.2).
b. Conformance inspection (see 4.3).

4.2 Qualification inspection. The qualification inspection performed by the qualification laboratory (see 6.3) shall consist of a review for approval of the submitted manufacturer’s test report and subjecting the qualification test sample to examination and testing to determine conformance to all of the requirements specified in section 3. The qualification test sample shall consist of a minimum of one quart (admixed) of the coating material. The samples are to be legibly identified (see 6.3.2).

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4.2.1 Retention of qualification. To retain qualification approval of products listed on the Qualified Products List (QPL), the manufacturer will be required to verify by certification to the qualifying activity that its product(s) comply with the requirements of this specification. Unless otherwise specified by the qualifying activity, the time of periodic verification by certification will be in two-year intervals from the date of original qualification. The certification action will be initiated by the qualifying activity.

4.3 Conformance inspection. The conformance inspection shall consist of all the tests for requirements specified in 3.4, 3.5, and 3.6, with the exception of storage stability (3.4.6), accelerated storage stability (3.4.7), freeze-thaw stability (3.4.8), stripability (3.5.7), and corrosion resistance (3.6.2). There shall be no failures. Samples for tests shall consist of one complete unopened kit selected at random from each batch. Containers shall only be opened when being tested.

4.3.1 Rejection and retest. Failure in any conformance inspection shall result in the rejection of the batch from which it obtained and shall constitute sufficient justification for removal from the qualified products list. Rejected material shall not be resubmitted for acceptance without written approval from the qualification activity (see 6.3). The application for resubmission shall contain all details concerning previous rejections and measures taken to correct these deficiencies.

4.4 Test panels. Test panels shall be prepared under laboratory test conditions (see 4.5). With the exception of the flexibility test (4.5.4) and the filiform corrosion test (4.5.8.2), all test panels shall be aluminum alloy 2024 (T3 temper) conforming to QQ-A-250/4, with approximate dimensions of 0.51 by 76.2 by 152.4 mm (0.020 by 3 by 6 in.). Test panels shall be conversion coated with material coating conforming to MIL-C-81706, class 1A.

4.4.1 Application of primer coating. The primer coating shall be prepared by:

a. Thoroughly mixing each component separately;
b. Mixing the components in the manufacturer's specified volume mixing ratio;
c. Thinning with water in accordance with the manufacturer's instructions (water reducible only);
d. Allowing admixed coating to stand for 30 minutes prior to use;
e. Spraying the test panels with primer coating to a dry-film thickness of 15 to 23 µm (0.6 to 0.9 mils).
f. If a topcoat is not used, the primer coating shall be allowed to air dry for a minimum of 14 days, or air dry for a minimum of one hour followed by 24 hours at 65.5° ±3°C (150° ±5°F) prior to testing.
g. If a topcoat is required, the primer coating shall be air-dried for 2 hours and then apply coating conforming to MIL-PRF-85285 in accordance with 4.4.2.

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4.4.2 Application of topcoat. When a topcoat is required by the test method, mix coating conforming to MIL-PRF-85285, untinted gloss white (FED-STD-595, color number 17925), and allow it to stand 30 minutes prior to application. Apply the coating to a total dry-film thickness of 43 to 58 µm (1.7 to 2.3 mils). If applied in two coats, allow the first coat to air dry for 60 minutes prior to application of the second coat. After application of the topcoat to the required thickness and prior to testing, allow the coating to air dry for a minimum of 14 days or allow the coating to air dry for one hour followed by 24 hours at 65.5°C ±3°C (150° ±5°F).

4.5 Test methods. The tests of this specification shall be conducted in accordance with table I and 4.5.1 through 4.5.11. Unless otherwise specified in the test method or paragraph, laboratory test conditions shall be in accordance with ASTM-D3924.

TABLE I. Test methods.

