

TT-P-650D
August 25, 1988
SUPERSEDING
TT-P-650C
February 24, 1975

FEDERAL SPECIFICATION

PRIMER COATING, LATEX BASE,
INTERIOR, WHITE (FOR GYPSUM WALLBOARD, OR PLASTER)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE

1.1 Scope. This specification covers a white latex-base primer coating, non-lead, for interior gypsum wallboard, or plaster (see 6.4). The primer is representative of materials to be used in specified areas, when air quality regulations are applicable and content of volatile organic compounds (VOC) is limited (see 6.5).

2. APPLICABLE DOCUMENTS

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

Federal Specifications

TT-E-508 - Enamel, Interior, Semigloss, Tints and White
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

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer (Code 156), Naval Construction Battalion Center, Port Hueneme, CA 93043-5000, by using the self-addressed Standardization document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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

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(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by 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 General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(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.)

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 Society For Testing and Materials (ASTM):

- D562 - Consistency of Paints Using the Stormer Viscometer, Test Method for
- D1296 - Odor of Volatile Solvents and Diluents, Test Method for
- D1308 - Effect of Household Chemicals on Clear and Pigmented Organic Finishes, Test Method for
- D1475 - Density of Paint, Varnish, Lacquer, and Related Products, Test Method for
- D1849 - Package Stability of Paint, Test Method for
- D2243 - Freeze-Thaw Resistance of Water-Borne Paints, Test Method for
- D2369 - Volatile Content of Coatings, Test Method for
- D2486 - Scrub Resistance of Interior Latex Flat Wall Paints, Test Method for
- D2697 - Volume Nonvolatile Matter in Clear or Pigmented Coatings, Test Method for
- D3273 - Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, Test Method for
- D3924 - Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials, Specification for
- D3925 - Sampling Liquid Paints and Related Pigmented Coatings, Practice for

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- D3960 - Determining Volatile Organic Content (VOC) of Paints and Related Coatings, Practice for
- D4287 - Determination of Viscosity of Paints and Varnishes at a High Rate of Shear by the ICI Cone/Plate Viscometer, Test Method for
- E97 - Directional Reflectance Factor, 45-deg O-deg, of Opaque Specimens by Broad-Band Filter Reflectometry, Test Method for

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

South Coast Air Quality Management District (SCAQMD) Rules and Regulations:

Rule 1113 - Architectural Coatings

(Application for copies should be addressed to the South Coast Air Quality Management District, 9150 Flair Drive, El Monte, CA 91731.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

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 specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.2.1 and 6.2).

3.2 Composition.

3.2.1 Volatile vehicle (see 3.5.2). The VOC content shall be limited as defined by SCAQMD Rule 1113, for the intended use.

3.3 Primer. The primer shall conform to the requirements of table I when tested as specified.

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TABLE I. Primer.

Characteristics	Requirements			Test Methods		
	Min	Max	Para	ASTM	FTMS 141	Para
Analysis						
Solids, mass percent	41.0	-	3.4	D2369	-	-
Solids volume, percent	29.0	-	3.4	D2697	-	-
Volatile organic compounds (VOC), less water, g/L (lb/gal)	-	250 [1] (2.1)	-	D3960	-	-
Properties						
Vapor odor	-	-	3.3.1	D1296	-	-
Condition in container	-	-	3.3.2	-	3011	-
Density, kg/L (lb/gal)	1.20 (10.0)	-	3.4 1	D1475	-	-
Consistency, Krebs units	75.0	100.0	3.4	D562	-	-
Viscosity, pascal seconds	-	-	3.3 3	D4287	-	-
Accelerated aging	-	-	3.3.4	D1849	-	4.4.1
Freeze-thaw resistance, three cycles						
Consistency, Krebs units	75.0	100.0	-	D2243	-	-
Consistency change, Krebs units	-	8.0	-	D2243	-	-
Mildew resistance, rating units	8	-	-	D3273	-	-
Application						
Working properties	-	-	3.3.5	-	2081, 4321, 4331, 4335	-
Dry-hard time, hours	-	2	-	-	4061	-
Appearance of Dry Film						
Daylight 45 deg., 0 deg. directional reflectance	75.0	-	-	E97	-	-
Contrast ratio at 15.5 m ² /L (630 ft ² /gal)	0.85	-	-	-	4121, Proc B, Meth B	-
60 deg. specular gloss	5.0	20.0	-	-	6101	-
Performance of Dry Film						
Flexibility	-	-	3.3.6	-	6221	4.4.2
Knife test	-	-	3.3.7	-	6304	4.4.3
Recoating	-	-	3.3.8	-	-	4.4.4
Enamel holdout	-	-	3.3.9	-	6101	4.4.5
Alkali resistance	-	-	3.3.10	D2486, D1308	-	4.4.6

[1] Value may be different from that required for compliance to 3.2.1.

