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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
NASA-09920 (March 2003)  
NASA - KSC  
Superseding NASA-09920  
(September 1999)  
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SECTION 09920

ARCHITECTURAL PAINTING  
03/03

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NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers the general requirements, materials, surface preparation, material preparation, and coating systems for exterior and interior on-site painting.

Factory-finished and semifinished surfaces must be specified in their respective sections. Field finish applied to factory-semifinished surfaces must be checked for compatibility.

The following areas and surfaces are not generally painted except as noted or specified:

Elevator and duct shafts, concealed spaces, concealed pipes and ducts

Exterior brick, stone, and concrete surfaces are not generally painted, but may be, if considered aesthetically desirable.

Nonferrous metal and stainless steel surfaces, unless required for aesthetic reasons

Acoustic tile and acoustic plaster surfaces

Materials with acceptable factory-finished surfaces

Concrete floors

Structural steel encased in concrete and structural steel concealed by interior building finish, except where subject to high humidity or corrosive conditions

Drawings and paint schedules must indicate exterior and interior surfaces to be painted and finish coating color and gloss.

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PART 1 GENERAL

1.1 REFERENCES

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**NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.**  
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The publications listed below form a part of this section to the extent referenced:

ASTM INTERNATIONAL (ASTM)

ASTM C 920 (1994) Standard Specification for Elastomeric Joint Sealants

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 2 (1995) Hand Tool Cleaning

SSPC SP 3 (1995) Power Tool Cleaning

U.S. DEPARTMENT OF DEFENSE (DOD)

MS DOD-P-15328 (Rev D; Am 1) Primer (Wash), Pretreatment (Formula No. 117 For Metals) (Metric)

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FED-STD 595 (Rev B) Colors Used in Government Procurement

FS A-A-1500 (Rev A) Sealer, Surface (Latex Block Filler)

FS TT-E-508 (Rev C; Am 1) Enamel, Interior, Semigloss, Tints and White

FS TT-E-509 (Rev C) Enamel, Odorless, Alkyd, Interior, Semigloss, White and Tints

FS TT-P-102 (Rev E; Int Am 1) Paint, Oil (Alkyd Modified, Exterior, White and Tints)

FS TT-P-1511 (Rev B) Paint, Latex (Gloss and Semigloss, Tints and White) (For Interior Use)

FS TT-P-19 (Rev D) Paint, Latex (Acrylic Emulsion, Exterior Wood and Masonry)

FS TT-P-25 (Rev E) Primer Coating, Exterior Undercoat for Wood, Ready-Mixed, White and Tints

FS TT-P-650 (Rev D) Primer Coating, Latex Base, Interior, White (For Gypsum, Wallboard or

	Plaster)
FS TT-P-659	(Rev C) Primer Coating and Surfacer: Synthetic, Tints and White (For Metal and Wood Surfaces)
FS TT-P-664	(Rev D) Primer Coating, Alkyd, Corrosion-Inhibiting, Lead and Chromate Free, VOC-Compliant
FS TT-S-223	(Rev B) Sealer, Surface, Floor Water Emulsion Type

1.2 SUBMITTALS

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**NOTE: Review submittal description (SD) definitions in Section 01330, "Submittals," and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.**  
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The following shall be submitted in accordance with Section 01330, "Submittals," in sufficient detail to show full compliance with the specification:

SD-01 Preconstruction Submittals

Material Safety Data Sheets shall be submitted to the Contracting Officer.

Manufacturer's Standard Color Charts shall be submitted for architectural painting materials in accordance with the paragraph entitled, "General," of this section.

SD-03 Product Data

Manufacturer's catalog data shall be submitted for the following items including designated name, formula or specification number, manufacturer's instructions and name of manufacturer. Data shall include detailed analysis of each coating material required, with constituents measured as percentages of the total weight of coating; and details of application, thinning, and average coverage per gallon liter.

- Calk/Sealer
- Inhibitive Metal Primer
- Wash Primer
- Pigmented Primer/Sealer
- Latex Block Filler
- Masonry Primer/Sealer
- Enamel
- Wood Primer
- Acrylic Latex
- Acrylic Epoxy

## SD-07 Certificates

Certificates shall be submitted for following items showing conformance with the referenced standards contained in this section.

