

SECTION 09900

PAINING

PART 1 - GENERAL

1. DESCRIPTION

This section covers painting and application of protective coatings for finished construction.

2. SAMPLES AND COLORS

The Contractor shall submit at least one (1) month prior to the start of any painting work the manufacturer's brochures for the paint or coating brand selected for the project. The brochure shall identify the coating type, quality, application data and colors available. Prior to ordering any paint for the work, the Contractor shall have received written approval of coatings and color selection from the Engineer.

3. QUALITY ASSURANCE

A. Qualification of Painters:

Use only qualified journeymen painters experienced in mixing and application of the type and quality of the materials specified. In acceptance or rejection of the final project, no allowance will be made for lack of skill on the part of the painters.

B. Standards of Quality:

Paints and Paint products and manufacturers mentioned in this specification are set up as standards of quality. Other top-of-the-line paints of nationally known and reputable brands of comparable quality and type to those specified will be considered for approval by the Engineer, provided the Contractor and/or the manufacturer shall furnish satisfactory proof that the quality, composition and performance of the alternate brand equals or exceeds the specified products.

All paint shall be brought to the site in clean, original, sealed and labeled containers bearing the manufacturer's name, brand, and batch number. Paint products shall be subject to inspection by the Engineer.

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PART 2 - PRODUCTS

1. GENERAL

A. All paints and paint products furnished or applied under this specification shall be products of one (1) paint/coating manufacturer. Contractor shall verify that the proposed field paint and paint product is **compatible with paint and paint products used in primed or prefinished fabrications, or previously painted work.**

B. Brands:

Top-of-the-line paint/coating products shall be those specified which are the products of: Sherwin Williams; Del Manufacturing Company; Koppers Corporation; Mobil Chemical Company (Maintenance and Marine Coating Department); Amercoat; Carboline Corporation; Tnemec Company; or approved equal.

C. Where painting materials are referenced to Federal or Military Specifications, the reference shall define general type and quality required but is not intended to limit acceptable materials to an exact formulation.

D. Primers and Pretreatments:

Rust Inhibitive	Inertol "621 Rusinhibitive Primer", Mobil "13-R-50 Chromox 958 Q.D. Primer", or Tnemec "77 Chem-Prime".
Vinyl Wash	MIL-P15328; Cook "900-Y-2 Vinyl Wash Primer", Inertol "801 Wash Coat", Mobil "13-Y-8 Vinyl Wash Primer", or Tnemec "32-1210 Vinoline Wash Primer".
Oil Vehicle for Wood	Fed. Spec. TT-P-25; Cook "Grip-bond", Inertol "625 Exterior Undercoater", Mobil "17-W-4 Exterior First Coater", or Tnemec "100 Architectural Wood Primer".
Coal Tar	Koppers "Bitumastic Mill Undercoat".
Vinyl	AWWA System 2.
Catalyzed Epoxy	Mobil "78-W-3 Hi-Build Epoxy White".

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E. Intermediate and Finish Paints:

Gloss Alkyd Enamel	Fed. Spec. TT-E-489, Class A; Cook "Armorcote Gloss Enamel", Intertol "Glamortex Enamel", Mobil "Series 12 Panorama Coatings", or Tnemec "Ineme-Gloss Enamel", Sherwin Williams "KEM400 Enamel with urethane hardener.
Semigloss Alkyd Enamel	Fed. Spec. TT-E-529; Cook Shadotone Stain Enamel", Intertol "Glamortex Semi-Gloss", Mobil "Series 31 Alkyd Satin Enamel", or Tnemec "Enduration".
Aluminum Paint	Fed. Spec. TT-P-38; Cook "395 Ready-Mixed Aluminum", Intertol "441 All-Purpose Aluminum", Mobil "11-A-19 Structural Aluminum", or Tnemec "Formula 36".
Medium Consistency	Intertol "Standard Thick", Koppers "Bitumastic Super Service Black", Tnemec "450 Heavy Tnemecol", or USS Chemical "Pitt Chem 103".
Latex Emulsion	Acrylic containing at least 50 percent by weight nonvolatile solids; Cook "A-Dryl-X Latex Paint", Intertol "Dampfoil", Mobil "Series 79 Exterior Latex Paint", or Tnemec "Tneme-Cryl".
Vinyl	AWWA System 2.
Clear Satin Varnish	Cook "Timbertone Satin Varnish" Pratt & Lambert "38 Satin Pale Trim Varnish", or Martin Senour "Astro-Var".
Traffic Marking Paint	Glidden "Romark 11".
Heat Resistant Gray	Rust-Oleum "507 Heat Resistant Gray", or Mobil "37-F-4 Hi-Heat Gray".

