

SECTION 04000 - PAINTINGS AND COATINGS

PART 1 - GENERAL

1.1 WORK INCLUDED IN THIS SECTION

- A. The WORK of this Section includes materials and application of painting and coating systems for the following surfaces:
 - 1. Submerged Metal
 - 2. Exposed Metal
 - 3. Wood

1.2 SUBMITTALS

- A. The following shall be submitted in compliance with Section 01300.
 - 1. Manufacturer's technical and material safety data sheets for the products to be applied. Data sheets shall contain the following information:
 - a. Percent solids by volume.
 - b. Recommended surface preparation.
 - c. Recommended thinners.
 - d. Statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.
 - e. Application instructions including recommended equipment and temperature limitations.
 - f. Minimum and maximum recommended dry-film thickness per coat for prime, intermediate, and finish coats.
 - g. Curing requirements and instructions.
 - 2. The name of the company and abrasive to be used, the generic type of abrasive, and the CARB certification.

PART 2 - PRODUCTS

2.1 PAINTING AND COATING SYSTEMS

- A. General
 - 1. Coating products shall conform to San Diego Air Pollution Control District Rule 67.0, where products cannot contain more than 350 grams per liter (2.80 lbs.) of volatile organic material per gallon of coating

product applied. The following index lists the permissible painting and coating systems according to service and their corresponding generic coating type.

PAINT COATINGS SYSTEM INDEX		
COATING SYSTEM		GENERIC TYPE
Submerged Metal Coating System		
System 5	Submerged or Intermittently Submerged Metal, Potable Water	Epoxy
Exposed Metal Coating Systems		
System 15	Exposed Metal, Atmospheric Weathering Environment	Alkyd
System 20	Exposed Metal, Exterior	Synthetic Enamel
Plaster, Wood, Masonry and Drywall Coating System		
System 60	Plaster, Wood, Masonry and Drywall	Acrylic Latex

The systems are described in further detail in the following Sections. Included are the required surface preparation, prime coat, intermediate coat as required, topcoat, and coating thickness for each coating. Minimum dry-film thicknesses shall be as specified.

2.2 SYSTEM 5

A. Submerged or Intermittently Submerged Metal, Potable Water

1. Type: Two component, three coat epoxy system.
2. Service Conditions: For use with steel structures, piping, valves, or equipment in potable water service.
3. Surface Preparations: Surface preparation shall be in accordance with SSPC-SP 10.
4. Coating Systems: Apply three coats of Ameron 395, Kop-Coat Hi-Gard, Engard 460 HS, or equal. Apply to a minimum dry film thickness of 12 mils total.

2.3 SYSTEM 15

A. Exposed Metal, Atmospheric Weathering Environment

1. Type: Gloss alkyd enamel with minimum volume solids content of 46% with alkyd primer.
2. Service Conditions: For use on exterior metal and piping subject to sunlight and weathering.
3. Surface Preparation: Surface preparation shall be in accordance with SSPC-SP 6.
4. Prime Coats: Provide Kop-Coat 622HB, Ameron 5105, Engard 126 HS, or equal. Apply to a minimum dry film thickness of 2 mils.
5. Finish Coats: Provide two coats Kop-Coat 500HB Enamel; two coats Ameron 5401HS; two coats Engard 222 HS; 1.5 mils each coat; or equal.

2.4 SYSTEM 20

A. Exposed Metal, Exterior

1. Type: Gloss synthetic enamel with OSHA safety color coding.
2. Service Conditions: For use on exterior metal piping appurtenances, such as valve box lids, hydrant heads, guard posts, air valve enclosures, and water sample point enclosures.
3. Surface Preparation: SSPC-SP 1. Apply one coat of vinyl wash primer on galvanized, zinc, or bronze surfaces. Use Sinclair No. 7113, or equal.
4. Prime Coats: Sinclair No. 15N (non-ferrous or ferrous) or No. 14N (galvanized or zinc), 1.5 mils or equal.
5. Finish Coats: Provide two coats Sinclair No. 7500 (OSHA White), No. 7571 (OSHA Yellow), No. 7572 (OSHA Orange), No. 7573 (OSHA Green), or No. 7574 (OSHA Blue), 2 mils each coat; or equal.

