

SECTION 09905SURFACE PREPARATION AND SHOP COATINGSPART 1 - GENERAL1.1 SECTION INCLUDES

- A. Surface preparation and application of shop coatings on materials, equipment, and piping indicated in the various specification sections relating thereto, and as specified herein, including primers and topcoats for materials, equipment and piping that are finished at the point of manufacturer or fabrication.
- B. Examine the various Sections of the Specifications and be thoroughly familiar with all provisions regarding shop coatings.

1.2 RELATED SECTIONS

- A. Section 01340 - Submittals
- B. Section 05500 - Metal Fabrications
- C. Section 08110 - Steel Doors and Frames
- D. Section 09900 - Painting
- E. Division 11 - Equipment - all applicable sections
- F. Division 13 - Special Construction - all applicable sections
- G. Division 15 - Mechanical - all applicable sections
- H. Division 16 - Electrical - all applicable sections

1.3 PREFINISHED ITEMS NOT REQUIRING PAINT OR FINISH

- A. Copper, bronze, brass, chromium plate, nickel, stainless steel, aluminum or monel metals, except surfaces in contact with or embedded within concrete or masonry, unless otherwise specified elsewhere.

1.4 REFERENCES

- A. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.
- B. ASTM D 2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- C. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- D. Federal Test Method No. 141 - Method 6141, Stain Removal.
- E. SSPC - Steel Structures Painting Council.
- F. SSPC-PA1, "Standard for Shop, Field, and Maintenance Painting".
- G. SSPC-PA2, "Measurement of Dry Paint Thickness with Magnetic Gauges".
- H. SSPC-SP1, "Solvent Cleaning".
- I. SSPC-SP6, "Commercial Blast Cleaning".

- J. SSPC-SP10, "Near-White Blast Cleaning".
- K. SSPC-PA Guide 3, Standard "A Guide to Safety in Paint Application", latest revision.

#### 1.5 SUBMITTALS

- A. Submit product data under provisions of Section 01340.
- B. As a minimum, the following shall be included in the submittal package for all items, products, material or equipment, as specified.
  - 1. Submit data on the proposed shop coatings, details on surface preparation methods, application procedures and dry mil thickness.
  - 2. Submit a minimum of three (3) color charts for all factory top coats for color selection by Engineer.
  - 3. Submit coating manufacturer's certification that proposed shop coatings are compatible with field coatings, as specified in Section 09900.

#### 1.6 QUALITY ASSURANCE

- A. All Shop Coatings shall meet the requirements of the materials section, and shall be guaranteed by the manufacturer to be compatible with the field coatings, as specified in Section 09900. The Contractor shall coordinate this requirement during the Shop Drawing Phase.
- B. All Shop Coatings shall meet all Federal and [State] regulations pertaining to Volatile Organic Compounds (VOC) compliance.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Refer to Part 3 - EXECUTION for specific products and applications.

### PART 3 - EXECUTION

#### 3.1 SURFACE PREPARATION

- A. Definitions
  - 1. Submerged surfaces are defined as:
    - a. Those surfaces which are below the maximum water surface level as indicated on the drawings, and/or extend 3'-0" above the maximum water surface for uncovered tanks.
    - b. All surfaces contained within covered tanks.
    - c. The full height of all partially submerged items such as sluice gates, slide gates, weir gates, piping, etc.
    - d. All surfaces contained within underground structures, vaults and manholes such as valve pits, drywells, etc.
  - 2. Enclosed surfaces are those non-submerged surfaces enclosed and/or protected within a building in such a manner that it can not be exposed to UV light or weather conditions.

3. Weather exposed surfaces are all other conditions including buried items which do not fall into the definition of submerged or enclosed surfaces, as noted above.
- B. Ferrous Metal
1. All submerged ferrous metals shall be sandblast cleaned in accordance to SSPC-SP10, near white, immediately prior to priming.
  2. All other ferrous metals, Enclosed and Weather exposed surfaces, shall be sandblast cleaned in accordance to SSPC-SP6, commercial grade, immediately prior to priming.
  3. Remove dirt, oil and grease by washing surfaces with mineral spirits.
  4. Surfaces shall be dry and free of dust, oil, grease and other foreign material before priming.
- C. Non-Ferrous Metals
1. Surfaces in contact with or embedded within concrete or masonry that are to be primed, shall be cleaned in accordance to SSPC-SP1, Solvent Clean, immediately prior to priming.
  2. Remove dirt, oil and grease by washing surfaces with mineral spirits.
  3. Surfaces shall be dry and free of dust, oil, grease and other foreign material before priming.
- D. Galvanized Metals
1. Thoroughly clean surface with mineral spirits to remove oily residue.
  2. Dry with clean cloth.
  3. Treat surface with copper sulphate, or with a compound made for this purpose (Lithoform, Solfo Metallic Coating, etc.), in accordance with the manufacturer's directions, before applying the primer.

### 3.2. APPLICATION

- A. Equipment
1. Motors, speed reducers and similar parts shall have a surface preparation in accordance with the manufacturer standard coating requirements and suitable for weather exposed use.
  2. Items customarily finished at the point of manufacture (shop primed and painted) such as submersible pumps and other similar surfaces shall receive manufacturer's standard corrosion resistant coating of baked enamel or powder epoxy, suitable for the intended service.
  3. All equipment casing openings requiring protection shall have a water repellent tape and vapor phase inhibitor treated paper.
  4. All other ferrous surfaces shall be factory primed in accordance with Section 3.2.C, except ferrous surfaces obviously not to be painted (such as gears, exposed machined or bearing surfaces, enclosed machined or bearing surfaces, lubricated contact surfaces moving under load, thread connections to be field connected and other similar items) which shall be given a heavy shop coat of grease or other suitable rust resistant coating per manufacturer's recommendations.

