

TIGER Drylac® Series 29**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. QUALICOAT
1. Class 1 – Specification and Licensure, Liquid and Powder Organic Coatings On Aluminum For Architectural Applications
- D. 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.

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- 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.
 - 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.

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- B. Apply coating only when surface to be coated is dry and adequately pre-treated.

1.9 SCHEDULING

- 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.com.
- 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 29, 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.]

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- C. Aluminum surfaces:
 - 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.]

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- C. Spray application.
 - 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