Inhibitive Metal Primer  
Wash Primer  
Pigmented Primer/Sealer  
Latex Block Filler  
Masonry Primer/Sealer  
Enamel  
Wood Primer  
Acrylic Latex  
Acrylic Epoxy

## SD-08 Manufacturer's Instructions

Manufacturer's Instructions shall be submitted for architectural coatings in accordance with paragraph entitled, "General," of this section.

### 1.3 DELIVERY, HANDLING AND STORAGE

Materials shall be delivered in their original, unbroken containers bearing the manufacturer's name and product identification.

All paint materials, thinners, and cleaners shall be stored in tightly closed containers in a covered, well-ventilated area where they will not be exposed to excessive heat, sparks, flame, or direct sunlight. Water-based materials shall be protected against freezing.

Material Safety Data Sheets shall be submitted by the contracting officer.

### 1.4 CONTRACTOR PERSONNEL QUALIFICATION

Personnel assigned to the work shall be certified by the Contractor to have had adequate previous experience in the successful application of paints and coatings similar to those specified.

### 1.5 WARRANTY

Contractor shall guarantee all work against defects in labor and material for a period of one year.

## PART 2 PRODUCTS

### 2.1 GENERAL

The following are suggested paint manufacturers and their products. Other paint manufacturers' products of equal quality will be considered when approved by the Contracting Officer. All thinners and cleaners shall be products of the coating manufacturer. Primer and finish coats of the paint system shall be products of the same manufacturer.

Manufacturer's Standard Color Charts shall be submitted for architectural painting Materials showing manufacturer's recommended finish colors. Three color chips of each color and gloss scheduled shall also be submitted.

Manufacturer's Instructions shall be submitted for architectural coatings showing printed instructions covering thinning, mixing, handling, and applying.

## 2.2 EXTERIOR PRODUCTS

	<u>FEDERAL SPECIFICATION</u>	<u>PITTSBURGH</u>	<u>SHERWIN WILLIAMS</u>	<u>GLIDDEN</u>
Calk/Sealer	ASTM C 920	Chem Calk	Elastomeric	--
Latex Block Filler	FS A-A-1500	6-7	B25W46	5317
Masonry Primer/Sealer	FS TT-S-223	6-3	A 5V2	5212
Enamel	FS TT-P-102	1-934	A 2	1400
Wood Primer	FS TT-P-25	1-870	Y24W20	3651
Inhibitive Metal Primer	FS TT-P-664 FS TT-P-664	--	B50N2	310
Acrylic Latex flat emulsion	FS TT-P-19	6-650	A80	3525
Wash Primer	MS DOD-P-15328	97-687/8	P-60G2	--

## 2.3 INTERIOR PRODUCTS

	<u>FEDERAL SPECIFICATION</u>	<u>PITTSBURGH</u>	<u>SHERWIN WILLIAMS</u>	<u>GLIDDEN</u>
Latex Block Filler	FS A-A-1500	6-7	B25W46	5317
Masonry Primer/Sealer	FS TT-S-223	6-3	A 5V2	5212
Wood Primer	FS TT-P-25	1-870	Y24W20	3651
Inhibitive Metal Primer	FS TT-P-664 FS TT-P-664	--	B50N2	310
Pigmented Primer/Sealer	FS TT-P-650	6-2	B28W1	3416
Enamel	FS TT-E-508 FS TT-E-509	6-90	A 40	4600
Acrylic Latex	FS TT-P-1511	6-510	B42	3700
Water-base Acrylic Epoxy	--	16 line	B70/B60V15	--

## PART 3 EXECUTION

### 3.1 GENERAL

Manufacturer's recommendations for surface preparation, thinning, mixing, handling, and applying his product shall be considered a part of this

specification. In case of conflict between the manufacturer's recommendations and the requirements of this specification, the latter shall take precedence.

### 3.2 PROTECTION

Contractor shall remove and reinstall, or provide acceptable protection for, all hardware, accessories, lighting and electrical components, factory-finished materials, plumbing fixtures and fittings, and any other materials that may become splattered or damaged by the painting work. "WET PAINT" signs shall be posted to indicate newly painted surfaces.