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2. BRAND APPROVAL AND COLOR SELECTION

Specific approval by Engineer will not be required for any brand of paint hereinbefore listed. Specific approval by Engineer will be required however for each type and brand of paint not so listed. Contractor shall submit color cards for all paints which he proposes to use, together with complete descriptive specifications covering all unlisted brands, to the Engineer for color selection and brand approval. Requests for brand approval submitted directly to the Engineer by paint suppliers will not be considered.

3. FIELD PRIMING

In general, surfaces of equipment, steel, and cast iron are specified to be shop primed. Any such surfaces which have not been shop primed shall be field primed. Galvanized, aluminum, stainless steel, wood, and insulated surfaces shall be field primed. Primers used for field priming shall be:

Surface to be Primed:

Material

A.	Equipment, surfaces to be painted with:	
(1)	Alkyd Enamel	Rust inhibitive
(2)	Aluminum Paint	Rust inhibitive
(3)	Coal Tar Paint	Coal tar
B.	Steel and cast iron, surfaces to be painted with:	
(1)	Alkyd Enamel	Rust inhibitive
(2)	Aluminum Paint	Rust inhibitive
(3)	Coal Tar Paint	Coal tar
(4)	Vinyl	Vinyl
C.	Galvanized	Vinyl wash
D.	Copper	Vinyl wash
E.	PVC	Catalyzed Epoxy
F.	Wood	Oil vehicle for wood
G.	Insulated	As recommended by manufacturer of finish coats

Surfaces specified to be field painted with clear finish coats need not be primed. Priming will not be required on concrete, concrete block, and plaster surfaces specified to be painted with latex paint.

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4. PAINING SCHEDULE

The following schedule lists paints for intermediate and finish coats for surfaces to be painted. All exposed surfaces, including sides and edges, shall be painted.

5. WORK INCLUDED

Painting on this project includes only the new improvements.

Material types for various surfaces are as follows:

Surface to be Painted

Material

A. Metal Surfaces

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|---|----------------------------------|
| (1) All surfaces of structural and miscellaneous steel exposed in exterior location except the structural and miscellaneous steel specified to be painted with Vinyl.
(Galvanized surfaces are not to be painted.) | Gloss Alkyd Enamel |
| (2) All surfaces of structural and miscellaneous steel exposed inside buildings.
(Galvanized surfaces are not to be painted.) | Semigloss Alkyd Enamel |
| (3) All exposed surfaces of doors, door frames, steel handrails, steel floor plates, pumps, motors, engines, speed reducers, and other machines and equipment. | Gloss Alkyd Enamel |
| (4) The interior of the new and existing clarifier, together with all equipment below the water surface. | Vinyl (AWWA System 2) |
| (5) The exterior of the new and existing clarifier and the existing clear wells. | Three Coat Alkyd (AWWA System 1) |

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| (6) | All exposed surfaces of new and existing iron and steel piping inside buildings and above grade outdoors, including valves, fittings, flanges, bolts, supports, and accessories therefor, and including galvanized surfaces after proper cleaning and priming. | Gloss or Semi-Gloss Alkyd Enamel |
| (7) | All exposed surfaces of the electrical conduit on inside buildings, except banks of conduits in multiple layers hung from ceilings, including fittings, boxes, supports, and accessories therefor, after proper priming. | Semigloss Alkyd Enamel or Aluminum Paint |
| (8) | All metal surfaces which will be submerged or buried, all or in part, including valves and valve boxes, but excluding piping laid in the ground. | Medium consistency coal tar |
| (9) | All exterior surfaces of cast iron and steel piping exposed in manholes, and similar locations including valves, fittings, flanges, bolts, supports, and accessories therefor. | Medium consistency coal tar |
| (10) | Miscellaneous castings, including manhole rings and covers, and manhole steps. (One coat, if not foundry dipped.) | Medium consistency coal tar |
| (11) | Exposed surfaces of ductwork, after proper priming. | Semigloss Alkyd Enamel |
| (12) | Copper tubing, including fittings and valves. | Gloss or Semigloss Enamel |