5. These coating shall be maintained as necessary to prevent corrosion during all periods of storage and erection, until final acceptance by the Owner.
- B. Pipe, Fittings and Valves
1. The following surfaces shall be prepared in accordance with the manufacturer's recommendations and shall receive a shop coat of asphaltum varnish meeting Federal Specifications TT-C-494A or fusion bonded epoxy coating.
    - a) Interior surfaces of all hydrants, ductile iron pipe, fittings and valves except for air piping lines and air valves which shall be completely unlined.
    - b) The exterior surfaces of buried valves and miscellaneous piping appurtenances.
  2. The exterior surfaces of all ductile iron pipe and fittings buried shall receive the standard factory applied asphaltic coating (in accordance with AWWA C151).
  3. The exterior surfaces of ductile iron pipe, fittings and valves submerged, enclosed or weather exposed shall receive a factory applied shop primer in accordance with Section 3.2.C
  4. Machined surfaces shall be cleaned and coated immediately after being machined, with a suitable rust resistant coating per manufacturer's recommendations.
  5. All other ferrous surfaces shall be factory primed in accordance with Section 3.2.C, except ferrous surfaces obviously not to be painted shall receive a heavy shop coat of grease or other suitable rust resistant coating per manufacturer's recommendations.
  6. These coating shall be maintained as necessary to prevent corrosion during all periods of storage and erection until final acceptance by the owner.
- C. Schedule
- The product model and coatings system numbers listed below are based on products by the Sherwin Williams Company and Tnemec Company Inc. Other acceptable manufacturer's are Glidden Company and Devoe Coatings, Inc.

## SURFACE PREPARATION AND SHOP COATINGS

SURFACE / ITEM	SURFACE PREPARATION	Tnemec SHOP PRIME	Sherwin Williams SHOP PRIME
<b>METALS</b>			
Submerged Ferrous Metals, Piping, Fittings, Valves and Equipment specified to be shop primed in their respective sections.	SSPC-SP10 Near White Metal Blast Cleaning	Tnemec Series FC20 Pota-Pox Primer at 3.0 to 5.0 mils	High Solids Catalyzed Epoxy 5.0 to 6.0 mils
Enclosed Ferrous Metals, Piping, Fittings, Valves and Equipment specified to be shop primed in their respective sections.	SSPC-SP6 Commercial Blast Cleaning	Tnemec Series FC20 Pota-Pox Primer at 3.0 to 5.0 mils	Epoxide 52 Primer 3.0-5.0 mils
Weather Exposed Ferrous Metals, Piping, Fittings, Valves and Equipment specified to be shop primed in their respective sections.	SSPC-SP6 Commercial Blast Cleaning	Tnemec Series FC20 Pota-Pox Primer at 3.0 to 5.0 mils	Epoxide 52 Primer 3.0-5.0 mils
Enclosed Ferrous Metals in areas designated to receive an epoxy coating. See Note 7.	SSPC-SP6 Commercial Blast Cleaning	Tnemec Series 161 Tneme-Fascure at 2.0 to 3.0 mils	Epoxide 52 Primer 2.0-3.0 mils
Non-Ferrous and Galvanized Metals in contact with or embedded in concrete or masonry	SSPC-SP1 Solvent Wiping <u>followed by</u>	Tnemec Series 161 Tneme-Fascure at 2.0 to 3.0 mils	Recoatible Epoxy Primer 4.0 to 6.0 mils
Ferrous Metals in contact with or embedded in concrete or masonry	SSPC-SP6 Commercial Blast Cleaning	Tnemec Series 161 Tneme-Fascure at 2.0 to 3.0 mils	Recoatible Epoxy Primer 5.0 to 6.0 mils
All Other Weather Exposed and Enclosed Ferrous Metals, including steel frames, overhead door, steel lintels and bollards	SSPC-SP6 Commercial Blast Cleaning	Tnemec Series 37H-78 Chemprime at 2.0-3.0 mils	Recoatible Epoxy Primer 4.0 to 6.0 mils

## Notes:

1. Surface preparation shall be as specified within this section and as noted in the table above are minimums. Surface preparation shall be in accordance with the manufacturer's written recommendations.
2. All dry film thickness indicated are the minimum required.
3. All epoxy coatings subjected to UV Exposure shall receive an additional Polyurethane top coat with a minimum dry film thickness of 3 mils. No epoxy coating shall be left exposed to UV light. This shall include all equipment drives, motors, gear reducers, etc.
4. All ferrous metals and equipment delivered to the site with shop primers other than polyamide epoxy or alkyd primer indicated above, shall receive an intermediate coat as necessary for compatibility with epoxy top coats
5. All ferrous, nonferrous and galvanized metals in contact with concrete or masonry shall receive a polyamide epoxy primer with a minimum dry film thickness of 4 mils applied to the contact area.

## SURFACE PREPARATION AND SHOP COATINGS

6. Galvanized surfaces shall be treated as required by manufacturer to be compatible with the primer and top coats specified.
7. Areas that are designated to receive an epoxy coating as noted either on the Drawings or in Specification Section 09900 - Painting.

END OF SECTION