2.5 SYSTEM 60

A. Plaster, Wood, Masonry and Drywall

1. Type: Acrylic latex coating having a minimum volume solids of 40%.
2. Service Conditions: For use in coating weather-exposed or enclosed concrete masonry, drywall, wood, and plaster.
3. Surface Preparation: Surfaces shall be dry, clean, and free of contaminants.
4. Prime Coats: Self-priming.
5. Finish Coats: Provide two coats Tnemec Series 6, Tneme-cryl, 2 mils each; two coats Kop-Coat 600, 2 mils each; or equal.

3.	Power Tool Cleaning	SP 3
4.	White Metal Blast Cleaning	SP 5
5.	Commercial Blast Cleaning	SP 6
6.	Brush-Off-Blast Cleaning	SP 7
7.	Pickling	SP 8
8.	Near-White Blast Cleaning	SP 10

- C. Where the words "solvent cleaning," "hand tool cleaning," "wire brushing," "blast cleaning" or similar words are used in these specifications or in paint manufacturer's specifications, they shall be understood to refer to the applicable SSPC (Steel Structure Painting Council, Surface Preparation Specifications, ANSI A159.1) specifications listed above.
- D. Dust blasting shall be defined as cleaning the surface through the use of very fine abrasives, such as siliceous or mineral abrasives, 80 to 100 mesh. A fine etch shall be applied to the metal surface to clean the surface of any contamination or oxide.
- E. Oil and grease shall be removed from metal surfaces in accordance with SSPC-SP 1. Use clean cloths and cleaning solvents and wipe dry with clean cloths. Surfaces shall be free of film or grease before sandblasting.
- F. Weld spatter and weld slag shall be removed from metal surfaces and rough welds, beads, peaked corners, and sharp edges shall be ground smoothly in accordance with SSPC-SP 2 and SSPC-SP 3.
- G. Welds shall be neutralized with a chemical solvent that is compatible with the specified coating materials. Clean cloths and chemical solvent shall be used. Wipe dry with clean cloths. Residue shall be removed from cleaned surfaces.

3.3 ABRASIVE BLAST CLEANING

- A. Dry abrasive blast cleaning shall be used for metal surfaces. Abrasives shall not be used in automatic equipment that has become contaminated. When shop or field blast cleaning with handheld nozzles, blast particles shall not be recycled or reused.
- B. After blast cleaning and prior to application of coating, surfaces to be coated shall be dry cleaned by dusting, sweeping, and vacuuming to remove residue from blasting. The specified primer or touch-up coating shall be applied within the period of an eight-hour working day. Coating shall not be applied over damp or moist surfaces. Prior to application of primer or touch-up coating, blast cleaned surfaces not coated within said eight-hour period shall be re-cleaned.
- C. Area of work shall be maintained in a clean condition. Blasting particles shall not accumulate and constitute a nuisance or hazard.
- D. During blast cleaning, damage to adjacent coatings shall be prevented. Blast cleaning and coating shall be scheduled such that dust, dirt, blast particles, old coatings, rust, mill scale, etc., will not damage or fall upon wet or newly coated surfaces.

3.4 PAINTING SYSTEMS

- A. All materials of a specified painting system, including primer, intermediate, and finish coats, shall be produced by the same manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer for the particular coating system.
- B. Paints shall be delivered to the jobsite in original, unopened containers.

3.5 PAINT MIXING

- A. Multiple-component coatings shall be prepared using all contents of the container for each component as packaged by the paint manufacturer. Partial batches shall not be used. Multiple-component coatings that have been mixed beyond their pot life shall not be used. Small quantity kits for touchup painting and for painting other small areas shall be provided. Only the components specified and furnished by the paint manufacturer shall be mixed. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.

