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15 May 1997
SUPERSEDING
TT-P-1757A
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21 August 1984

FEDERAL SPECIFICATION

PRIMER COATING, ALKYD BASE, ONE COMPONENT

The General Services Administration has authorized the use of this federal specification by all federal agencies.

1. SCOPE AND CLASSIFICATION.

1.1 Scope. This specification covers the requirements for two types, classes, and colors of a one-component, alkyd-base, corrosion-inhibiting primer coating.

1.2 Classification.

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

Type I - Volatile content consists of non-photochemically reactive solvents (see 3.2.1.1)
Type II - Volatile organic compound (VOC) content less than or equal to 340 grams/liter (gm/l) (2.8 lb./gal) (see 3.2.1.2)

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

Class C - Chromate based corrosion-inhibitors (see 3.2.3.1.1)
Class N - Non-chromate based corrosion-inhibitors (see 3.2.3.1.2)

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.

AMSC N/A FSC 8010

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1.2.3 Color. The primer coating colors consist of the following:

Color Y - Deep yellow
Color T - Green (FED-STD-595, color number 34151)

1.3 Part numbers. Part numbers, for cataloging purposes, may be assigned in accordance with 6.3.

2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

FEDERAL SPECIFICATIONS

QQ-A-250/4	-	Aluminum Alloy 2024, Plate And Sheet
TT-L-32	-	Lacquer, Cellulose Nitrate, Gloss, For Aircraft use
TT-S-735	-	Standard Test Fluids, Hydrocarbon
PPP-P-1892	-	Paint, Varnish, Lacquer, and Related Materials; Packaging, Packing, and Marking of

FEDERAL STANDARDS

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

(Activities outside the Federal Government may obtain copies of federal specifications and standards as specified in the information of the Index of Federal specifications, Standards, and Commercial Item Descriptions. The index is for sale on a subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification, and other federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from the General Services Administration, Federal Supply Service Bureau, Specification Section, Suite 8100, L'Enfant Plaza, SW, Washington, DC 20407.)

(Federal Government activities may obtain copies of federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

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MILITARY SPECIFICATIONS

MIL-C-8514	-	Coating Compound, Metal Pretreatment, Resin-Acid
MIL-A-8625	-	Anodic Coatings, For Aluminum and Aluminum Alloys
DOD-P-15328	-	Primer (Wash) Pretreatment (Formula No. 117 for Metals) (Metric)
MIL-C-81706	-	Chemical Conversion Materials For Coating Aluminum And Aluminum Alloys
MIL-T-81772	-	Thinner, Aircraft Coating

MILITARY STANDARDS

MIL-STD-129	-	Marking for Shipment and Storage

(Copies of military specifications and standards required by contractors in connection with specific procurement functions are obtained from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

CODE OF FEDERAL REGULATIONS

DEPARTMENT OF LABOR

29 CFR 1910.1200	-	Occupational Safety and Health Standards - Hazard Communications

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

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI-Z129.1	-	American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals (DoD Adopted)

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

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AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

ASQC-Z1.4 - Sampling Procedures and Tables for Inspection by Attributes (DoD Adopted)

(Application for copies of ASQC-Z1.4 should be addressed to the American Society for Quality Control, PO Box 3005, 611 East Wisconsin Avenue, Milwaukee, WI 53201-4606.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-B117 - Salt Spray (Fog) Testing, Standard Test Method for (DoD Adopted)
ASTM-D444 - Pigment, Zinc Yellow (Zinc Chromate Yellow) Chemical Analysis Of, Standard Test Methods For (DoD Adopted)
ASTM-D523 - Specular Gloss, Standard Test Method For (DoD Adopted)
ASTM-D563 - Phthalic Anhydride Content Of Alkyd Resin & Resin Solution, Standard Test Method 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, Standard Test Method For (DoD Adopted)
ASTM-D1296 - Odor of Volatile Solvents and Diluents, Standard Test Method For (DoD Adopted)
ASTM-D1364 - Water in Volatile Solvents (Fischer Reagent Titration Method), Standard Test Method For (DoD Adopted)
ASTM-D1542 - Qualitative Detection of Rosin in Varnishes, Standard Test Method For (DoD Adopted)
ASTM-D1729 - Visual Evaluation of Color Differences of Opaque Materials, Standard Practice For (DoD Adopted)
ASTM-D2369 - Volatile Content of Coatings, Standard Test Method For (DoD Adopted)
ASTM-D3271 - Direct Injection of Solvent-Reducible Paints into a Gas Chromatograph for Solvent Analysis, Standard Practice For (DoD Adopted)
ASTM-D3272 - Vacuum Distillation of Solvents From Solvent-Reducible Paints For Analysis, Standard Practice For (DoD Adopted)
ASTM-D3335 - Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Analysis 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)