Requirement paragraph	Test	Test paragraph	FED-STD-141 test method	ASTM method
3.3	Lead and cadmium content	---	---	ASTM-D3335
3.3.1	Solvent content	4.5.1	---	---
3.3.2	Chromium content	---	---	ASTM-D3718
3.4.2	Odor	---	---	ASTM-D1296
3.4.3	Fineness of grind	---	---	ASTM-D1210
3.4.4	Pot life	---	---	ASTM-D1200
3.4.5	Condition in container	---	3011	---
3.4.6	Storage stability 1/	---	3022	---
3.4.7	Accelerated storage stability 2/	---	---	ASTM-D1849
3.4.8	Freeze-thaw stability	---	---	ASTM-D2243 3/
3.5.2	Drying time	---	---	ASTM-D1640
3.5.3	Lifting	4.5.2	---	---
3.5.4	Adhesion - wet tape	4.5.3	---	---
3.5.5	Flexibility	4.5.4	---	---
3.5.6	Stripability	4.5.5	---	---
3.5.7	Infrared reflectance (type II only)	4.5.6	---	---
3.6.1	Water resistance	4.5.7	---	---
3.6.2.1	Salt-spray corrosion resistance	4.5.8.1	---	---
3.6.2.2	Filiform corrosion resistance	4.5.8.2	---	---
3.6.3	Fluid resistance	4.5.9	---	---
3.6.4	Solvent resistance (cure)	4.5.10	---	---
3.7.1	Mixing and dilution	4.5.11	---	---
3.7.2	Application	4.4.1	---	---

1/ The daily ambient air temperature air at the storage location shall fall within the range of 1.7° to 46°C (35° to 115°F).

2/ The primer coating shall be mixed with a mechanical shaker for 10 minutes instead of 300 stirs in 2 minutes.

3/ One freeze-thaw cycle shall be 16 hours at -9° ±3°C (+15° ±5°F) followed by 8 hours at room temperature, 18° to 29.5 °C (65° to 85°F).

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4.5.1 Solvent content.. The unthinned, admixed primer coating, in accordance with the manufacturers instructions, shall be used for this test. The volatile organic compound (VOC) content of the primer coating shall be calculated as follows:

$$VOC\ (g/L) = A \div B$$

Where:

$A = [(100 - X_M - W_{H2O}) \div 100]$

$B = [(1 \div P_M) - (W_{H2O} \div 100{,}000)]$

X_M = Solids content of the admixed primer coating (weight percent) determined in accordance with ASTM-D2369, procedure B.

P_M Density of admixed primer coating (g/L), determined in accordance with ASTM-D1475.

W_{H_2O} = Water, content of the admixed primer coating (percent by weight), determined in accordance with ASTM-D3792.

4.5.2 Lifting. The primer coating shall be applied to test panels in accordance with 4.4 through 4.4.1, with the exception of drying time, noted as follows: topcoat shall be applied in accordance with 4.4.2 to primer coating that has air dried for 2, 4, and 18 hours, respectively. After the topcoat has fully cured, the test panels shall be examined for conformance to 3.5.4.

4.5.3 Adhesion - wet tape. Primer coating shall be applied to the test panels in accordance with 4.4 through 4.4.1. The test panels shall then be immersed in distilled water for 24 hours at room temperature, 18° to 29.5°C (65° to 85°F). After removal, the test panels shall be dried with absorbent paper tissue and, within three minutes of removal from the water, be tested in accordance with FED-STD-141, method 6301 for conformance to 3.5.5.