3.6 PROCEDURES FOR THE APPLICATION OF COATINGS

- A. Conform to the requirements of SSPC-SP 1. The recommendations of the coating manufacturer including the selection of spray equipment, brushes, rollers, cleaners, thinners, mixing, drying time, temperature and humidity of application, and safety precautions shall be followed.
- B. Stir, strain, and keep coating materials at a uniform consistency during application. Each coating shall be applied evenly, free of brush marks, sags, runs, holidays, and other evidence of poor workmanship. A different shade or tint shall be used on succeeding coating applications to indicate coverage where possible. Finished surfaces shall be free from defects or blemishes.
- C. Thinners shall not be used unless recommended by the coating manufacturer. If thinning is permitted, the maximum allowable amount of thinner per gallon of coating material shall not be exceeded. Coating materials shall be stirred at all times when adding thinner. Do not flood the coating material surface with thinner prior to mixing. Coating materials shall not be reduced more than is absolutely necessary to obtain the proper application characteristics and to obtain the specified dry-film thicknesses.
- D. Dust, blast particles, and other debris shall be removed from blast cleaned surfaces by dusting, sweeping, and vacuuming. Ventilator fans shall be permitted to clean airborne dust to provide good visibility of working area prior to coating applications. Dust shall be removed from coated surfaces by dusting, sweeping, and vacuuming prior to applying succeeding coats.
- E. Coating systems shall be applied to the specified minimum dry-film thicknesses as measured from above the peaks of the surface profile.
- F. Primer shall be applied immediately after blast cleaning and before any surface rusting occurs, or any dust, dirt, or any foreign matter has

accumulated. Surfaces that have surface colored or become moist prior to coating application shall be recleaned by blast cleaning.

- G. A brush coat of primer on welds, sharp edges, nuts, bolts, and irregular surfaces shall be applied prior to the application of the primer and finish coat. The brush coat shall be done prior to and in conjunction with the spray coat application. The spray coat shall be applied over the brush coat.

3.7 SURFACES NOT TO BE COATED

- A. The following surfaces shall not be painted unless otherwise noted on the Drawings or in other Standard Specification Sections. Protect during the painting of adjacent areas:
 - 1. Cement mortar coated pipe and fittings.
 - 2. Stainless steel.
 - 3. Metal plates/nameplates or letters.
 - 4. Concrete surfaces.
- B. Copper tubing, red brass piping and PVC piping except where such piping occurs in rooms where the walls are painted, or required for color coding.
- C. Buried pipe unless specifically required in the piping specifications.

3.8 PROTECTION OF SURFACES NOT TO BE PAINTED

- A. Surfaces not intended to be painted shall be removed, masked, or otherwise protected. Drop cloths shall be provided to prevent paint materials from falling on or marring adjacent surfaces.

3.9 SURFACES TO BE COATED

- A. Surfaces shall be coated as described below:
 - 1. Buried piping shall be coated as described in the various piping specifications.
 - 2. Valves shall be coated as described in the various valve specifications.
 - 3. Exposed surfaces of enclosures, guard posts, and valve boxes shall be coated as described in the particular specifications for the above items.

3.10 DRY FILM THICKNESS TESTING

- A. Coating thickness specified for metal surfaces shall be measured with a magnetic-type dry-film thickness gage. The finish coat (except zinc primer and galvanizing) shall be tested for holidays and discontinuities with an electrical holiday detector, low-voltage, wet-sponge type. Measuring equipment shall be provided by the CONTRACTOR. A detector as manufactured by Tinker and Razor or K-D Bird Dog shall be provided by the CONTRACTOR. A dry-film thickness gage as manufactured by Mikrotest or

Elcometer shall be provided by the CONTRACTOR. Each coat shall be checked for correct dry-film thickness. Measurements shall not be done within eight hours after application of the coating.

- B. If the item has an improper finish color or insufficient film thickness, clean and topcoat the surface with the specified paint material to obtain the specified color and coverage. Hand or power-sand visible areas of chipped, peeled, or abraded paint, feathering the edges. Then prime and finish coat in accordance with the specifications. Work shall be free of runs, bridges, shiners, laps or other imperfections.

END OF SECTION