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ASTM-D3924	-	Standard Environment for Conditioning and Testing of Paint, Varnish, Lacquer and Related Materials, Standard Specification For (DoD Adopted)
ASTM-D3960	-	Volatile Organic Compound (VOC) Content of Paints and Related Coatings, Standard Test Method For (DoD Adopted)
ASTM-G26	-	Operating High-Exposure Apparatus (Xenon-Arc Type) With And Without Water For Exposure Of Non Metallic Materials, Standard Practice 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)

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

RULE 102 - Definition of Terms

(Application for copies should be addressed to SCAQMD, Attn.: Public Information, 21865 Copley Drive, Diamond Bar, CA 91765.)

(DoD activities may obtain copies of those adopted voluntary standards listed in the DoD Index of Specifications and Standards free of charge from the Standardization Document Order Desk, Building 4D, 700 Robins Avenue, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this specification 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 Toxicity. 29 CFR 1910.1200 requires that a Material Safety Data Sheet (MSDS) be prepared for this primer coating (see 6.6). The MSDS also must meet the requirements of FED-STD-313.

3.2 Composition. When tested in accordance with ASTM D3335, no component of the primer coating shall not contain more than 0.06 percent by weight of lead metal or lead compounds.

3.2.1 Solvent content.

3.2.1.1 Type I. The volatile content shall consist of non-photochemically reactive solvents. A non-photochemically reactive solvent, as defined by the South Coast Air Quality Management District (SCAQMD) Rule 102, is any solvent with an aggregate of less than 20 percent of its total

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volume, composed of the chemical compounds classified below, or which does not exceed any of the following individual percentage composition limitations, referred to the total volume of solvent, when tested in accordance with 4.6.1:

- A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cyclo-olefinic type of unsaturation except perchloroethylene: 5 percent.

- A combination of aromatic compounds with eight of more carbon atoms to the molecule except ethylbenzene, methyl benzoate, and phenyl acetate: 8 percent.

- A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

3.2.1.2 Type II. The VOC content of the type II primer coating shall be less than or equal to 340 g/l (2.8 lb./gal), when tested in accordance with ASTM-D3960 (see 4.6). Chlorinated and halogenated solvents are prohibited.

3.2.2 Thinner compatibility. The primer coating shall be compatible with thinner conforming to MIL-T-81772, type III.

3.2.3 Total solids. For non-pressurized packaged primer coatings, the total solids content shall be equal to or greater than 59 percent by weight, when tested in accordance with ASTM-D2369 (see 4.6). For pressurized (aerosol) packaged primer coatings, the total solids content shall be equal to or greater than 13 percent by weight, when tested in accordance with ASTM-D2369 (see 4.6).

3.2.3.1 Pigment content. The pigment content of the primer coating shall be equal to or greater than 53 percent by weight of the total solids content, when tested in accordance with ASTM-D2698 (see 4.6). Siliceous extenders shall be less than or equal to 15 percent by weight of the total pigment content; however siliceous extenders containing more than 1.0 percent crystalline silica (such as crystobalite or tridymite) are prohibited.

3.2.3.1.1 Class C. The pigment portion of the class C primer coating shall contain zinc chromate equal to or greater than 85 percent by weight of the total pigment content, when tested in accordance with ASTM-D444 (see 4.6).

3.2.3.1.2 Class N. The pigment portion of the class N primer coating shall not contain chromium, when tested in accordance with ASTM-D3718 (see 4.6).

3.2.4 Nonvolatile vehicle (resin) content. The nonvolatile vehicle (resin) content shall consist of 81 to 84 percent by weight drying-type phthalic anhydride plus 16 to 19 percent by weight oil-modified phenol-aldehyde resin, when tested in accordance with ASTM-D563. Additionally, it shall be free of rosin and rosin-type derivatives, when tested in accordance with ASTM-D1542 (see 4.6 and table I).

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3.3 Physical properties - liquid.