4.5.4 Flexibility. Test panels, constructed of aluminum alloy 2024 (O temper) conforming to QQ-A-250/4 with approximate dimensions of 0.51 by 76.2 by 152.4 mm (0.020 by 3 by 6 in.), shall be anodized in accordance with MIL-A-8625, type I. Primer coating shall then be applied to the test panels in accordance with 4.4.1. The flexibility of the coating shall then be tested in accordance with ASTM-D2794, using a Gardco GE Universal Impact Tester, Model #172, or equivalent (see 6.5), using a specialized impacter which weighs 3.6 lb., and has formed on each end four convex spherical segments, each of different radii and extension. Place the coated panel, film side downward, on the rubber pad at the bottom of the impacter guide. Drop the impacter on the panel through the impacter guide, ensuring that the impression of the entire rim of the impacter is made in the panel. Reverse the impacter ends and drop it through the guide on the panel adjacent to the first area of impact. Using 10 power magnification, examine to conformance to 3.5.6; report the percent elongation corresponding to the largest spherical impression at which no cracking occurs.

4.5.5 Stripability. Separate test panels, prepared with the primer coating only (see 4.4 through 4.4.1) and panels prepared with the primer coating and topcoat (see 4.4 through 4.4.2), shall be artificially aged at 99° ±3°C (210° ±5°F) for four days. The edges of the test panels shall

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then be masked with aluminum foil tape and the test panels placed on a rack at 60° to the horizontal, coated side up. Remover conforming to MIL-R-81294, type I, shall be poured along the upper edge of the test panels. Just enough remover to completely cover the coated surface of each test panel shall be used. After 15 minutes exposure to the remover, the loosened film shall be brushed off with a stiff, non-metallic, bristle brush while rinsing under a stream of cool water. The test panels shall then be examined for conformance to 3.5.7. The amount of primer coating removed in this manner is determined by the percentage of substrate surface area exposed.

4.5.6 Infrared reflectance (type II primer coating only). The type II primer coating shall be applied to test panels prepared in accordance with 4.4 through 4.4.1. The total reflectance (specular and diffuse) of the primer coating relative to barium sulfate shall be measured using a spectrophotometer over a range of 450 to 2700 nm. Examine for conformance to 3.5.8.

4.5.7 Water resistance. Test panels shall be prepared with primer coating only (see 4.4 through 4.4.1) and primer coating and topcoat (see 4.4 through 4.4.2). After immersion in distilled water maintained at 49° ±3°C (120° ±5°F) for four days, the coatings shall be examined for softening, wrinkling, blistering, and any other visually detectable deficiency (see 3.6.1).

4.5.8 Corrosion resistance.

4.5.8.1 Salt-spray. The primer coating shall be applied to test panels in accordance with 4.4 through 4.4.1. Two intersecting lines shall be scribed diagonally across the surface of the primer coating, exposing the bare substrate. The test panels shall then be placed in a 5 percent salt spray cabinet for 2000 hours, in accordance with ASTM-B117. After removal from the salt-spray cabinet, the test panels shall be examined for conformance to 3.6.2.1.

4.5.8.2 Filiform. Test panels, constructed from Alclad aluminum alloy 2024 (T3 temper) conforming to QQ-A-250/5, with dimensions of 0.020 by 3 by 6 in. shall be conversion coated with material coating conforming to MIL-C-81706, class 1A. Primer coating and topcoat shall then be applied to the test panels in accordance with 4.4.1 through 4.4.2. Two intersecting lines shall be scribed across the surface of each test panel and shall penetrate through the cladding and into the base metal. The test panels shall be placed vertically in a desiccator containing 12 Normal (N) HCl for one hour at 24° ±3°C (75° ±5°F). Within five minutes of removal from the desiccator, the test panels shall be placed in a desiccator maintained at 40° ±2°C (104° ±3°F) and relative humidity (RH) of 80 ±5 percent for 1000 hours. The test panels shall then be examined for conformance to 3.6.2.2. Filiform corrosion appears as thread-like filaments initiating from the exposed substrate and spreading underneath the coating film. A general description of filiform growth appears in ASTM-D2803.

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4.5.9 Fluid resistance. The primer coating shall be applied to test panels in accordance with 4.4 through 4.4.1. The test panels shall then be separately immersed for 24 hours in the following:

a. Lubricating oil conforming to MIL-PRF-23699, maintained at 121° ±3°C (250° ±5°F);
b. Hydraulic fluid conforming to MIL-PRF-83282 maintained at 66° ±3°C (150° ±5°F).

