

MIL-P-6808C

29 June 1973

SUPERSEDING

MIL-P-6808B(ASG)

21 September 1962

MILITARY SPECIFICATION**PRIMER COATING, ZINC CHROMATE,
PROCESS FOR APPLICATION OF**

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

1. SCOPE

- * 1.1 Scope. This specification covers procedures for the application of zinc chromate primer coating, Federal Specification TT-P-1757, on surfaces of aerospace weapons systems or military equipment.

2. APPLICABLE DOCUMENTS

- * 2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS**Federal**

TT-B-846	Butyl Alcohol, Normal (Butanol) (For Use in Organic Coatings)
TT-P-1757	Primer Coating, Zinc Chromate, Low-Moisture-Sensitivity
TT-T-548	Toluene, Technical
TT-X-916	Xylene (For Use in Organic Coatings)

Military

JAN-T-171	Toluene
-----------	---------

FSC 8010

MIL-P-6808C

MIL-S-5002	Surface Treatments and Inorganic Coatings for Metal Surfaces of Weapons Systems
MIL-P-7962	Primer Coating, Cellulose-Nitrate Modified Alkyd Type, Corrosion-Inhibiting, Fast-Drying
MIL-C-8507	Coating, Wash Primer (Pretreatment) for Metals, Application of
MIL-C-8514	Coating Compound, Metal Pretreatment, Resin-Acid
MIL-F-18264	Finishes: Organic, Weapons System, Application and Control of
MIL-L-19537	Lacquer, Acrylic-Nitrocellulose, Gloss (for Aircraft Use)
MIL-L-19538	Lacquer, Acrylic-Nitrocellulose, Camouflage (for Aircraft Use)

STANDARDS**Federal****FED-STD-595****Colors**

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS**3.1 Materials.**

- * **3.1.1 Zinc chromate primer.** The zinc chromate primer specified herein shall conform to the requirements of TT-P-1757. The primer is furnished in two compositions, G and L, and in two colors, Color (Y) Yellow and Color (T) Interior Green.
- * **3.1.2 Thinner.** Composition G primer shall be thinned with toluene conforming to TT-T-548. Xylene conforming to TT-X-916 and butyl alcohol conforming to TT-B-846 may be used as noted in 3.2.3.1, 3.2.3.3.1 and 4.4. Composition L primer shall be thinned with the type and volume of nonphotochemically reactive thinner specified by the manufacturer.
- * **3.1.3 Precautions.**
 1. Do not mix primers from different suppliers.
 2. Do not mix Composition G primers with Composition L primers.

3. Do not apply acrylic nitrocellulose lacquers (MIL-L-19537 and MIL-L-19538) over zinc chromate primer. Lacquers conforming to MIL-L-19537 and MIL-L-19538 should be applied over MIL-P-7962 primer.

4. Allow materials to come to room temperature before using.

* 3.2 Procedures and operations.

3.2.1 Preparation of metal surfaces. Metal surfaces shall be treated in accordance with MIL-S-5002. Application of the pretreatment coating shall be in accordance with MIL-C-8507. Dry scuff the pretreatment coating with clean Kraft paper or fine abrasive paper or cloth in accordance with MIL-C-8514. This procedure is recommended as necessary to minimize the extent of sanding required on subsequent finish coatings to produce an acceptable level of smoothness and gloss of the final finish. Immediately prior to priming, each individual area shall be rendered free of all dust, overspray, lint, etc. When tack rags are used to clean the surface, use only approved type tack rags prepared from new mill end cloths (see 3.2.8). All surfaces to be primed shall be thoroughly dry, and special precautions shall be taken to assure the dryness of faying surfaces, seams, etc., particularly following water, solvent wash, or vapor degreasing.

3.2.2 Mixing. The primer in the original container shall be thoroughly agitated or stirred with a paddle, or other mechanical device, to assure thorough admixture of the contents, before thinning as specified in 3.2.3.1, 3.2.3.2, and 3.2.3.3.1. The thinned material shall be strained through cotton cloth such as nainsook or an acceptable commercial paint strainer that will not dissolve or disintegrate in the thinned primer.

3.2.3 Methods of application. Spraying is the most satisfactory method of application, but brushing may be employed. For items of complicated shape and spot-welded assemblies, dipping or flow coating may be found to be the only practicable method of application. Use of dip tanks, however, should be avoided, wherever possible, for the reasons specified in paragraph 3.2.3.3.1. The method of application shall be such as to give coats of the prescribed thickness, smoothness, and uniformity. The primer, as applied, shall have the requisite adhesion to the substrate and be suitable for coating with the prescribed topcoating. Regular and frequent checks shall be conducted on control panels and on production items to insure the suitability of the primer film. Unless otherwise specified, one coat of zinc chromate primer shall be applied.