3.3.1 Fineness of grind. The fineness of grind of the primer coating shall be equal to or greater than 6 on the Hegmen scale, when tested in accordance with ASTM-D1210 (see 4.6).

3.3.2 Water content. The water content of the primer coating shall be less than or equal to 0.5 percent by weight when tested in accordance with ASTM-D1364 (see 4.6).

3.3.3 Viscosity. The viscosity of the primer coating shall be 16 to 25 seconds through a number 4 Ford Viscosity Cup, when tested at 77° ±5°F (25° ±3°C), in accordance with ASTM-D1200 (see 4.6).

3.3.4 Suspension properties. The primer coating shall completely redisperse to a smooth, homogeneous state, when tested in accordance with 4.6.2.

3.3.5 Condition in container. The primer coating shall be free from skins, lumps, grit, and pigment floatation or settling, when tested in accordance with FED-STD-141, methods 3011 and 3021 (see 4.6). Additionally, the primer coating shall be capable of being mixed to a smooth, homogeneous condition in the original container and when reduced for laboratory testing.

3.3.6 Coarse particles and skins. Coarse particles retention shall be less than or equal to 0.3 percent by weight of the total primer coating, when tested in accordance with FED-STD-141, method 4092 (see 4.6).

3.4 Working properties.

3.4.1 Non-pressurized container. The primer coating shall be a freely working product, capable of being spray applied to yield a smooth, uniform film, free from runs and/or sags, when applied in accordance with 4.5.1.

3.4.2 Pressurized (aerosol) container. The primer coating shall be capable of having 98 percent or more of the container contents applied in a pattern that deposits a smooth, uniform film, free from runs and/or sags, when applied in accordance with 4.5.1.

3.4.3 Drying time. The primer coating shall dry hard within 15 minutes of application, when tested in accordance with FED-STD-141, method 4061 (see 4.6).

3.4.4 Odor. The primer coating shall have no obnoxious odor before or during spraying, while drying, or as dry film, when tested in accordance with ASTM-D1296 (see 4.6).

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3.4.5 Surface appearance. When spray applied to glass test panels in accordance with 4.6.3, the primer coating shall not run, sag or streak, and shall dry to a hard smooth finish, free from grit, seeds, streaks, blisters, or other surface irregularity.

3.5 Film properties.

3.5.1 Color. Immediately after application in accordance with 4.5.1, the color of the primer coating shall be a good visual match to the following, when tested in accordance with ASTM-D1729 (see 4.6):

Color Y - Deep yellow
Color T - FED-STD-595, color number 34151.

3.5.2 Specular gloss.

3.5.2.1 Primer coating. The 60° specular gloss of the primer coating shall be less than or equal to 6, when tested as specified in 4.6.4.1.

3.5.2.2 Primer coating with topcoat. The 60° specular gloss of the topcoated primer coating shall be equal to or greater than 65, when tested in accordance with 4.6.4.2. Additionally, the dried coating surface shall be free from blisters, coarse particles, or other surface irregularities.

3.5.3 Adhesion - wet tape. The topcoated primer coating shall exhibit no loss of adhesion when tested in accordance with 4.6.5.

3.5.4 Flexibility. The primer coating shall exhibit no cracking or flaking when tested in accordance with 4.6.6.

3.5.5 Lifting. The topcoated primer coating shall exhibit no bleeding, blistering, wrinkling, lifting, or other surface irregularities, when tested in accordance with 4.6.7.

3.6 Resistance properties.

3.6.1 Hydrocarbon resistance.

3.6.1.1 Primer coating. The primer coating shall withstand immersion for 4 hours in fluid conforming to TT-S-735, type III, maintained at room temperature [25 ±3°C (77 ±5°F)], when tested in accordance with 4.6.8.1.1. 24 hours after removal from the fluid, the primer coating shall exhibit no softening, wrinkling, blistering, loss of adhesion, or other coating deficiency.

3.6.1.2 Primer coating with topcoat. The topcoated primer coating shall withstand immersion for 4 hours in hydrocarbon fluid conforming to TT-S-735, type III, maintained at room temperature [25 ±3°C (77 ±5°F)], when tested in accordance with 4.6.8.1.2. 24 hours after

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removal from the fluid, the primer coating and topcoat shall exhibit no softening, wrinkling, blistering, loss of adhesion, or other coating deficiency.

