

## SECTION 09 67 23-RESINOUS FLOORING

### **PROCLAD ST (1/4") Decorative Flake, Standard Epoxy-Based Troweled Mortar System with Decorative Flake System**

#### PART 1 – GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. This section includes the following:
  - 1. Resinous flooring system as shown on the drawings and in schedules.
- B. Related sections include the following:
  - 1. Cast-in-Place Concrete, section 03 30 00
  - 2. Concrete Curing, section 03 39 00

##### 1.3 SYSTEM DESCRIPTION

- A. The work shall consist of preparation of the substrate, the furnishing and application of an epoxy based trowel applied flooring system with colored flake broadcast and high performance urethane top coat.
- B. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/4 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
- C. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

##### 1.4 SUBMITTALS

- A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.
- B. Manufacturer's Safety Data Sheet (SDS) for each product being used.
- C. Samples: A 3 x 4 inch sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

##### 1.5 QUALITY ASSURANCE

- A. The Manufacturer shall have a minimum of 5 years' experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
- B. The Applicator shall have been approved by the flooring system manufacturer in all phases of surface preparation and application of the product specified.
- C. No requests for substitutions shall be considered that would change the generic type of the specified System.

- D. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food & Drug Administration (FDA), and local Health Department.
- E. A pre-installation conference shall be held between Applicator, General Contractor and the Owner for review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

#### 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Packaging and Shipping
  - 1. All components of the system shall be delivered to the site in the Manufacturer's packaging, identified with the product type and batch number.
- B. Storage and Protection
  - 1. The Applicator shall be provided with a storage area for all components. The area shall be between 60°F and 90°F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
  - 2. Copies of Safety Data Sheets (SDS) for all components shall be kept on site for review by the Engineer or other personnel.
- C. Waste Disposal
  - 1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

#### 1.7 PROJECT CONDITIONS

- A. Site Requirements
  - 1. Application may proceed while air, material and substrate temperatures are between 60°F and 90°F provided the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
  - 2. The relative humidity in the specific location of the application shall be less than 85% but no less than 30% and the surface temperature shall be at least 5°F above the dew point.
  - 3. The Applicator shall ensure that adequate ventilation is available for the work area.
  - 4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.
- B. Conditions of New Concrete to Receive Coating
  - 1. Concrete shall be moisture cured for a minimum of 5 days and have fully cured a minimum of 28 days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.
  - 2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
  - 3. Sealers and curing agents should not to be used.
  - 4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against effects of moisture vapor transmission and possible delamination of the system.
- C. Safety Requirements
  - 1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
  - 2. "NO SMOKING" signs shall be posted at the entrances to the work area.
  - 3. The Owner shall be responsible for the removal of foodstuffs from the work area.
  - 4. Non-related personnel in the work area shall be kept to a minimum.

## 1.8 WARRANTY

- A. ProREZ Performance Resins & Coatings warrants that material shipped to buyers at the time of shipment be substantially free from material defects and will perform substantially to ProREZ Performance Resins & Coatings published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
- B. ProREZ Performance Resins & Coatings liability with respect to this warranty is strictly limited to the value of the material purchase.
- C. ProREZ Performance Resins & Coatings has no responsibility for the application and processing of products and is under no circumstances liable to any third party whatsoever.

## PART 2 – PRODUCTS

### 2.1 FLOORING- ProREZ Performance Resins & Coatings: PROCLAD ST 1/4" Decorative Flake Broadcast.

1. System Materials:
  - a. Primer: ProREZ Performance Resins & Coatings, ProPoxy S resin and hardener. (Optional primer for elevated moisture levels to be ProPoxy MB moisture block primer).
  - b. Overlay: ProREZ LLC, ProPoxy S resin, hardener and ProQuartz filler.
  - c. Grout/Flake Broadcast: ProPoxy Cove resin and hardener with decorative flake.
  - d. Grout Coat: ProPoxy S resin and hardener.
  - e. Optional High Performance Urethane Top Coat: ProREZ Performance Resins & Coatings, ProThane S resin and hardener.
2. Patch Materials
  - a. Shallow, Cracks, Control Joints (if non-dynamic), and Deep Fill Patching: Use ProPoxy S Resin and Hardener or ProPoxy MB Resin and Hardener with ProThickener or clean dry silica sand suitable for troweling deeper fill patches.

### 2.2 MANUFACTURER

- A. ProREZ Performance Resins & Coatings, 47 Inwood Road, Cromwell, CT 06416-0153.
- B. Manufacturer of Approved System shall be single source and made in the USA.