After removal from the test fluids, cool the test panels to room temperature, 18° to 29.5°C (65° to 85°F) and examine for conformance to 3.6.3.

4.5.10 Solvent resistance (cure). The primer coating shall be applied to test panels in accordance with 4.4 through 4.4.1. The primer coating shall then be examined for cure, as follows:

a. Soak a cotton, terry cloth rag in MEK solvent (see 6.11).
b. Rub the coating with the soaked rag for 50 passes (25 times) with firm finger pressure.
c. Examine coating for conformance to 3.6.4.

4.5.11 Mixing and dilution. Stir component A until completely uniform. Mix component A with component B in the volume mixing ratio specified by the manufacturer and examine for conformance to 3.7.1. Thin as specified by the manufacturer. Stir and allow the admixed primer coating to sit for 30 minutes. Examine for conformance to 3.7.2.

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 material 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 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 which may be helpful, but is not mandatory.)

6.1 Intended use. The primer coatings covered by this specification are corrosion-inhibiting and chemical resistant and intended to be spray applied to most metallic surfaces. This coating is compatible with polyurethane and epoxy topcoats (see 6.6) and may be used as an alternative to MIL-PRF-23377 for many applications; however, primer coatings containing water, such as this, should not be used on iron or bare carbon steel, nor for the wet installation of fasteners or faying

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surfaces. Type II primer coating is intended for use where low infrared reflectance is required. Class N may not be substituted for Class C1 or C2, unless authorization for its use is given by the procuring activity or engineering authority for the system or item to which the primer coating is to be applied.

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 2.2 and 2.3).
c. Packaging requirements (see 5.1).
d. Marking and labeling (see 6.10)
e. Classification (Type I or II, and Class C1, C2, or N, as applicable) (see 1.2 and 6.4).
f. Quantity and kit size (see 6.4.1).
g. Acceptance criteria for packaging (see 6.7).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List (QPL-85582) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from the Commander, Naval Air Warfare Center Aircraft Division, Code 4.3.4.1, 22347 Cedar Point Road, Unit 5, Patuxent River, MD 20670-1161.

6.3.1 Inspection report and other data. When authorizing the forwarding of qualification samples, the qualifying activity will request the manufacturer to submit the qualification inspection sample, the Material Safety Data Sheet (MSDS), and a test report showing that the material conforms to the requirements of this specification.

6.3.2 Qualification inspection sample identification. Qualification inspection samples are to be forwarded to the laboratory designated in the letter of authorization (see 6.4) and identified as follows:

- Qualification test samples.
- Specification MIL-PRF-85582C, Type I or II, and Class C1, C2, or N (as applicable).
- Primer Coatings: Epoxy, Waterborne.
- Manufacturer's name and product number
- Submitted by (name and date) for qualification testing in accordance with authorization (reference authorizing letter).

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6.4 Part identification numbers. Part identification numbers for cataloging purposes under this specification may be coded as follows:

M85582	-	X	-	XX	-	XXXX
Specification identifier		Type designator (1 = Type I, 2 = Type II)		Class designator (C1, C2, or N0)		Kit size designator (see 6.4.1)

6.4.1 Kit size. The primer coatings covered by this specification should be purchased by volume, the unit being a kit containing two components. The kit component sizes need not be of the same size. When this part numbering system is used, the kit size is to be identified as following:

Kit size 1/	Kit size designator
4 pint (0.47 liters)	004P
4 quart (0.95 liters)	004Q
4 gallon (3.79 liters)	004G

1/ The kit size and its designator may be modified for ease of procurement and is not otherwise limited.