3.6.1.3 Hydrocarbon resistance - flexibility. The primer coating, with and without a topcoat, shall exhibit no cracking or flaking, when tested in accordance with 4.6.8.2.

3.6.2 Water resistance.

3.6.2.1 Primer coating. The primer coating shall exhibit no blistering or other surface defect, when tested in accordance with 4.6.8.3.1.

3.6.2.2 Primer coating and topcoat. The topcoated primer coating shall exhibit no blistering or other surface defect, when tested in accordance with 4.6.8.3.2.

3.6.3 Salt spray resistance. The primer coating shall not lift, blister, or cause substrate corrosion when tested in accordance with 4.6.9.

3.7 Accelerated weathering. The primer coating, with and without a topcoat, shall exhibit no cracking, checking, or embrittlement, nor loss of corrosion protection properties or loss of adhesion, when tested in accordance with 4.6.10 through 4.6.10.3.

3.8 Storage stability. The primer coating shall meet all the requirements of this specification after a minimum storage period of 365 days (one year) from the date of manufacture under the following conditions:

a. The daily mean ambient air temperature at the storage facility is 35 to 95°F (1.7 to 35°C).
b. The peak ambient air temperature at the storage facility does not exceed 115°F (46°C).

3.9 Workmanship. The ingredients, workmanship, and processing of this primer coating shall be such that all the requirements of this specification are met.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 the specification where such inspections are deemed necessary to assure 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

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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 inspection. The inspection requirements specified herein are classified as follows:

a. Conformance inspection (see 4.3)

4.3 Conformance inspection. The conformance inspection shall consist of all the examinations and tests specified in table I. In the event that a test sample fails to meet any requirement of this specification, the lot (see 4.3.1) represented by the sample shall be rejected. At the option of the procuring activity, reduced testing may be permitted (see 6.2 and 6.2.1). Certification of conformance to the storage stability requirement (see 3.8) is permitted.

4.3.1 Lot formation. A lot shall consist of all the primer coating, of the same type, class, and color, manufactured at one time, forming part of one contract or order, and submitted for acceptance to the procuring activity.

4.4 Sampling.

4.4.1 Sampling for tests. Conformance inspection samples shall be selected in accordance with FED-STD-141, method 1022.

4.4.2 Sampling of filled containers. A random sample of filled containers shall be selected in accordance with ASQC-Z1.4 (see 6.4).

4.5. Test panels. When test panels are required for testing, they shall be prepared under laboratory conditions (see 4.6). With the exception of surface appearance (4.6.3) and flexibility (4.6.6), all tests panels shall be aluminum alloy 2024,conforming to QQ-A-250/4 (T3 temper), with approximate dimensions of 0.020 by 3.0 by 6.0 in. (0.5 by 76.2 by 152.4 millimeters (mm)), and treated with chemical conversion materials conforming to MIL-C-81706, class 1A.

4.5.1 Primer coating application. Primer coating shall be applied to test panels (see 4.5) to a dry film thickness of 0.6 to 0.9 mils (15 to 23 microns (µm)). When required for spray application, the viscosity of the packaged primer coating may be reduced with thinner conforming MIL-T-81772, type III. Do not add thinner to the type II primer coating if the addition of the primer will increase the VOC above 340 g/l (2.8 lb./gal). Unless otherwise stated in the test

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method or paragraph, allow the primer coating to dry in accordance with the manufacturer's instructions prior to application of any topcoat.

4.5.2 Topcoat application. When topcoating is required for testing, the primer coating shall be air dried for 30 minutes and then two coats of lacquer conforming to TT-L-32, type II, FED-STD-595 color number 17038 (gloss black), shall be applied, 30 minutes apart. Each coat of lacquer shall be applied to a dry film thickness of 0.8 to 1.0 mil (20 to 25µm). After the second coat of lacquer is applied, air dry for 72 hours.

4.6 Test methods. The tests shall be conducted in accordance with table I and paragraphs 4.6.1 through 4.6.10.3. Unless otherwise specified in the test method or paragraph, all tests shall be conducted under laboratory conditions, as specified in ASTM-D3924.

Table I. Test methods.

