

TIGER Drylac® Series 49**Section 09977**

This section includes the shop application of a powder coating finish to interior and exterior metal component surfaces.

PART 1 GENERAL**1.1 SECTION INCLUDES**

- A. Powder coating applied to metal surfaces.
- B. Refer to Schedule at end of section.

1.2 RELATED SECTIONS

- A. Section 01330 - Submittal Procedures.
- B. Section 01600 - Product Requirements, Substitutions.

Coordinate with any section that describes components requiring coating application; specify uncoated surfaces or a primer of a type that is compatible with pretreatment process (es) specified in this section.

- C. Section 05120 – Structural Steel: Substrate surfaces requiring powder coatings.
- D. Section 05500 – Metal Fabrications: Substrate surfaces requiring powder coatings.
- E. Section 09900 – Paints and Coatings: Paint coatings over other metal surfaces.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM B117 – Practice for Operating Salt Spray (Fog) Apparatus.
 - 2. ASTM D522 – Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - 3. ASTM D523 – Test Method for Specular Gloss.
 - 4. ASTM D609 – Practice for preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Coatings, and related Coating Products
 - 5. ASTM D610 – Test method for Evaluating Degree of Rusting on Painted Steel Surfaces
 - 6. ASTM D714 – Test Method for Evaluating Degree of Blistering of Paints.
 - 7. ASTM D968 – Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
 - 8. ASTM D1014 – Practice for Conducting Exterior Exposure Tests of Paints on Steel.
 - 9. ASTM D1400 – Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base.
 - 10. ASTM D1654 – Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.

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11. ASTM D1729 – Practice for Visual Appraisal of Colors and Color Differences of Diffusely Illuminated Opaque Materials.
 12. ASTM D1730 – Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting.
 13. ASTM D1735 – Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus
 14. ASTM D2244 – Test Method for Calculation of Color Differences from Instrumentally Measured Coordinates.
 15. ASTM D2247 – Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 16. ASTM D2794 – Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 17. ASTM D3359 – Test Methods for Measuring Adhesion by Tape Test.
 18. ASTM D3363 – Test Method for Film Hardness by Pencil Test.
 19. ASTM D3451 – Practices for Testing Polymeric Powders and Powder Coatings.
 20. ASTM D4214 – Test Method for Evaluating Degree of Chalking of Exterior Paint Films.
 21. ASTM D5382 – A Guide to Evaluation of Optical Properties of Powder Coatings.
 22. ASTM D5861 – Guide to Significance or Particle Size Measurements of Coating Powders.
 23. ASTM D6441 – Test Methods for Measuring the Hiding Power of Powder Coatings.
 24. ASTM E284 – Terminology of Appearance
 25. ASTM E1164 – Practice for Obtaining Spectrophotometric Data for Object-color Evaluation
- B. American Architectural Manufacturer's Association (AAMA)
1. AAMA 2603-20 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
- C. International Organization for Standardization (ISO)
1. ISO 1519 - Paints and varnishes - Bend test (cylindrical mandrel).
 2. ISO 1520 - Paints and varnishes - Cupping test.
 3. ISO 2409 - Paints and varnishes - Cross-cut test.
 4. ISO 2815 - Paints and varnishes - Buchholz indentation test.

1.4 SUBMITTALS

- A. Submit product data in accordance with Section 01330 - Submittal Procedures.
- B. Submit full records of all products used. List each product in relation to finish formula and include the following:
1. Product type and use.

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2. Manufacturer's product number.
 3. Color numbers or descriptions.
 4. Manufacturer's Material Safety Data Sheets (MSDS).
- C. Submit manufacturer's application instructions for each product specified.
- D. Submit certification that all materials have been applied in accordance with the coating manufacturer's recommendations.

1.5 SAMPLES

- A. Submit samples in accordance with Section 01330 - Submittal Procedures.
- B. Submit [duplicate] [300 x 200] mm sample panels of each finish [type,] [color,] [and texture] specified.
- C. Submit full range of available colors where color availability is restricted.
- D. Use 1.5 mm (14 gage) aluminum or steel q-panels for sample finish.

1.6 QUALITY ASSURANCE

1. Standard of Acceptance:
 - a. Final coat to exhibit uniformity of color and uniformity of gloss across full surface area.
 - b. Quality of coated products to conform to specified requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect coated materials in accordance with Section 01600 - Product Requirements.
- B. Deliver and store materials in original packaging, sealed, with labels intact. (see Product Descriptions)
- C. Indicate on containers or wrappings:
 1. Manufacturer's name and address.
 2. Type of coating.
 3. Color number in accordance with established color schedule.
 4. Batch number.
- D. Provide and maintain dry, temperature controlled, secure storage.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Maintain substrate and ambient temperature limits required by coating manufacturer.
- B. Apply coating only when surface to be coated is dry and adequately pre-treated.