Every precaution shall be taken to prevent damage to adjacent buildings, shrubs and motor vehicles. Shrubs shall be cut back to 12 inches 300 millimeter from structures to be painted. Roping, barricading or covering to preclude damage to personal and real property during surface preparation and painting shall be the Contractor's responsibility. When spray painting, the Contractor must give 24 hours advance warning, coordinated with the Contracting Officer or his representative, and post signs to ensure parking arrangements can be made. Repairs to damaged surfaces shall be effected at no additional cost to the Government.

### 3.3 SURFACE PREPARATION

#### 3.3.1 General Surface Preparation

All surfaces shall be clean, dry, and free from contaminants and foreign matter. Mildew and chalking shall be removed and the surface thoroughly sterilized. All chipped, peeling, or blistered paint shall be removed and the surface spot-primed. Hard, glossy surfaces shall be dulled and roughened to ensure proper adhesion.

#### 3.3.2 Earth and Masonry Interface

Where applicable, soil shall be hand removed to expose 4 inches 100 millimeter of cement block wall below grade level. Exposed cement block shall receive the same treatment under this specification as the cement block above grade level. Soil shall be replaced to restore the original grade no sooner than 48 hours after the block painting is complete.

#### 3.3.3 Metal Surfaces

All heavy rust and loose mill scale shall be removed from steel in accordance with [SSPC SP 2, Hand Tool Cleaning] [SSPC SP 3, Power Tool Cleaning].

Minor aluminum oxide film and corrosion shall be removed by hand or power tool cleaning.

Previously unpainted galvanized and aluminum surfaces shall be treated with wash primer in accordance with manufacturer's instructions.

#### 3.3.4 Wood Surfaces

Knots shall be sealed with a mixture of equal parts of shellac and alcohol (or product approved equal). Nail holes, cracks, and other defects shall be filled with plastic wood or putty. Concealed surfaces shall be back-primed before installation.

### 3.3.5 Masonry Surfaces

All surfaces shall be free from form-release compounds, laitance, and other contaminants.

Large cracks, voids and other major surface imperfections shall be repaired before painting. All repairs to cracks and openings in cement block or masonry surfaces shall require preparation of a "V" type opening with the top of the "V" one-half the depth of the crack or opening. All non-tenacious material shall be removed, then the "V" shall be filled using [Portland cement grout as described and formulated in FS TT-P-19. Substrates shall be moistened to receive mortar.] [Epoxy gel grout in accordance with manufacturer's instructions.]

### 3.3.6 Plaster and Drywall

All surfaces shall be clean and dry. Cracks and other surface imperfections shall be filled with spackling compound and sanded smooth.

### 3.3.7 Sealing

All cracks, crevices, and joints such as those along the perimeter of windows and doors shall be sealed with a paintable [polysulfide] [latex] type calking conforming to ASTM C 920.

## 3.4 MIXING AND APPLICATION

### 3.4.1 General

All painting shall be accomplished in accordance with the painting schedule.

No exterior painting shall be allowed in rainy weather or when rain is imminent. No paints or coatings shall be applied when the temperature or humidity is outside the limits recommended by the manufacturer.

Paints and coatings shall be applied by brush, roller, or airless spray.

Each coat of material applied shall be free from runs, sags, bubbles, and foreign contaminants; variations in color, gloss and texture; dry overspray, brush, and roller marks; holidays (missed areas); or other evidence of poor application.

All paints and coatings shall be thoroughly worked into corners and crevices.

Paints and coatings shall be neatly "cut-in" around doors, windows, ceilings, etc.

All newly painted surfaces shall be adequately protected from damage.

### 3.4.2 Procedures

Coatings shall be applied as follows:

- a. Material shall be thoroughly stirred to produce a uniform mixture.
- b. Material shall be thinned for workability and improved spray characteristics, but only according to the manufacturer's instructions.

- c. Each coat shall be applied uniformly at the minimum wet-film thickness specified by the manufacturer.
- d. Special attention shall be given when coating sharp edges, corners, and crevices to ensure complete coverage.
- e. Finish coats shall show good hiding characteristics and uniform appearance.

#### 3.4.3 Exterior Surfaces

Metal surfaces shall be primed with alkyd primer in accordance with [FS TT-P-659] [manufacturer's instructions], and topcoated with two coats enamel in accordance with [FS TT-P-102] [manufacturer's instructions].

Paint shall be allowed to dry overnight before re-coating.

