



SECTION 09670 (09 67 23)

RESINOUS FLOORING AND WALL SYSTEMS

TENNANT ECO-CRETE™ SL DB

SL*-MMA Body Coat*-MMA Topcoat-MMA Topcoat

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Resinous Systems of the Following Types:
 - 1. Eco-Crete™ SL DB.

1.2 RELATED SECTIONS

- A. Section 03300 – Cast-In-Place Concrete.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
 - 2. ASTM C 307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
 - 3. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.
 - 4. ASTM C 579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 5. ASTM C 580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 6. ASTM D 570 - Standard Test Method for Water Absorption of Plastics.
 - 7. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 8. ASTM D1475 - Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
 - 9. ASTM D2369 - Standard Test Method for Volatile Content of Coatings.
 - 10. ASTM D2393 - Test Method for Viscosity of Epoxy Resins and Related Components.
 - 11. ASTM D3278 - Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus.
 - 12. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.

13. ASTM D 4226 - Standard Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products.
 14. ASTM D 4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
 15. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 16. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
 17. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. Deutsches Institute fur Normung (DIN):
1. DIN 53460 – Testing of Plastics; Determination of the Vicat Softening Temperature of Thermoplastics.
- C. International Concrete Repair Institute (ICRI):
1. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
- D. Military Specifications (MIL):
1. MIL-D-3134J - Deck Covering Materials.
- E. National Floor Safety Institute (NFSI):
1. ANSI/NFSI B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data:
1. Manufacturer's data sheets on each product to be used, including properties, VOC content, wet static coefficient of friction, compressive strength, tensile strength, elongation and similar properties.
 2. Preparation instructions and recommendations.
 3. Storage and handling requirements and recommendations.
 4. Typical installation methods.
- C. Verification Samples: Two representative units of each system, including color and texture.
- D. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- F. Manufacturer's Project References: Submit manufacturer's list of successfully completed resinous flooring system projects, including project name and location, name of architect, and type and quantity of flooring systems furnished.
- G. Applicator's Project References: Submit applicator's list of successfully completed resinous flooring system projects, including project name and location, name of architect, and type and quantity of flooring systems applied.

- H. Care and Maintenance Instructions: Submit manufacturer's care and maintenance instructions, including cleaning instructions.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
- B. Applicator's Qualifications:
 - 1. Applicator regularly engaged, for a minimum of 5 years, in application of resinous flooring systems of similar type to that specified.
 - 2. Employ persons trained for application of resinous flooring systems.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
 - 1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
 - 2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
 - 3. Retain mock-up during construction as a standard for comparison with completed work.
 - 4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.6 PRE-INSTALLATION CONFERENCE

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and batch number.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.
 - 2. Keep materials in manufacturer's original, unopened containers and packaging until application.
 - 3. Store materials in clean, dry area indoors between 65 and 80 degrees F (18 and 27 degrees C).
 - 4. Store materials out of direct sunlight.
 - 5. Keep materials from freezing.
 - 6. Protect materials during storage, handling, and application to prevent contamination or damage.

1.8 PROJECT CONDITIONS

- A. Apply flooring system under the following ambient conditions:
 - 1. Ambient and Concrete Floor Temperatures: Between 65 and 85 degrees F (18 and 29 degrees C).
 - 2. Material Temperature: Between 65 and 85 degrees F (18 and 29 degrees C).

3. Relative Humidity: Maximum 80 percent.
4. Dew Point: Floor temperature more than 5 degrees over dew point.

B. Do not apply flooring system under ambient conditions outside manufacturer's limits.

1.9 WARRANTY

A. Submit manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Tennant Coatings Inc., which is located at: 701 N. Lilac Dr.; Minneapolis, MN 55440; Toll Free Tel: 800-228-4943; Email:[request info \(Coatings@tennantco.com\)](mailto:request%20info%40Coatings%40tennantco.com); Web:<http://www.tennantcoatings.com>
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
1. Color: As selected by Architect from manufacturer's full range.

2.2 TENNANT ECO-CRETE SL

- A. Eco-Crete SL DB, SL*-MMA BODY*-MMA TOP-MMA TOP.
1. Slurry with silica broadcast: Eco-Crete SL, 1/8 inches.
 2. Broadcast coat with silica broadcast: Tennant MMA Body, 1/8-3/16 inches.
 3. Grout Coat: Tennant MMA Topcoat, 16 mils.
 4. Topcoat: Tennant MMA Topcoat, 12.8 mils.
 5. Color: As selected by Architect from manufacturer's full range.

2.3 PRODUCT PROPERTIES

- A. Eco-Crete SL: A three-part, cementitious-polyurethane slurry system with aggregate broadcast, for resurfacing lightly eroded interior concrete floors in areas that require thermal shock resistance and slip resistance. Typically installed at 1/8 inch (3.2 mm).
1. Compressive Strength, ASTM C579: 8,400 psi (57.9 MPa).
 2. Tensile Strength. ASTM C307: 1,050 psi (7.2 MPa).
 3. Flexural Strength, ASTM C580: 2,700 psi (19.99 MPa).
 4. Bond Strength, ASTM D-4541: 100 Percent Concrete Failure.
 5. Impact Strength, ASTM D-4226: >160 in/lb.
 6. Volatile Organic Compound, VOC, ASTM D3960, Mixed A+B+C: 0.04 lb./gal (5g/L).
 7. Resistance to Fungi Growth, ASTM G21: Passes, Rating 1.
 8. Flammability, ASTM D635: Self-extinguishing.
- B. MMA Body Coat: A semi self-leveling, methyl methacrylate (MMA) body coat. It must be broadcast with quartz/flake to rejection.
1. Flash Point degrees F/C, Seta Closed Cup, ASTM D3278: Flammable Liquid.
 2. Percent Solid, by weight, ASTM D2369: 100.
 3. Density, ASTM D1475: 8.17 lb./gal (0.98 g/L).
 4. Viscosity, Brookfield, ASTM D2393: 300-500 cps.
 5. Volatile Organic Compound-VOC, ASTM D3960: 0 lb./gal (0 kg/L).
 6. Water Absorption, ASTM D570: <0.1 percent.
 7. Compressive Strength, ASTM C109: 6,500 psi (45 MPa).
 8. Tensile Strength, ASTM C307: 2,000 psi (14 MPa).