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- A. Submit work schedule for various stages of coating application.
- B. Submit schedule minimum 48 hours in advance of operations.

PART 2 PRODUCTS**2.1 MANUFACTURER**

- A. TIGER Drylac® U.S.A., Inc., 3945 Swenson Ave., St Charles, Illinois 60174; Phone (800) 243-8148, Fax (877) 926-8148; E-mail: TAS@tiger-coatings.us. Website: www.tiger-coatings.us.
- B. Substitutions: [Refer to Section 01600.] [Not permitted.]
- C. Coating to be applied by an applicator with the appropriate facilities (spray equipment, oven, controlled environment, etc...)

2.2 MATERIALS

- A. Powder Coating: Polyester resin-based thermosetting powder, Series 49, standard grade weather resistant Polyester TGIC for Exterior or Interior applications.

2.3 COLORS

- A. Selection of colors [from manufacturers full range of colors. Please contact your local Tiger Drylac U.S.A., Inc. office for assistance with any suitability issues] [Color Schedule provided by Consultant after contract award.]
- B. Smooth Glossy Finish Colors: Full range of standard RAL colors as supplied by Tiger Drylac U.S.A., Inc.
- C. Smooth Matte Finish Colors: [Black RAL 9005; 49/80350] [White RAL 9010; 49/10103] [White 49/11350]
- D. Rough Texture Glossy: [Natural White; 49/11570] [Black RAL 9011; 49/80990]

2.4 COATING FINISHES

Review selection of shop applied primers specified in other sections for shop fabricated products to ensure compatibility with specified finish powder coatings.

- A. Shop primed ferrous metal surfaces:
 - 1. Thermosetting Polyester Resin-based Powder. Finish coat: [smooth glossy.] [smooth matte.]
- B. Galvanized and zinc coated metal surfaces:
 - 1. Thermosetting Polyester Resin-based Powder. Finish coat: [smooth glossy.] [smooth matte.]
- C. Aluminum surfaces:

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1. Pre-treat to ASTM D1730 Type B, Method 5 using a multi-stage chromate process or an approved chrome-free pretreatment process approved by powder coating manufacturer for optimized weather resistance. Other pre-treatment options may be available based on product end-use requirements.
2. Thermosetting Polyester Resin-based Powder, Finish coat: [smooth glossy.] [smooth matte.]

PART 3 EXECUTION**3.1 PREPARATION**

- A. Grind fabrication welds smooth.
- B. Clean surfaces prior to pretreatment coating.
- C. Surfaces to Receive Finishes: Dry and free of debris, oils, dust, or other deleterious materials.

3.2 CLEANING

Cleaning and pretreatment are extremely important; consider all alternatives and methodology appropriate to component intended for coating.

- A. Clean surfaces to be coated as follows:
 1. Remove all dust, dirt, and other surface debris by vacuuming, wiping dry with clean cloths or compressed air.
 2. Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 3. Allow surfaces to drain completely and allow to thoroughly dry.

Use water blasting only when necessary for extreme cases of contamination by oily residue and where hand washing is impractical.

- B. If the above procedures do not clean the substrate surfaces, clean the surfaces with high pressure water washing.
- C. Apply pretreatment as soon as possible after cleaning and before surface deterioration occurs.
- D. Pre-treat iron phosphate for steel, zinc phosphate for galvanized or steel structures, and yellow or green chromating, or approved chrome-free for aluminum substrates.

3.3 APPLICATION

- A. Apply coating to requirements of coating manufacturer's written application instructions.

Consider application methods carefully, in conjunction with appropriate coating experts.

- B. Method of Application: [Electrostatic manual spraying.] [Electrostatic automatic spraying.] [Tribo/Airstatic manual spraying.] [Tribo/Airstatic automatic spraying.] [Metallic powder coating by electrostatic processing.]
- C. Spray application.

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1. Provide and maintain equipment that is suitable for intended purpose, capable of properly fluidizing powder coating to be applied.
 2. Apply coating materials to clean surfaces to minimum 2.5 - 3.5 mil dry film thickness or as specified by manufacturer.
 3. Ensure coating adheres to internal corners and recessed areas.
- D. Allow surfaces to cure for minimum time period as required by manufacturer.
- E. Cure in accordance with manufacturer's cure curves.

3.4 FIELD QUALITY CONTROL

Consider inspection services only when the project or special conditions exist.

- A. Field inspection of coating operations to be performed by a designated independent inspection firm.
- B. Advise when each applied coating is ready for review.

3.5 SCHEDULE

Include a schedule that identifies metal components that require shop applied powder coating. The following is an EXAMPLE only to illustrate a format.

- A. Structural Columns - Tubular Steel, Interior and Exterior: Light Blue color.

END OF SECTION