Wood surfaces shall be primed with alkyd primer in accordance with [FS TT-P-659] [manufacturer's instructions], and topcoated with two coats [acrylic emulsion] [enamel] in accordance with [FS TT-P-19] [FS TT-P-102] [manufacturer's instructions]. Primer and enamel shall be allowed to dry overnight before topcoating. A four hour drying time shall be allowed between coats of acrylic emulsion paint.

Masonry surfaces shall have two topcoats of acrylic emulsion paint applied and both coatings shall be in accordance with [FS TT-P-19] [manufacturer's instructions]. First coat shall be tinted with a universal color (umber) to allow quick identification between the first and second coats. A four hour drying time shall be required between coats. Coating shall be applied with a fibered roller or airless spray. Junction of the wall and roof, window framing, door framing and piping shall be cut in using appropriate brushes.

#### 3.4.4 Interior Surfaces

Wood and metal surfaces shall have two coats of enamel paint applied in accordance with [FS TT-E-508/FS TT-E-509] [manufacturer's instructions]. A [four] [twelve] [\_\_\_\_\_] hour drying time shall be required between coats. Surfaces to be painted with enamel paint include any metal or wood paintable surface. Items to be painted include (but are not limited to) doors, jambs, handrails, and grilles.

Masonry surfaces shall have two coats of [latex] [epoxy] paint applied in accordance with [FS TT-P-1511] [manufacturer's instructions] on wall surfaces, ceilings and appurtenances (excluding vinyl cove base) with colors other than that specified. A [four] [twelve] [\_\_\_\_\_] hour drying time shall be required between coats. One coat of [latex] [epoxy] shall be applied on areas where existing color is the same as that specified. Areas requiring only one coat of [latex] [epoxy] shall be patched and spot primed or touched up before painting to insure one coat coverage. A four hour minimum drying time shall be required between the spot primed coat and the finish coat. Surfaces to painted with [latex] [epoxy] paint include concrete, concrete masonry, gypsum drywall systems and plaster. Items to be painted include (but are not limited to) walls, ceilings, pipes and columns.

### 3.5 SPOT-PAINTING

Spot-painting to correct damaged surfaces will be allowed only when touchup area blends into the surrounding finish. Otherwise, the entire area shall be recoated. Touchup shall be accomplished using the same method of application as was used to apply the original material.

### 3.6 ACCEPTANCE PROVISIONS

#### 3.6.1 Inspection

Contractor shall provide for inspection of his work to ensure that the requirements of this section have been fulfilled.

#### 3.6.2 Cleanup

Contractor shall be responsible for removal of all paint or coating splatter and spills from floors, adjacent walls, hardware, and all other finished surfaces.

Contractor shall leave the work area clean and free from all rubbish and accumulated material left from his work.

### 3.7 PAINT SCHEDULE

#### 3.7.1 Exterior Paint Schedule

Colors shall be in accordance with [FED-STD 595] [manufacturer's product name/number].

<u>SURFACE</u>	<u>PRIMER</u>	<u>FINISH COAT</u>	<u>FINISH COLOR AND SHEEN</u>
Exterior masonry (rough/ porous)	Latex block filler	Acrylic emulsion latex	[_____]
Exterior masonry (smooth)	Alkali- resistant primer	Acrylic emulsion latex	[_____]
Exterior wood	Exterior wood primer	Enamel/acrylic emulsion latex	[_____]
Exterior metal	Exterior metal primer	Enamel	[_____]

#### 3.7.2 Interior Paint Schedule

Colors shall be in accordance with [FED-STD 595] [manufacturer's product name/number].

<u>SURFACE</u>	<u>PRIMER</u>	<u>FINISH COAT</u>	<u>FINISH COLOR AND SHEEN</u>
Interior	Latex block	Latex/water-	[_____]

<u>SURFACE</u>	<u>PRIMER</u>	<u>FINISH COAT</u>	<u>FINISH COLOR AND SHEEN</u>
masonry (rough/porous)	filler	base acrylic epoxy	
Interior masonry (smooth)	Pigmented sealer	Latex/water- base acrylic epoxy	[_____]
Interior plaster	Pigmented sealer	Latex/water-base acrylic epoxy	[_____]
Interior drywall	Pigmented sealer	Latex/water-base acrylic epoxy	[_____]
Interior wood	Interior wood primer	Enamel	[_____]
Interior metal	Interior metal primer	Enamel	[_____]

-- End of Section --