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B. Concrete and Masonry Surfaces

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| (1) | All concrete and concrete block surfaces (except floor surfaces) Which are exposed to view in interior locations (two coats). | Latex Emulsion |
| (2) | All concrete surfaces, except the interior of the filter boxes, flash mix box, or filter distribution area. | Latex Emulsion |

C. Miscellaneous Surfaces

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|-----|-------------------------------------|------------------------|
| (1) | Wooden doors and frames and shelves | Semigloss Alkyd Enamel |
| (2) | PVC Piping | Gloss Enamel |
| (3) | Portland cement plaster surfaces | Latex Emulsion |

D. Surfaces Not to be Painted:

Except as otherwise required or directed, the following surfaces are to be left unpainted:

- (1) Exposed surfaces of aluminum, except ductwork.
- (2) Polished or finished stainless steel. Unfinished stainless steel shall be painted.
- (3) Nickel or chromium.
- (4) Galvanized surfaces, except piping, conduit, and ductwork.
- (5) Piping concealed in plumbing chases except the chase below the operating floor and above suspended ceilings.

Surfaces to be coated with vinyl coatings shall be cleaned by sand or gritblasting. Sand or gritblasting of to near white metal as specified herein. Painting shall follow immediately after sand or gritblasting. Care shall be taken when sand or gritblasting to prevent marring or damage to any adjacent surfaces not meant to be sandblasted.

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5. CONCRETE SURFACES

New concrete surfaces which are to be painted shall be prepared by removing all dirt, dust, efflorescence, oil or grease stains, or other foreign substances, by wire or fiber brushing or scrubbing, scraping, or other approved means. Prior to mechanical cleaning, any oil or grease shall be removed with a solvent or detergent. Concrete floor pads to be painted shall be acidized before painting.

6. CONCRETE BLOCK SURFACES

Voids and opening in concrete block construction shall be painted. Interior surfaces to be painted with latex paint need not be filled.

7. WOOD SURFACES

All wood surfaces shall be sanded smooth before painting. All dust shall be carefully wiped off after sanding.

8. COPPER TUBING

All flux residue shall be removed from soldered joints in copper tubing. Immediately before painting is started; tubing shall be wiped with a clean rag soaked in xylol.

9. PVC PLASTIC

All wax and oil shall be removed from PVC plastic surfaces by wiping with a solvent of the type used for the specified primer.

10. HARDWARE

Hardware and hardware items such as bolts, screws, washers, springs, and grease dittings need not be cleaned prior to painting if there is no evidence of dirt, corrosion, or foreign material.

11. APPLICATION

Paint shall be applied in a neat manner, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each paint coat shall be hard and dry through the entire paint film before the next coat is applied. Each coat shall be applied in a manner that will produce an even film of uniform and proper thickness. In no case shall paint be applied at a rate of coverage per gallon which is greater than the maximum rate recommended by the manufacturer. Paint films showings sags, checks, blisters, teardrops, or fat edges will not be accepted, Paint containing any of these defects shall be entirely removed and the surface repainted.

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12. PRIMING

Edges, corners, crevices, welds, and bolts shall be given a brush coat of primer before the specified spot or touch-up painting of metal surfaces. Special attention shall be given to filling all crevices with paint. Abraded and otherwise damaged portions of shop applied paint shall be repainted. Welded seams and other uncoated surfaces, heads and nuts of field installed bolts, and surfaces where paint has been damaged by heat, shall be given a coat of the specified primer. This patch, spot, or touch-up painting shall be completed, and shall be dry and hard, before additional paint is applied.

13. LATEX PAINT

Latex paint shall be applied by brushing or rolling, spraying will not be permitted. Latex paint shall not be thinned excessively.