9. Flexural Strength, ASTM C348: 2,800 psi (19 MPa).
 10. Shor D Hardness, ASTM D2240: 62.
 11. Elongation at Break, ASTM D628: 35 percent.
 12. Coefficient Thermal Expansion, VDE 0304: 0.000035 degrees F (-17.8 degrees C).
 13. Vicat Temperature, DIN 53460: 140 degrees F (60 degrees C).
- C. MMA Topcoat: A high build, methyl methacrylate (MMA) coating which dries clear and is intended for the use as a topcoat.
1. Flash Point degrees F/C, Seta Closed Cup, ASTM D3278: Flammable Liquid.
 2. Percent Solid, by weight, ASTM D2369: 100.
 3. Density, ASTM D1475: 8.09-8.42 lb./gal (0.97-1.01 g/L).
 4. Viscosity, cps, Brookfield, ASTM D2393: 80-90.
 5. Volatile Organic Compound-VOC, ASTM D3960: 0 lb./gal (0 kg/L).
 6. Water Absorption, ASTM D570: <0.1 percent.
 7. Compressive Strength, ASTM C109: 7,500 psi (52 MPa).
 8. Tensile Strength, ASTM C307: 2,100 psi (14 MPa).
 9. Flexural Strength, ASTM C348: 3,100 psi (21 MPa).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine concrete surfaces to receive flooring system. Verify concrete is structurally sound.
- B. Moisture Testing of Concrete: Perform at least one of the following two tests to determine moisture in concrete. Type of test and frequency as recommended by manufacturer and installer.
 1. Calcium Chloride Test:
 - a. Measure moisture vapor emission rate of concrete in accordance with ASTM F 1869.
 - b. Application of flooring system shall start only if test results are below 12 pounds per 1,000 sq.ft (1.5kg/93 sq.m) over a 24-hour period.
 - c. If test results are above limits, notify Architect and flooring manufacturer in writing.
 2. In-situ Probe Test:
 - a. Measure relative humidity in concrete in accordance with ASTM F 2170.
 - b. Application of flooring system shall start only if test results are below 85 percent relative concrete humidity.
 - c. If test results are above limits, notify Architect and flooring manufacturer in writing.
- C. Do not begin preparation or installation until satisfactory moisture test results are achieved. Provide flooring manufacturer's recommended moisture vapor control coating if required.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Protection of In-Place Conditions: Protect adjacent surfaces and adjoining walls from contact with flooring system materials.
- C. Surface Preparation:
 1. Prepare concrete surface in accordance with manufacturer's instructions.

2. Remove dirt, dust, debris, oil, grease, curing agents, bond breakers, paint, coatings, sealers, silicones, and other surface contaminants which could adversely affect application of flooring system.
3. Steel shot blast concrete to a minimum surface profile of ICRI 310.2R, CSP 5.
4. Key-cut termination points with 1/4-inch (6-mm) by 1/4-inch (6-mm) cut.
5. Patch depressions, divots, and cracks in concrete in accordance with manufacturer's instructions.
6. Mechanically remove loose, delaminated, and damaged concrete and repair in accordance with manufacturer's instructions.
7. Joints: Fill joints in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install flooring system in accordance with manufacturer's instructions and approved submittals at locations indicated on the Drawings.
- B. Ensure concrete is dry, clean, and prepared in accordance with manufacturer's instructions.
- C. Allow concrete to cure a minimum of 7 days before applying flooring system.
- D. Mixing:
 1. Mix material components together in accordance with manufacturer's instructions.
 2. Mix only enough material that can be applied within working time.
 3. Add and mix colorants with materials in accordance with manufacturer's instructions to achieve uniform color.
- E. Apply flooring system materials to obtain consistent mil thickness and smooth, uniform appearance and texture.
- F. Overlay: Apply overlay in accordance with manufacturer's instructions. Apply overlay to prepared concrete surface.
- G. Traction Aggregate: Broadcast traction aggregate in accordance with manufacturer's instructions. Broadcast traction aggregate into wet overlay.
- H. Cove:
 1. Apply cove primer and cove in accordance with manufacturer's instructions at locations indicated on the Drawings.
 2. Apply cove to height and shape as indicated on the Drawings.
 3. Apply cove to create seamless, smooth transition between flooring and walls.
- I. Seal Coat:
 1. Apply seal coat in accordance with manufacturer's instructions.
 2. Apply seal coat over traction aggregate.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
- B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.

3.5 CLEANING AND PROTECTION

- A. Allow flooring system to dry in accordance with manufacturer's instructions before opening to traffic.
- B. Allow flooring system to dry a minimum of 1 week before cleaning by mechanical means.
- C. Protect completed flooring system from damage during construction.

END OF SECTION