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3.3.1 Vapor odor. The vapor from the primer in the can, and during application, shall not be irritating, or offensive in odor. There shall be no residual odor after 24 hours air drying.

3.3.2 Condition in container. The container shall not be corroded, and the primer shall be free from livering and biological growth. The primer shall be redispersible by a maximum of 5 minutes hand stirring to a uniform, usable condition, free from persistent foam.

3.3.3 Viscosity. The viscosity shall be the manufacturer's standard for the product provided.

3.3.4 Accelerated aging. The primer, stored in a full, tightly closed container for 30 days at 51.7 +/- 1.1 degrees Celsius (C) (125 +/- 2 deg. Fahrenheit (F)), shall show no coagulation or hard settled pigment. The paint shall be redispersible to a uniform condition, and meet the working property requirements of table I.

3.3.5 Working properties. The primer shall brush, spray, and roll easily on unprimed gypsum wallboard, without excessive brushmarks, foaming, or roll spatter, and shall dry to a smooth, uniform film, free from lap marks, suction spots, fuzz, or streaking.

3.3.6 Flexibility. The primer film shall show no cracking or flaking when tested.

3.3.7 Knife test. The primer film shall ribbon or curl from the panel when tested, and the cut shall show beveled edges.

3.3.8 Recoating. The primer film shall show no lifting, softening, or other film irregularities when tested.

3.3.9 Enamel holdout. The difference in 60 deg. gloss between one and two topcoats shall not be greater than 5 percent of the one-coat gloss value.

3.3.10 Alkali resistance. The primer shall not blister or emulsify when exposed for 4 hours to 0.5 percent NaOH solution. After 24 hours recovery, the film shall show no change in hardness or adhesion.

3.4 Batch verification. When specified (see 6.2), quality conformance tests (see 4.2.2.1) shall include the requirements of table II, when a first article has been previously specified. The test values, X, shall be as specified in table I, and shall be within the required ranges of the values determined in the first article testing, as specified in table II.

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TABLE II. Batch verification.

Characteristics	Requirements
Analysis	
Solids, mass percent	X +/- 1.0
Solids volume, percent	X +/- 4.0
Properties	
Density, kg/L (lb/gal)	X +/- 0.1 (0.8)
Consistency, Krebs units	X +/- 10.0

3.5 Material Safety Data Sheets (MSDS). MSDS shall be submitted in accordance with FED-STD-313.

3.5.1 Excluded materials. MSDS shall show exclusion of chromium, lead, halogenated solvents, benzene, and 2-ethoxyethanol and 2-methoxyethanol and the corresponding acetates, as intended ingredients.

3.6 Air quality regulations marking. Each unit container and shipping container shall include the maximum VOC in grams per liter and pounds per gallon of coating, less water and less exempt solvents, and shall also state that the material is to be used without thinning under normal environmental and application conditions.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All material must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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

- a. First article inspection (see 4.2.1)
- b. Quality conformance inspection (see 4.2.2)
- c. Preparation for delivery inspection (see 4.5).

4.2.1 First article inspection. The first article inspection shall be performed on the material when a first article is required (see 3.1 and 6.2). This inspection shall include the tests of 4.4, and the preparation for delivery inspection of 4.5. The first article may be either first production material, or standard production material from the supplier's current inventory, provided the material meets the requirements of the specification and is representative of the ingredients and manufacturing technique applicable to the remaining material to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the tests of 4.2.2.1, and the preparation for delivery inspection of 4.5, and conformance to 3.4 when specified. Additional tests may be performed as deemed necessary.

4.2.2.1 Quality conformance tests. Quality conformance inspection shall include the following test requirements of table I:

- a. Analysis
 - (1) Solids mass
 - (2) Solids volume
- b. Properties
 - (1) Condition in container
 - (2) Density
 - (3) Consistency
 - (4) Viscosity
- c. Application
 - (1) Drying time
- d. Appearance of dry film
 - (1) Contrast ratio
- e. Performance of dry film
 - (1) Flexibility
 - (2) Knife test
 - (3) Enamel holdout
 - (4) Alkali resistance

4.3 Sampling. A lot shall consist of material from a single manufacturer's batch, defined as the end product of all raw materials mixed, blended, or processed in a single operation. Inspections shall be performed on samples selected in accordance with ASTM D3925.

