

## **SECTION 09 90 00 – PAINTING AND COATING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes surface preparation and the application of painting and coating systems on the following substrates:
  - 1. Exterior ferrous metals to the extent indicated.
  - 2. Exterior non-ferrous metals, except as specified.
  - 3. Exterior portland cement plaster with painted finish.
  - 4. Exterior concrete with painted finish.
  - 5. Interior wood with painted finish.
  - 6. All interior ferrous metals, except as specified.
  - 7. All interior non-ferrous metals, except as specified.
  - 8. Interior gypsum drywall with painted finish.
  - 9. All prime coated hardware and other factory primed metal items.
  - 10. Exposed fire protection piping, valves and standpipes, excluding sprinkler heads, valve tags, name plates, and exposed operating components of motors and pumps.
  - 11. Exposed pipe, pipe hangers and supports, heat exchangers, tanks, piping and equipment insulation, plumbing and ductwork, motor shafts and mechanical equipment within central plant rooms. Painting work excludes similar equipment located in mechanical fan (AHU Equipment) rooms.
  - 12. All metal grilles, except anodized aluminum, unless otherwise indicated.
  - 13. Exposed conduit, raceway, boxes, switchgear and electrical cabinets, excluding items located in mechanical fan (AHU Equipment) rooms.
  - 14. Items normally requiring painting or finishing, or indicated to be painted or finished.
  - 15. Where an item is not specifically mentioned, paint same as similar adjacent materials or surfaces.
  - 16. Make test patches to verify coating system compatibility and adhesion over existing coatings and surfaces.
- B. Do not include painting of:
  - 1. Prefinished or factory finished items (e.g., shop finished woodwork and casework, acoustic materials, and similar items).
  - 2. Aluminum, copper, chromium and other plated finishes.
  - 3. Concealed surfaces in concealed and inaccessible areas including furred-areas, pipe chases, duct shafts, and similar spaces.
  - 4. Operating parts of fire protection, plumbing, mechanical, and electrical equipment, including sensing devices, motor and fan shafts, and sprinkler heads.
  - 5. Code required labels and nomenclature plates.

6. Exposed data and communication wiring and wiring devices.

C. Related Sections:

1. Section 03 30 00 "Cast-in-Place Concrete."
2. Section 05 50 00 "Metal Fabrications".
3. Section 06 10 53 "Miscellaneous Rough Carpentry."
4. Section 06 40 00 "Architectural Woodwork" for shop priming of woodwork items indicated for field painting.
5. Section 07 92 00 "Joint Sealants."
6. Section 09 21 16 "Gypsum Board Assemblies."
7. Section 09 24 00 "Plaster Assemblies."
8. Section 09 72 00 "Wallcoverings."
9. Section 10 14 00 "Signage."

### 1.3 DEFINITIONS

A. Painting and Coating Systems: Include coating system materials such as primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats. Paint and coating work includes surface preparation and cleaning, primer touch-up of shop primed items, repair of existing coatings (including barrier coats required to properly apply new coating systems), field priming and painting exterior and interior material, equipment and appurtenances.

B. Gloss Levels:

1. Gloss Level G1 (Traditional Matt Finish – Flat): Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
2. Gloss Level G2 (Velvet): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
3. Gloss Level G3 (Traditional Eggshell): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
4. Gloss Level G4 (Satin): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
5. Gloss Level G5 (Traditional Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D 523.
6. Gloss Level G6 (Traditional Gloss): 70 to 85 units at 60 degrees, according to ASTM D 523.
7. Gloss Level G7 (High Gloss): More than 85 units at 60 degrees, according to ASTM D 523.

### 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Step coats on Samples to show each coat required for system.

3. Label each coat of each Sample.
  4. Label each Sample for location and application area.
  5. Resubmit samples until required color sheen and texture are approved.
- D. Application Schedule: Submit a schedule of paint system exposure, substrates and painting manufacturer's product data for barrier, prime, intermediate and topcoats, application instructions and application equipment recommended by painting manufacturer for application methods scheduled. For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  2. VOC content.

### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

### **1.6 QUALITY ASSURANCE**

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
    - b. Other Items: Architect will designate items or areas required.
  2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Quality Grade: Provide manufacturer's best quality trade sale paint material of coating types specified. Use only material Manufacturer's containers with intact labels with product identification.
- C. Coating Systems: Provide primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.

- D. Color Designations and Selections: Subject to compliance with requirements, names used to designate colors are not intended to imply that manufacturers or products named are required to the exclusion of specified products of other manufacturers. Match colors indicated by reference to manufacturer's standard color designations.
- E. Pigments: Use color pigments that are pure, non-fading, suitable for substrates and service indicated. Lead content in pigment, if any, is limited to contain not more than 0.06% lead, as lead metal based on the total non-volatile (dry-film) of paint by weight. This limitation is extended to interior surfaces and those exterior surfaces, such as stairs, decks, porches, railings, windows, and doors that are readily accessible to children under 7 years of age.

### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

### **1.8 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Coating Systems Products: Subject to compliance with requirements, provide products of one of the following for each substrate indicated:
  - 1. Benjamin Moore & Co.(Moore)
  - 2. Glidden Professional (GP)
  - 3. PPG Architectural Finishes, Inc. (Pittsburgh)
  - 4. Pratt & Lambert (P & L)
  - 5. Sherwin-Williams Company (The) (S-W)

### **2.2 PAINT, GENERAL**

- A. Material Compatibility:
  - 1. Provide materials for use within each paint substrate system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of

colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Flat Paints and Coatings: 50 g/L.
  2. Nonflat Paints and Coatings: 150 g/L.
  3. Dry-Fog Coatings: 400 g/L.
  4. Primers, Sealers, and Undercoaters: 200 g/L.
  5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
  6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
  7. Pretreatment Wash Primers: 420 g/L.
  8. Floor Coatings: 100 g/L.
  9. Shellacs, Clear: 730 g/L.
  10. Shellacs, Pigmented: 550 g/L.
- C. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Colors: As indicated in a color schedule on the Drawings, of if not shown, as selected by Architect from manufacturers full range of available colors.

### 2.3 EXTERIOR PAINTING SYSTEMS AND MATERIALS

A. Exterior Ferrous Metal:

1. Latex Semi-Gloss Enamel: 2 finish coats over primer.

- a. Primer: Rust Inhibitive Latex Primer.

GP: Devflex 4020PF Direct to Metal Primer & Flat Finish  
Moore: Acrylic Metal Primer M04  
Pittsburgh: 90-712 Pitt-Tech DTM Acrylic Primer/Finish  
P & L: Tech Gard Latex Metal Primer  
S-W: Pro Industrial Pro Cryl Universal Primer B66W310

- b. First and Second Finish Coats: Exterior Semi-Gloss Latex Enamel.

GP: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel  
Moore: DTM Acrylic Semi-Gloss M29  
Pittsburgh: 90-474 Pitt-Tech DTM Satin Enamel  
P & L: Accolade Latex Ext. Gloss House & Trim Finish  
S-W: Pro Industrial 0 VOC Acrylic Semi-Gloss

B. Exterior Non-Ferrous Metal (Zinc Coated Steel and Unfinished Aluminum):

1. Latex Semi-Gloss Enamel: 2 finish coats over primer.

- a. Primer: Latex Galvanized Metal Primer.

GP: Devflex 4020PF Direct to Metal Primer & Flat Finish

Moore: Acrylic Metal Primer M04  
Pittsburgh: 90-712 Pitt-Tech DTM Acrylic Primer/Finish  
S-W: Pro Industrial Pro Cryl Universal Primer B66W310

b. **First and Second Finish Coats: Exterior Semi-Gloss Latex Enamel.**

GP: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel  
Moore: DTM Acrylic Semi-Gloss M29  
Pittsburgh: 90-474 Pitt-Tech Waterborne Satin Enamel  
S-W: Metalatex Semi-Gloss Enamel B42W110

C. **Exterior Concrete and Plaster:**

1. **Latex Low Luster (Flat) Finish: 2 coats with total dry film thickness not less than 2.5 mils.**

a. **First and Second Coats: Exterior Latex Flat Paint.**

GP: Ultra-Hide 150 Exterior Flat Paint 2210V  
Moore: Moorcraft Super Spec Exterior Flat 180  
Pittsburgh: Sun Proof Exterior Latex Flat Finish 72-45  
P & W: Vapex Latex Flat House Paint Z1600 Series  
S-W: A-100 Acrylic Latex Flat Exterior Finish A-6 Series

## 2.4 INTERIOR PAINTING SYSTEMS AND MATERIALS

A. **Interior Wood - Painted:**

1. **Latex Eggshell Low Odor Finish: 2 finish coats over primer.**

a. **Primer: Latex-Based Interior Low-Odor White Primer.**

GP: Lifemaster No VOC Interior Primer 9116-1200  
Moore: Eco Spec Interior Latex Primer Sealer 231  
Pittsburgh: Pure Performance Latex Primer 9-2  
S-W: Pro Green 200 Low Odor VOC Primer B28W600

b. **First and Second Finish Coats: Latex-Based Interior Eggshell Enamel.**

GP: Lifemaster No VOC Interior Eggshell (LM9300)  
Moore: Eco Spec Interior Latex Eggshell Enamel 223  
Pittsburgh: Pure Performance Eg Shell 9-411  
S-W: Pro Green 200 Low Odor VOC Eg-Shell B20W651