Characteristic	Requirement paragraph	Test method		
		FED-STD-141 Method Number	ASTM Method	Test Paragraph
Toxicity	3.1	---	---	---
Lead content	3.2	---	ASTM-D3335	---
Solvent content	---	---	---	---
Type I	3.2.1.1	---	---	4.6.1
Type II	3.2.1.2	---	ASTM-D3960	---
Total solids	3.2.3	---	ASTM-D2369	---
Pigment content	3.2.3.1	---	ASTM-D2698	---
Class C	3.2.3.1.1	---	ASTM-D444	---
Class N	3.2.3.1.2	---	ASTM-D3718	---
Nonvolatile vehicle (resin) content	3.2.4	---	---	---
Rosin content	3.2.4	---	ASTM-D1542	---
Phthalic anhydride	3.2.4	---	ASTM-D563	---
Fineness of grind	3.3.1	---	ASTM-D1210	---
Water content	3.3.2	---	ASTM-D1364	---
Viscosity	3.3.3	---	ASTM-D1200	---
Suspension properties	3.3.4	---	---	4.6.2
Condition in container	3.3.5	3011, 3021	---	---
Coarse particles and skins	3.3.6	4092	---	---
Working properties	3.4.1, 3.4.2	---	---	---
Drying time	3.4.3	4061	---	---
Odor	3.4.4	---	ASTM-D1296	---

Table I. Test methods, continued.

Surface appearance	3.4.5	---	---	4.6.3
Color	3.5.1	---	ASTM-D1729	---

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Specular gloss				
Primer coating	3.5.2.1	---	---	4.6.4.1
Primer coating with topcoat	3.5.2.2	---	---	4.6.4.2
Adhesion - wet tape	3.5.3	---	---	4.6.5
Flexibility	3.5.4	---	---	4.6.6
Lifting	3.5.5	---	---	4.6.7
Hydrocarbon resistance				
Primer coating	3.6.1.1	---	---	4.6.8.1.1
Primer coating with topcoat	3.6.1.2	---	---	4.6.8.1.2
Hydrocarbon resistance - flexibility	3.6.1.3	---	---	4.6.8.2
Water resistance				
Primer coating	3.6.2.1	---	---	4.6.8.3.1
Primer coating with topcoat	3.6.2.2	---	---	4.6.8.3.2
Salt spray resistance	3.6.3	---	---	4.6.9
Accelerated weathering	3.7	---	---	4.6.10
Storage stability	3.8	---	---	---
Workmanship	3.9	---	---	---

4.6.1 Solvent analysis. The analysis of the solvent of type I primer coating shall be in accordance with 4.6.1.1 through 4.6.1.2.5. The volatile content of type II primer coating shall be determined in accordance with ASTM-D3960.

4.6.1.1 Isolation of solvents (type I primer coating only). Isolate the solvent portion of the type I primer coating in accordance with ASTM-D3272 for subsequent analysis.

4.6.1.2 Analysis of solvent composition (type I primer coating only). The analysis of the solvent portion of the type I primer coating shall be conducted in accordance with ASTM-D3271 and 4.6.1.2.1 through 4.6.1.2.3, using any gas chromatograph with a thermal conductivity detector and provisions for programmable temperature operation. The column of the gas chromatograph shall be packed and of the length specified as follows:

a. Two lengths of ¼-in. (6.35 mm) diameter copper tubing:

   1. One 8 ft. (2.44 m) long, packed with 20 percent by weight N, N-Bis (2-cyanoethyl) formamide on 60 to 80 mesh (250 to 177 mm) Chromosorb P.
   2. One 12 ft. (3.66 m) long, packed with 30percent by weight diethylene glycol succinate on 60 to 80 mesh (250 to 177 mm) Chromosorb P.

b. The two lengths are coupled together and installed such that the sample passes through the 8 ft. (2.44 m) length first.

4.6.1.2.1 Operating conditions. The operating conditions of the chromatograph shall be as follows:

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- Detector cell temperature: 300°C (572°F)
- Detector cell current: 160 milliamperes (ma)
- Injection port temperature: 250°C (482°F)
- Helium flow at exit: 100 ml/minute
- Column heating rate: 2°C/minute, (3.6°F/minute)
- Initial column temperature: 60°C (140°F)
- Terminal column temperature: 440°C (824°F)

4.6.1.2.2 Procedure. Weight 5.0 ml of the isolated solvent from 4.6.1.1 into a flask. Add 1.0 ml of a standard solvent (ethyl acetate, methyl isobutyl ketone (MIBK), or butyl acetate) to the isolated solvent. Mix thoroughly and inject about 3.0 microliters (µl) of the sample into the column obtain a chromatogram of the solvent present in the sample in accordance with ASTM-D3271.