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4.4 Testing. The primer shall be tested in accordance with table I. Unless otherwise specified, the standard conditions and requirements of ASTM D3924 shall apply. Failure of any test shall be cause for rejection of the lot from which the sample was taken.

4.4.1 Accelerated aging. After storage of the primer 30 days in a 1-quart container, examine as specified in ASTM D1349, and test as applicable in table I, to determine compliance with 3.3.4.

4.4.2 Flexibility. Test as specified in FED-STD-141, method 6221. Apply the primer at a dry film thickness of 37 +/-2 micrometers (0.0015 +/-0.0001 inch) to a 75 by 125 millimeters (mm) (3 by 5 inch) tinplate panel conforming to method 2012. Air-dry the panel 2 hours, then bake 24 hours at 105 +/-2 deg. C (221 +/-3.6 deg. F). Use a 3.2-mm (1/8-inch) diameter mandrel.

4.4.3 Knife test. Cut the film from a flat portion of the panel used in 4.4.2, at a location away from the bent area, and examine.

4.4.4 Recoating. After one of the panels used for the working properties test has air-dried 24 hours, recoat with a second brush coat. Evaluate during brushing and after drying.

4.4.5 Enamel holdout. After one of the primed panels, used for the working properties test, has air-dried 24 hours, brush TT-E-508 enamel over one-half of the panel at 11.0 m^{L2}/L (450 ft^{L2}/gal). Air-dry 24 hours, and similarly brush the enamel over the entire panel. Measure the 60 deg. gloss over each area after 48 hours air-drying.

4.4.6 Alkali resistance. Apply and dry the primer as specified in ASTM D2486, using a gypsum wallboard panel. Test by the covered spot test procedure of ASTM D1308.

4.5 Preparation for delivery inspection. The inspection of the packaging, packing, and marking shall be in accordance with the requirements of section 4 of PPP-P-1892.

5. PREPARATION FOR DELIVERY

5.1 Packaging, packing, and marking. Packaging, packing, and marking shall be in accordance with the requirements of PPP-P-1892, with the level of packaging and the level of packing as specified (see 6.2). The primer shall be furnished in 1-gallon and 5-gallon containers as specified (see 6.2).

5.1.1 Special marking. In addition to other markings required by PPP-P-1892, containers shall be marked with air quality regulations conformance (see 3.6).

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6. NOTES

6.1 Intended use. The primer coating is intended for use on interior walls and ceilings of gypsum wallboard, or on cured plaster, free of surface contaminants. The primer coating may be tinted with a colorant recommended by the manufacturer, but oil colors should not be used. One coat of the primer coating should be sufficient for most surfaces. Two coats may be required when the finish coat is to be a dark color. The primer may be finished with one or two latex topcoats, or with an alkyd intermediate primer and an alkyd topcoat.

6.2 Ordering data. Purchasers shall select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification
- (b) When a first article is required for inspection and approval (see 3.1, 4.2.1, and 6.3)
- (c) When batch verification is required (see 3.4)
- (d) Level of packaging and level of packing required (see 5.1)
- (e) Size of container required (see 5.1)

6.3 First article. When a first article inspection is required, the material will be tested, and should be a sample selected from the first production material, or it may be standard production material from the contractor's current inventory, as specified in 4.2.1. The first article should consist of a minimum of two gallons of material. The contracting officer should include specific instructions in acquisition documents regarding arrangements for test and approval of the first article.

6.4 Cross-reference of classification. This specification includes the requirements of TT-P-650C, type I, for ready-mixed material; type II, for paste material, has been deleted.

6.5 Conformance to air quality regulations. Purchasers should specify materials as described, or as otherwise required, to conform to the most stringent air quality regulations for intended jurisdictions and applications of use.

6.6 Subject term (key word) listing.

Aging, accelerated
Air quality regulations marking
Alkali resistance
Batch verification
First article
Solids volume
Viscometer, ICI cone/plate
Volatile organic compounds

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MILITARY INTERESTS:

CIVIL AGENCY COORDINATING ACTIVITY

Custodians

GSA - FSS

Army - ME

Preparing Activity:

Navy - YD

Navy - YD

Review Activity

Army - MR

User Activity

(DOD Project 8010-1170)

Army - CE

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.