B. **Interior Ferrous Metal:**

1. **Latex Semi-Gloss Low Odor Finish: 2 finish coats over primer.**

a. **Primer: Latex-Based Interior Low-Odor White Primer.**

GP: Devflex 4020PF Direct to Metal Primer & Flat Finish  
Moore: Eco Spec Interior Latex Primer Sealer 231  
Pittsburgh: Pure Performance Primer 9-2  
S-W: Pro Green 200 Low Odor Low VOC Primer B28W600

b. **First and Second Finish Coats: Latex-Based Interior Semi-Gloss Enamel.**

GP: Lifemaster 2000 Interior Semi-Gloss (LM9200)  
Moore: Eco Spec Interior Latex Semi Gloss 224  
Pittsburgh: Pure Performance Semi-Gloss 9-510  
S-W: Pro Green 200 Latex Semi-Gloss B31W651

C. **Interior Non-Ferrous Metal (Zinc Coated Steel and Unfinished Aluminum):**

1. **Latex Semi-Gloss Low Odor Finish: 2 finish coats over primer.**

a. **Primer: Latex-Based Interior Low-Odor White Primer.**

GP: Devflex 4020PF Direct to Metal Primer & Flat Finish  
Moore: Eco Spec Interior Latex Primer Sealer 231  
Pittsburgh: Speedhide Interior Low Odor Latex Sealer UC80020  
S-W: Pro Industrial Pro Cryl Universal Primer B66W310

b. **First and Second Finish Coats: Latex-Based Interior Semi-Gloss Enamel.**

GP: Lifemaster 2000 Interior Semi-Gloss (LM9200)  
Moore: Eco Spec Interior Latex Semi Gloss 224  
Pittsburgh: Pure Performance Semi-Gloss 9-510  
S-W: Pro Green 200 Latex Semi-Gloss

D. **Interior Gypsum Drywall Systems:**

1. **Latex Flat Low Odor Finish (Ceilings Only): 2 finish coats over primer.**

a. **Primer: Latex-Based Interior Low-Odor White Primer.**

GP: Lifemaster No VOC Interior Primer-Sealer 9116-1200  
Moore: Eco Spec Interior Latex Primer Sealer 231  
Pittsburgh: Pure Performance Primer 9-2  
S-W: Pro Green 200 Low Odor Low VOC Primer B28W600

b. **First and Second Finish Coats: Latex-Based Interior Flat Paint.**

GP: Lifemaster 2000 Interior Flat (LM9100)  
Moore: Eco Spec Interior Latex Flat 219  
Pittsburgh: Pure Performance Flat 9-110  
S-W: Pro Green 200 Low Odor Low VOC Flat B30W651

2. Latex Eggshell Low Odor Eg-Shell Enamel Finish (Wall Areas): 2 finish coats over primer.
  - a. Primer: Latex-Based Interior Low-Odor White Primer.  
  
GP: Lifemaster No VOC Interior Primer-Sealer 9116-1200  
Moore: Eco Spec Interior Latex Primer Sealer 231  
Pittsburgh: Pure Performance Primer 9-2  
S-W: Pro Green 200 Low Odor Low VOC Primer B28W600
  - b. First and Second Finish Coats: Latex-Based Interior Eggshell Enamel.  
  
GP: Lifemaster 2000 Interior Eggshell (LM9300)  
Moore: Eco Spec Interior Latex Eggshell Enamel 223  
Pittsburgh: Pure Performance Eggshell Latex 9-411  
S-W: Pro Green 200 Low Odor Latex Eg-Shel
3. Cut Shellac Varnish Sealer or Alkyd Based Wall Primer (Wall Areas to Receive Wall Covering): 1 primer coat with a dry film thickness of 0.9 mils.
  - a. Primer: Cut Shellac Varnish or Latex or Alkyd Primer/Sealer & Vapor Barrier.  
  
Moore: Moore's Wall-Grip 2  
Moore: Wall-Grip 1, 2, 3 203  
Pittsburgh: 17-21 Seal-Grip Acrylic Latex Wall Primer/Sealer  
S-W: PrepRite PreWallcovering Primer B28W8980

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  1. Concrete: 12 percent.
  2. Masonry (Clay and CMU): 12 percent.
  3. Wood: 15 percent.
  4. Gypsum Board: 12 percent.
  5. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

- F. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to re-install items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer, but not less than the following:
  - 1. SSPC-SP 2, "Hand Tool Cleaning."
  - 2. SSPC-SP 3, "Power Tool Cleaning."
  - 3. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Aluminum Substrates: Remove loose surface oxidation.
- H. Wood Substrates:
  - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 2. Sand surfaces that will be exposed to view, and dust off.
  - 3. Prime edges, ends, faces, undersides, and backsides of wood.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- I. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

### **3.3 APPLICATION**

- A. Apply paints according to manufacturer's written instructions and recommendations.

1. Use applicators and techniques suited for paint and substrate indicated.
  2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
    - a. Equipment, including panelboards and switch gear.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Tanks that do not have factory-applied final finishes.
    - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
  2. Paint the following work where exposed in occupied spaces:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    - h. Other items as directed by Architect.
  3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### **3.4 FIELD QUALITY CONTROL**

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
  - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### **3.5 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or de-faced painted surfaces.

**END OF SECTION 09 90 00**