* 3.2.3.1 Spraying. To reduce Composition G primer for spraying, 2 to 2-1/2 volumes of toluene conforming to TT-T-548 shall be added to one volume of package material to obtain the requisite spraying characteristics and levelling properties. For slower drying characteristics, up to 1/4 of the toluene may be replaced with xylene, TT-X-916. The thinner to be employed for Composition L shall be as specified in 3.1.2. Since individual batches of primer will vary in actual

MIL-P-6808C

package consistency and working characteristics, slight variations in thinning may be required to obtain optimum working characteristics. The spray viscosities for both Composition G and L should be as specified in Table I. For application of films with greater thickness than specified in 3.2.4, the thinning ratio may be reduced and the primer sprayed at a higher viscosity, provided the deposited film of primer has the requisite adhesion to the substrate and be suitable for coating with the prescribed topcoat.

TABLE I
SPRAY VISCOSITY IN SECONDS AT 77° F

No. 4 Ford Cup	No. 1 Zahn Cup	No. 2 Zahn Cup
8 to 12	26 to 34	17 to 23

3.2.3.1.1 Equipment. The spraying equipment shall include a recent type of spray gun capable of handling synthetic primers and enamels utilizing an external mix nozzle. All compressed air lines should include a commercial filter and water separators and shall be blown out at least twice a day, or oftener, if necessary, to avoid condensation of oil and water which would result in oil and water spots in the finish coat. Whenever an extended break in work is anticipated, the primer shall be blown out of the liquid lines to avoid settling in the lines. High air pressure is not necessary and may actually prove undesirable. (With most guns, 15 to 40 pounds per square inch is satisfactory.) Positive agitation shall be provided and used in all mixing tanks. A thin, wet coat shall be applied by working with gun comparatively close to the surface. If applied too dry (caused by too much air, improper atomization, insufficient reduction, or holding the gun too far from the surface), metal anchorage will be impaired. A properly applied spray coat shall be greenish-yellow in color, and shall dry to a smooth satin-like finish.

3.2.3.2 Brushing. Composition G primer shall be thinned by adding approximately one volume toluene, TT-T-548, to one volume primer, except that if slower drying is desired, xylene, TT-X-916, may be used to replace part or all of the toluene. The thinner to be employed for Composition L shall be as specified in 3.1.2. The primer shall be spread quickly without reworking the brush over the coated areas. For large areas, a larger brush (approximately 4 inches) of good quality shall be used. Better work will often result if first consideration is given to speedy application, allowing maximum smoothness and regular patterned strokes to become of secondary importance. The proper thinning ratio is of great importance and is worthy of considerable care in adjusting.

3.2.3.3 Dipping application.

3.2.3.3.1 Dip tanks. Since primer in dip tanks is subject to deterioration as a result of contamination, oxidation, etc., use of dip tanks is not recommended and should be avoided whenever possible. Dip tanks, if used, shall be the smallest

possible size and shall be controlled as specified herein. Composition G primer, when applied by dipping, shall be reduced with toluene conforming to TT-T-548 or JAN-T-171, in the ratio of one volume of primer to 2 to 2-1/2 volumes of toluene or, for contractors, in accordance with the recommendations of the paint manufacturer. Replacement of up to 10 percent by volume of toluene with butyl alcohol conforming to TT-B-846 is permitted, but the drying time will have to be increased accordingly. The thinner to be employed for Composition L when used in dipping operations shall be as specified in 3.1.2. Adjustment of the thinner content shall be such that when the part is removed quickly, an adequate covering results. In practice, the dipped part shall be withdrawn slowly enough to permit the excess material to run off before the wet area is more than a slight distance above the surface of the liquid to prevent "washing". Additional thinner as required to make up evaporation losses shall be thoroughly stirred into the material in the tank, and tanks shall be stirred thoroughly before use to redisperse pigments which have settled to the bottom. Not all approved primers are suitable for application by dipping. The suitability of primers for this application may be determined as follows: A 4-by 12-inch test panel dipped full length for 30 seconds in material reduced as required for dipping shall, after removal and draining in a nearly vertical position, exhibit a film uniform in appearance, and free from color separation, sagging, running, or streaking. Primer coatings should be checked regularly for adequacy of adhesion to the substrate and suitability for top-coating. Primer in dip tanks shall be tested bi-weekly for conformance to the inspection requirements of the primer specification relative to film and resistance properties. Dip tank primer shall be discarded on evidence of deterioration.