4.6.1.2.3 Calculation. Measure the area of each solvent peak and relate it to the area of the known amount of the standard. Calculate the percentage of solvent by volume, as follows:

$$\text{Percent solvent (volume basis)} = [(A \times F \times P) \div (I \times S)]$$

Where:

A = area of solvent peak
F = detector response correction factor for volume (see note)
P = volume of standard solvent multiplied by 100
I = area of standard solvent peak
S = volume of sample

NOTE: Detector response correction factors for volume can be calculated from the specific gravity of each solvent.

4.6.2 Suspension properties. Prepare 200 ml of the primer coating for spray application in accordance with 4.5.1. Place the sample in a glass container and seal the container. Leave the sample undisturbed for 24 hours. After this period, shake the sample vigorously for 30 seconds and examine for dispersion to a smooth, homogeneous state (see 3.3.4).

4.6.3 Surface appearance. Spray the primer coating onto clean, dry, surface-defect free glass test panels and observe the primer coating for conformance to 3.4.5.

4.6.4 Specular gloss.

4.6.4.1 Primer coating. Prepare three panels in accordance with 4.5 and 4.5.1. When dry, examine the specular gloss (60°) of the primer coating in accordance with ASTM-D523 for conformance to 3.5.2.1.

4.6.4.2 Primer coating with topcoat. The test panels from 4.6.4.1 shall be topcoated as in accordance with 4.5.2. Examine the specular gloss (60°) in accordance with ASTM-D523 for conformance to 3.5.2.2.

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4.6.5 Adhesion - wet tape. The primer coating shall be applied to test panels in accordance with 4.5 and 4.5.1 and topcoated in accordance with 4.5.2, with the exception that the topcoat shall be dried for 6 hours. The test panels shall then be immersed in distilled water at room temperature [25 ±3°C (77 ±5°F)] for 24 hours. Within sixty minutes after removal from the distilled water, the test panels shall be wiped dry with a soft cloth and tested in accordance with FED-STD-141, method 6301, with the exception the tape shall be pressed down using two passes of the rubber-covered roller.

4.6.6 Flexibility. Test panels for the flexibility tests shall be aluminum alloy 2024 conforming to QQ-A-250/4 (O temper), anodized in accordance with MIL-A-8625, type I, with approximate dimensions of 0.020 by 3.0 by 6.0 in. (0.5 by 76.2 by 152.4 millimeters (mm). The primer coating shall be applied to test panels in accordance with 4.5.1 and topcoated in accordance with 4.5.2, with the exception that the topcoat shall be air-dried for 30 minutes and then baked at 95° to 105°C (203° to 221°F) for 24 hours. The coated test panels shall then be bent over a 1/8 in. (3.2 mm) mandrel, in accordance with FED-STD-141, method 6221 for conformance to 3.5.4.

4.6.7 Lifting. The primer coating shall be applied to 6 separate test panels, in accordance with 4.5 and 4.5.1, reserving one panel for each of the following air-dry times: 10 minutes; 30 minutes; 1 hour; 6 hours; 16 hours; and 48 hours. At the end of each drying time, apply one coat of lacquer conforming to TT-L-32, type II, to a dry film thickness of 0.8 to 1 mil (20.3 to 25.4 mm). After the topcoat has air dried for 72 hours, examine for conformance to 3.5.5.

4.6.8 Resistance properties.

4.6.8.1 Hydrocarbon resistance.

4.6.8.1.1 Primer coating. The primer coating shall be applied to test panels in accordance with 4.5 and 4.5.1 and air dried for 48 hours. Immerse the test panels in fluid conforming to TT-S-735, type III, for four hours at room temperature [25 ±3°C (77 ±5°F)]. 24 hours after removal from the fluid, examine the coating for conformance to 3.6.1.1.

4.6.8.1.2 Primer coating and topcoat. The primer coating shall be applied to test panels in accordance with 4.5 and 4.5.1 and then topcoated in accordance with 4.5.2, with the exception that the test panels shall be air dried for 24 hours and then baked at 95° to 105°C (203° to 221°F) for two hours. The test panels shall then be immersed in fluid conforming to TT-S-735, type III, maintained at room temperature [25 ±3°C (77 ±5°F)] for four hours. 24 hours after removal from the fluid, examine the coating for conformance to 3.6.1.2.