14. FILM THICKNESS

The total paint film thickness including prime coat (if any), intermediate coats, and finish coat shall not be less than:

<u>Type of Paint</u>	<u>Minimum Dry Film Thickness</u>
Aluminum	3 mils
Latex	3 mils
Clear Varnish	2 mils
Coal Tar Medium Consistency	20 mils
Heat Resistant	3 mils
All Other Finishes	5 mils

15. WEATHER CONDITIONS

Paint shall not be applied, except under shelter, during wet, damp, or foggy weather, or when windblown dust, dirt, debris, or insects will collect on freshly applied paint. Paint shall not be applied at an air temperature below 50°F., or to surfaces of metals such as the surfaces of a tank or pipe containing cold water, which have a temperature below 50°F., regardless of the air temperature, or when metal temperature and atmospheric conditions cause condensation on the surface of the metal.

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16. REPAIRING DAMAGED PAINT ON EQUIPMENT

Painted surfaces of equipment which have become damaged prior to acceptance by the Owner, shall be repainted with the same or equivalent paint used in the original application.

17. PROTECTION OF SURFACES

Throughout the work, the Contractor shall use drop cloths, masking tapes, and other suitable measures to protect all surfaces from accidental spraying, spattering, or spilling of paint. He shall be responsible for and shall correct and repair any damaged condition resulting from his operations or from the operations of all those who are responsible to him.

Any paint deposited on surfaces which are not being painted at the time shall be immediately removed. In case bituminous paints are spilled or dropped on any material except metals, the spots shall, after surface cleaning, be spot painted with aluminum paint prior to applying the specified paint. Any exposed concrete or masonry not specified to be painted which is damaged by paint shall be either removed and rebuilt or, where so authorized by the Owner, painted with two (2) coats of masonry paint.

PART 3 - EXECUTION

1. GENERAL

The Contractor shall be fully responsible for the materials, workmanship, and final appearance of all painting surfaces. The Contractor shall determine when surfaces and conditions are acceptable for application of paint and paint products.

2. MIXING AND THINNING

Paint shall be thoroughly mixed each time any is withdrawn from the container. Paint containers shall be kept tightly closed except while paint is being withdrawn. Unless otherwise authorized, all paint shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied paint be reduced, by addition of paint thinner or otherwise, below that represented by the recommended coverage rate.

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3. SURFACE PREPARATION

All surfaces to be painted shall be dry and free of dirt, dust, sand, grit, mud, oil, grease, rust, loose mill scale, or other objectionable substances. Cleaning and painting operations shall be performed in a manner which will prevent dust or other contaminants from getting on freshly painted surfaces. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started. Surfaces shall be free of cracks, pits, projections, or other imperfections which would prevent the formation of a smooth, unbroken paint film except for concrete block construction where a rough surface is an inherent characteristic.

When applying touch-up paint, or repairing previously painted surfaces, the surfaces to be painted shall be cleaned and sanded or wire brushed in such a manner that the edges of adjacent paint are feathered or otherwise smoothed so that they will not be noticeable when painted. All paint made brittle or otherwise damaged by heat of welding shall be completely removed.

Where vinyl painted ferrous metal surfaces are adjacent to surfaces specified to be painted with other types of paint, the surface to be painted with vinyl paint shall be completely painted and finished before the other painting is started.

4. GALVANIZED SURFACES

Galvanized surfaces shall be prepared for painting in strict conformity with the instructions of the manufacturer of the vinyl wash primer. Any chemical treatment of galvanized surfaces shall be followed by thorough rinsing with clean water.

5. FERROUS METAL SURFACES

Ungalvanized ferrous metal surfaces shall be cleaned for painting by means of solvents, high-speed power wire brushing, scraping, sand or gritblasting or other approved methods. Surfaces of welds shall be given special treatment by scraping and wire brushing as necessary to remove all slag and weld spatter. Tools which produce excessive roughness shall not be used. Blast cleaning may be used at the option of the Contractor provided that no dust is permitted to settle on adjacent wet paint films. Mill scale which adheres so tightly that it cannot be lifted with a sharp knife need not be removed.

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