3.2.3.3.1.1 Dip tanks, use of material from. Employment of dip tank primer as a source of primer for spray application on exterior surfaces is prohibited.

3.2.4 Thickness control. Dry film thickness of a single coat shall be 0.0003 to 0.0004 inch, except as may be authorized by other applicable specifications (see 6.1). A suitable film-measuring device shall be used to control the film thickness. Primer coats of less than 0.0003 inch have reduced corrosion inhibiting effectiveness; therefore, films below this thickness shall be avoided. For single coats of primer the color may provide a satisfactory means of gaging the thickness of coating applied. A medium coating shall be applied such that a distinct greenish cast is produced. A full yellow color is generally indicative of too heavy a coating. A suggested method of using color to gage thickness is to prepare reference panels of the primer being used, with exactly measured thickness of primer applied over the type of substrate of the production item; e.g., over pretreatment coating (wash primer) or over surface treatment, as applicable.

3.2.5 Minimum recoating time. Although the primer dries to handle within a few minutes, it shall be allowed to dry not less than 1-1/2 hours before top-coating with lacquer or enamel when the finish system includes pretreatment coating, and not less than 6 hours before topcoating with lacquer for finish systems not employing pretreatment coating, since premature application of topcoats will impair

MIL-P-6808C

the adhesion and promote brittleness of the finish system. When two coats of primer are used in exterior finishes, the first coat of primer shall be allowed to dry at least 1 hour before recoating with the next coat of primer. Note: Composition G primer is free from after tack within 1/2 hour, and Composition L primer within 6 hours.

3.2.5.1 Adjustment of drying time for local conditions. The minimum drying period to obtain the requisite adhesion of the finish must be predetermined by tests to take into account the actual temperature and humidity conditions during the painting operation. No definite drying time limits are available for all the varied processing conditions. However, the minimum drying period prescribed in the preceding paragraph may be reduced by 15 minutes if test data obtained by spraying the complete finish system as specified in MIL-F-18264, on large panels under production conditions, establishes the requisite flexibility and the adequacy of adhesion of the system when tested by the wet adhesion tape test on scratched panels as specified in MIL-F-18264. The following suggestions are made as starting points for the local investigation. If painting is done at temperatures from 70° to 79° F and the relative humidity is less than 70 percent, the minimum drying period of 1-1/2 hours before topcoating with lacquer or enamel will be found generally satisfactory; at these relative humidities but at higher temperatures it may be found possible to reduce the drying time 15 minutes. For temperatures below 70° F or relative humidities above 70 percent the minimum drying period may have to be extended for an additional 1/2 hour or more.

3.2.5.2 Baking. Whenever it is considered desirable to shorten the drying time of primer before application of topcoat, the primer shall be baked 45 minutes at 160° to 180° F (71° to 82° C) or for 20 minutes at 220° to 240° F (104° to 116° C). At other temperatures, the time of baking shall be reduced in proportion to the temperature increase. Baking will produce more satisfactory metal anchorage to cadmium plate and similar surfaces. Baking temperature shall not exceed 295° F. Sufficient air dry should be allowed before oven cure, for flash-off of solvent to prevent blistering or crazing of primer.

3.2.6 Maximum recoating time.

3.2.6.1 Maximum recoating time, exterior finish. The primer component of the exterior finish shall be topcoated within 24 hours after its application, since primer coats develop poor topcoating characteristics with time. However, where production operations are suspended for short periods, e.g., over weekends, holidays, etc., this time may be extended as necessary, but not to exceed 72 hours, provided the adhesion is unaffected thereby, as determined by the wet tape scratch adhesion test specified in Specification MIL-F-18264. Removable access plates offer a convenient representative surface for conducting the scratched panel adhesion test specified in Specification MIL-F-18264.

3.2.6.2 Maximum recoating time, interior finish. For interior parts, primer coatings coated more than 72 hours earlier may be topcoated provided suitable measures are taken to insure the requisite intercoat adhesion; e.g., by sanding of the primer or by washing with a solution of 95 percent toluene and 5 percent cello-solve acetate.

3.2.7 Outdoor storage. Outdoor storage of primed parts which are to be subsequently coated with either primer or topcoats is prohibited.

3.2.8 Treatment prior to topcoating. When required, the primer shall be scuff sanded with wet or dry No. 400 sandpaper, to obtain the required smoothness of coating. Sanding is permitted only to remove small specks that might carry through to the topcoats. Areas where primer presents a distinctly rough appearance should be stripped and repainted. Whether primer is sanded or not, cleaning to remove dust, lint, etc., is required immediately prior to topcoating. Tack rags used for cleaning shall have been prepared from new mill end cloths, since laundered rags may be contaminated with silicone materials which would adversely affect the adhesion of the finish.