6.5 Impact tester source. The instrument used for 4.5.4 uses an impacter which weighs 20 lb., and has formed on each end four convex spherical segments, each of different radii and extension. An instrument found suitable for conducting ASTM-D2794 (see 4.5.4) is the Gardco GE Universal Impact Tester, Model #172, available from the Paul N. Gardner Company, 316 NE First Street, PO Box 10688, Pompano Beach, FL 33061-6688. There may be other instruments equivalent to this unit.

6.6 Compatibility. The primer coatings covered by this specification are compatible with coatings conforming to the following specifications: MIL-PRF-22750, "Coating, Epoxy, High-Solids;" MIL-C-46168; "Coating, Aliphatic Polyurethane, Chemical Agent Resistant;" MIL-C-53039, "Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant;" MIL-PRF-85285; and TT-P-2756, "Coating: Self-Priming Topcoat, Low Volatile Organic Compounds." Compatibility with other coatings should be tested prior to use.

6.7 Acceptance criteria for packaging and marking. Previous revisions of this document specified samples be selected at random from each lot in accordance with ASQC-Z1.4, “Sampling Procedures and Tables for Inspection by Attributes,” inspection level S-2. The lot size for this examination should be the number of kits fully prepared for delivery shall be examined for container fill, weight, and marking. Copies of ASQC-Z1.4 may be obtained from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.

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6.8 Safely handling MEK solvent. To minimize exposure to MEK solvent, it is recommended that personnel conducting the solvent resistance (cure) test (see 4.5.10) wear either butyl rubber or Teflon® gloves and a half-face respirator equipped with organic vapor cartridges.

6.9 Subject term (key word) listing.

Barium chromate
Strontium chromate
Corrosion inhibitive
Hazardous material
Hydrochloric acid
Low infrared reflectance
Methyl ethyl ketone (MEK) solvent
Water reducible

6.10 Special instructions. In addition to the marking specified in PPP-P-1892, "Paint, Varnish, Lacquer, and Related Materials, Packaging, Packing and Marking of," individual containers need to be identified with the following information:

- Component identification
  - Component A - Base Component
  - Component B - Curing component
- MIL-PRF-85582C, Type I or II, Class C1, C2, or N (as applicable)
- Manufacturer's name and product number
- Date of manufacture (Month/Year)
- Batch number/net contents
- VOC content in grams/liter
- Mixing and thinning instructions

Unit containers for component A should have the following marking:

"WARNING! COMBUSTIBLE"

Unit containers for component B should have the following marking:

"WARNING! FLAMMABLE"

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A printed precaution sheet should be included with each kit as follows:

PRECAUTIONS

a. The surface to be coated must be clean (free of oil, dust, etc.).
b. Spray equipment must be adequately grounded. Clean equipment immediately after use.
c. Mix only the amount of primer coating to be used within 4 hours.
d. Primer coating from one vendor, or individual component, should never be mixed with that of another vendor.
e. Apply over pretreated metal. On fiberglass-reinforced plastic, a prior coating of wash primer will facilitate stripping without damage to the fiberglass.

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

CONCLUDING MATERIAL

Custodians:
Army - MR
Navy - AS
Air Force - 99

Review Activities:
Army - AV, MD1
Navy - CG, OS, SH
Air Force - 11, 84
GSA - FSS (9FTE-10)
Misc. - DS

Preparing activity:
Navy - AS
(Project 8010-0979)

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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-85582C	2. DOCUMENT DATE (*YYMMDD*) 970930

3. DOCUMENT TITLE

PRIMER COATINGS: EPOXY, WATERBORNE

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) DSN (*If Applicable*):	7. DATE SUBMITTED (*YYMMDD*)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE NUMBER (*Include Area Code*)
COMMANDER NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION	(1) Commercial (908) 323-7488 (2) DSN 624-7488
c. ADDRESS (*Include Zip Code*) CODE 414100B120-3 HIGHWAY 547 LAKEHURST, NJ 08733-5100	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone: (703) 756-2340 DSN 289-2340

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