4.6.8.2 Hydrocarbon resistance - flexibility. The test panels used in 4.6.8.1.1 and 4.6.8.1.2 shall be bent 180° over a ½ in. (12.7 mm) mandrel, in accordance with FED-STD-141, method 6221, and examined for conformance to 3.6.1.3.

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4.6.8.3 Water resistance.

4.6.8.3.1 Primer coating. The primer coating shall be applied to test panels in accordance with 4.5. and 4.5.1 and air dried for 48 hours. Immerse the test panels in distilled water at room temperature [25 ±3°C (77 ±5°F)] for 24 hours. Examine for conformance to 3.6.2.1.

4.6.8.3.2 Primer coating and topcoat. The primer coating shall be applied to test panels, in accordance with 4.5 and 4.5.1, and then topcoated in accordance with 4.5.2. Immerse the test panels in distilled water at room temperature [25 ±3°C (77 ±5°F)] for 24 hours. After removal, examine for conformance to 3.6.2.2.

4.6.9 Salt spray resistance. The primer coating shall be applied to test panels in accordance with 4.5 and 4.5.1. Two intersecting lines shall be scribed across the surface of each test panel, exposing the substrate. The panels shall then be placed in a 5 percent salt-spray cabinet for 1,000 hours, in accordance with ASTM-B117. Examine for conformance to 3.6.3.

4.6.10 Accelerated weathering. Accelerated weathering testing shall be conducted on test panels with primer coated only applied (see 4.6.10.1 and 4.6.10.3) and on test panels with primer coating with topcoat applied (see 4.6.10.2 and 4.6.10.3).

4.6.10.1 Primer coating. Apply the primer coating in accordance with 4.5 and 4.5.1. Perform the accelerated weathering test in accordance with 4.6.10.3.

4.6.10.2 Primer coating and topcoat. Apply the primer coating in accordance with 4.5 and 4.5.1. Apply the topcoat in accordance with 4.5.2. Perform the accelerated weathering test in accordance with 4.6.10.3.

4.6.10.3 Procedure. Expose the test panels for 500 hours in a xenon-arc weatherometer (Atlas Electric Devices Company or equivalent) that is cycling between 102 minutes of light only and 18 minutes of light and waterspray, operated in accordance with ASTM-G26, Method 1, "Continuous Exposure to Light and Intermittent Exposure to Water Spray." Total exposure time shall be 500 hours. The following conditions shall apply when testing:

Apparatus type:	BH
Black body temperature in cabinet:	60 ±3°C (140 ±5°F)
Relative humidity in cabinet:	50 ±5 percent
Intensity of xenon-arc:	0.3 to 0.4 watts/meter^2 at 340 nm

Examine for conformance to 3.7.

5. PACKAGING.

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5.1 Packaging and packing. The primer coating shall be packaged and packed in accordance with PPP-P-1892. The packaging and the packing shall be as specified by the procuring activity (see 6.2).

5.1.1 Container and container size.

5.1.1.1 Non-pressurized (bulk) containers. Containers shall conform to PPP-P-1892. Container size shall be 1 pint, 1 quart or 1 gallon, as specified (see 6.2).

5.1.1.2 Pressurized (spray) containers. Pressurized (spray) containers shall be supplied with a cover cap protecting the valve. The valve shall operate with moderate finger pressure and close immediately upon release of pressure without sputtering. Container size shall be 1 pint.

5.2 Marking and labeling. All unit and shipping containers shall also be labeled in accordance with ANSI-Z129.1, PPP-P-1892, and MIL-STD-129. Individual containers shall bear a printed label showing the following, as applicable, and in the order shown:

- PRIMER COATING, ALKYD BASE, ONE COMPONENT
- Federal Specification TT-P-1757B, Type (I or II), Class (C or N), and Color (Y or T), as applicable
- Manufacturer's name and product number
- Date of Manufacture (Month and year)
- Batch number
- VOC content in grams per liter (g/l)
- Net contents
- Mixing instructions

5.2.1 Non-pressurized (bulk) containers. Non-pressurized (bulk) containers shall include the following additional marking:

"For viscosity reduction, use thinner conforming to MIL-T-81772, type III, only

Directions for application: Apply by spraying, brushing, or dipping. Application of a topcoat while the primer coating is still wet is required to attain maximum adhesion and corrosion inhibition."