3.2.9 Application of primer as sealer. Where it is necessary to apply insignia and marking lacquers over areas previously coated with enamels, zinc-chromate primer may be used satisfactorily as a sealer. The primer shall be applied in the manner as for dope proofing and subsequently the lacquers shall be applied as dry as practicable. The drying time of the primers when used as a sealer shall be predetermined as specified in paragraph 3.2.5.1.

3.2.10 Application as interior finish. Where interior green color conforming to color No. 34151 of Federal Standard No. 595, is prescribed for interior finish, primer pretinted to this color may be employed as the finish coat in areas not subject to wear or traffic. Tinting to other colors is prohibited.

4. QUALITY ASSURANCE PROVISIONS

* 4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 Inspection tests. Primer coatings shall be inspected in order to insure conformance to the requirements of this specification. When inspection is performed at the contractor's plant, all inspections and tests shall be conducted by

MIL-P-6808C

the contractor and the results thereof shall be retained for review as required by the procuring activity.

4.2 Film thickness measurements. Regular and frequent film thickness measurements shall be conducted on the production item with a Naval Research Laboratory Filmeter, Gardner Thickness Gage, or any equivalent film thickness measuring device, or the color comparison method specified in 3.2.4, on a sufficient number of selected areas of the item and on a sufficient number of items to assure maintenance of the overall thickness of primer in accordance with specification requirements.

4.3 Control of film thickness. When the painter has the gun adjusted and is ready to start spray painting, he shall first spray paint large test panels. The thickness of the film shall be measured on the panels with a micrometer or an Ames Thickness Gage, or equivalent. If the film thickness exceeds the allowable maximum, necessary adjustments shall be made to the spray gun, viscosity, etc., and trial spraying repeated until the proper thickness is obtained. Then painting may proceed.

4.4 Thinning. Thinning of primer shall be restricted to specially designated personnel operating in direct conjunction with the materials quality control laboratory. Thinning by the individual painters without the authorization of the quality control laboratory shall be strictly prohibited.

4.5 Rejection and retest. Primer finishes not conforming to the requirements of this specification shall be rejected. Coatings and finishes may be reworked or replaced to correct the defects, and resubmitted for acceptance. Full particulars concerning previous rejection and the action taken to correct the defects found originally shall be furnished to the procuring activity.

5. PREPARATION FOR DELIVERY

5.1 The requirements of Section 5 are not applicable to this specification.

6. NOTES

* 6.1 Intended use. The zinc chromate primer coating is intended for use as a corrosion inhibiting primer for interior aluminum surfaces of aircraft and missiles, either alone, or topcoated with nitrocellulose lacquers or enamels. Recommended topcoats are lacquers covered by TT-L-20 and TT-L-32 and enamels covered by TT-E-489 and TT-E-527. However, this primer can be used under a variety of enamels and lacquers and in missiles on metals other than aluminum. With a suitable topcoat it can be used for exterior applications. It is used as the finish coat on interior surfaces which are not subject to wear or traffic. A dry film thickness of 0.6 to 0.8 mils of primer is required when used on military equipment such as nonaircraft or airborne equipment, and on iron or steel surfaces. The primer is also applied to aerospace faying surfaces and attaching parts as specified in MIL-F-7179.

6.2 Prior material specification reference. Federal Specification TT-P-1757, Primer Coating, Zinc Chromate, Low-Moisture-Sensitivity, supersedes MIL-P-8585A dated 17 October 1957. However, this specification, MIL-P-6808C may be used for the application of MIL-P-8585A primer.

Custodians:

Army - MR
Navy - AS
Air Force - 84

Preparing activity:

Navy - AS
(Project No. 8010-0749)

Review activities:

Army - MR, MI, AV
Air Force - 84

☆ U. S. GOVERNMENT PRINTING OFFICE: 1973-713-144/337

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the blems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification 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.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

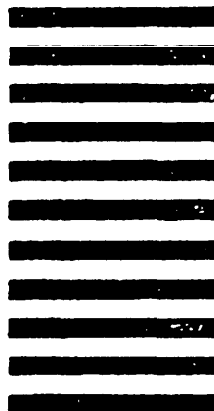
OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 12503 WASHINGTON D. C.

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

Commander
Naval Air Systems Command (AIR 51122)
Washington, DC 20361



STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

☐

VENDOR

☐

USER

☐

MANUFACTURER

☐

OTHER (Specify): _____

5. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)