5.2.2 Color "T" containers. Containers of color "T" primer coating, shall contain the following:

"Pretinted to match Interior Green, FED-STD-595, color number 34151"

5.2.3 Precautionary marking. The following shall appear on each container of primer coating:

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"CAUTION

AVOID BREATHING VAPOR

USE ONLY IN ADEQUATELY VENTILATED AREA"

5.2.3.1 Class C primer coating. In addition to the marking required in 5.2.3, the following shall appear on each container of class C primer coating: "CONTAINS CHROMATES."

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 primer coating is intended for use as a corrosion inhibiting primer coating on aluminum and aluminum alloy structures and surfaces and on surfaces coated with a pretreatment coating conforming to MIL-C-8514 or DOD-P-15328. The recommended dry film thickness is 15.2 to 22.9 µm (0.6 to 0.9 mil). Suggested testing for dip or flow-coat application is as follows:

- Dip application: Dip a test panel, with approximate dimensions of 101.5 by 305 mm (4 by 12 in.), full-length, into the primer coating, whose viscosity has been reduced as specified by the manufacturer. Upon removal from the primer coating, examine the test panel. If the film is not uniform in appearance and free from color separation, runs, sags or streaks, it is unsuitable for dip application.

- Flow-coat application. When applied by flow-coating to a glass panel, the primer coating should produce a continuous film, free from grit, seeds, streaks, blisters, or other surface irregularity.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this specification, including any amendments.
b. Issue of DoDISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.1 and 2.2).
c. Type, class, and color (see 1.2 through 1.2.3).
d. If a test report is required (see 4.3.3).
e. Quantity, size, and type of containers (see 5.1.1 and 6.3).
f. If reduced testing is permitted (see 6.2.1)

6.2.1 Reduced testing provisions. Purchasers have the option of permitting reduced testing requirements on material supplied to this specification when the manufacturer has historical test data that is less than five years old. Reduced testing is defined as all of the tests of this

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specification, with the exception of salt spray resistance (4.6.9), and weather resistance (4.6.10), and storage stability (4.6.11); however, manufacturer should be required to submit certification that the primer coatings are capable of passing all tests in the specification. Test data may be required to accompany the certification.

6.3 Part number assignment. Part numbers may be codes, as follows:

TTP1757B -	XXX -	XXXX
Specification identifier	Type, class, and color designator (see 6.3.1)	Container size designator (see 6.3.2)

6.3.1 Type, class, and color codes. When part number assignments are constructed in accordance with 6.3, the grade, class, and color designation in the part number assignment should be as follows:

Type	Class	Color	Designator
I	C	Yellow	1CY
I	N	Yellow	1NY
I	C	Green	1CG
I	N	Green	1NG
II	C	Yellow	2CY
II	N	Yellow	2NY
II	C	Green	2CG
II	N	Green	2NG

6.3.2 Container size designation. The container size designation in the part number assignment is coded as follows:

Container size	Designator
1 pint	001P
1 quart	001Q
1 gallon	001G

The container size and designator may be modified for ease of procurement and is not limited otherwise (as an example, 10 gallons would be coded as 010G).

6.4 Container sampling. Contracting personnel should consider the following for the sampling specified in 4.4.1.2: Inspection level S-4, Acceptable Quality Level (AQL) 2.5 defective per 100 units.

6.5 Subject term (key word) listing.

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Corrosion-inhibition
Exterior use
Flammable
Zinc chromate

6.6 Material Safety Data Sheet (MSDS). 29 CFR 1910.1200 requires that the MSDS for each hazardous chemical used in an operation must be readily available to personnel using the material. Contracting officers should identify the activities requiring copies of the MSDS.

6.7 Changes from previous issue. 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

Civil Agency Coordinating Activity
GSA - FSS (10FTE)

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

Review:
Army - MD
Navy - CG, MC
Air Force - 84

Preparing activity:
Navy - AS
(Project 8010-0490)

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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.

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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (*YYMMDD*)
	TT-P-1757B	970515

3. DOCUMENT TITLE

PRIMER COATING, ALKYD BASE, ONE COMPONENT

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) 323-2947 (2) DSN 624-2947
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

DD Form 1426, OCT 89 *Previous editions are obsolete*

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