### 2.3 PRODUCT REQUIREMENTS

A.	Primer	ProPoxy S
1.	Percent Solids	100 %
2.	VOC	0 g/L
3.	Compressive Strength, ASTM D 695	13,100 psi
4.	Tensile Strength, ASTM D 638	2,400 psi
5.	Flexural Strength, ASTM D 638	4,000 psi
6.	Abrasion Resistance, ASTM D 4060	
	C 17 Wheel, 1,000gm load, 1,000 cycles	30 mg weight loss
7.	Flame Spread/NFPA-101, ASTM E 84	Class A
8.	Impact Resistance MIL D 2794	>160 in/lb
9.	Water Absorption MIL D 570	<0.1%
10.	Potlife @ 70°F	20 minutes

B.	Overlay	ProClad ST
1.	VOC	0 g/L
2.	Compressive Strength, ASTM D 579	15,000 psi
3.	Tensile Strength, ASTM D 307	2,400 psi
4.	Flexural Strength, ASTM D 580	4,000 psi
5.	Flexural Modulus of Elasticity, ASTM C 580	1.0 x 10 <sup>5</sup>
6.	Abrasion Resistance, ASTM D 4060 C 17 Wheel, 1,000gm load, 1,000 cycles	18 mg weight loss
7.	Flame Spread/NFPA-101, ASTM E 84	Class A
8.	Flammability, ASTM D 635	Self Extinguishing
9.	Indentation, MIL D-3134	No indentation
10.	Impact Resistance MIL D-3134	Pass
11.	Water Absorption ASTM C 413	<0.1%
C.	Broadcast Coat	ProPoxy Cove Resin
1.	Percent Solids	100%
2.	VOC	0 g/L
3.	Compressive Strength, ASTM D 695	13,100 psi
4.	Tensile Strength, ASTM D 638	2,400 psi
5.	Flexural Strength, ASTM D 580	4,000 psi
6.	Abrasion Resistance, ASTM D 4060 C 10 Wheel, 1,000gm load, 1,000 cycles	30 mg weight loss
7.	Flame Spread/NFPA-101, ASTM E 84	Class A
8.	Impact Resistance MIL D 2794	>160 in/lb
9.	Water Absorption MIL D 570	<0.1%
10.	Potlife @ 70°F	20 minutes
D.	Top Coat	ProThane
1.	Tensile Strength ASTM D-2370	6,500 psi
2.	Adhesion ASTM-4541	400 psi, concrete failure (applied over epoxy)
3.	Impact Resistance, ASTM D 2794	>160 in/lb
4.	Abrasion Resistance, ASTM D 4060 CS17 Wheel 1000 GM Load 1000 Cycles ASTM D-4060	10-15 mg loss

## PART 3 – EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.
  1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

### 3.2 PREPARATION

- A. General
  1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.

2. Moisture Testing: Perform tests recommended by manufacturer and as follows:
  - a. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
  - b. If the relative humidity exceeds 75% then ProREZ LLC ProPoxy MB moisture mitigation system must be installed prior to resinous flooring installation. Slab-on grade substrates without a vapor barrier may also require the moisture mitigation system.
3. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
4. Mechanical surface preparation
  - a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust-recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.
  - b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle, bush hammers, or other suitable equipment.
  - c. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum ¼ inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.
  - d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
5. Patching
  - a. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufacturer's recommendations.

### 3.3 APPLICATION

#### A. General

1. The system shall be applied in three distinct steps as listed below:
  - a. Substrate preparation
  - b. Priming
  - c. Trowel applied overlay
  - d. Broadcast coat and Flake application
  - d. Grout coat
  - e. High Performance Urethane Top Coat
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

- B. Primer
  - 1. The primer shall comprise of 2 components, resin and hardener as supplied by the manufacturer (mix ratio = 3 parts resin to 1 part hardener per the manufacturer's instructions).
  - 2. The primer shall be applied by flat squeegee and back rolled at the rate of 150-200 sf/gal.
- C. Overlay
  - 1. The overlay coat shall be trowel applied onto the wet or tacky primer.
  - 2. The overlay shall be comprised of three components, a resin and hardener as supplied by the Manufacturer, and mixed in a ratio of 3 parts resin to 1 part hardener, with a bag of prepackaged aggregate.
  - 3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means into which the aggregate is then added.
  - 4. The batch of mortar is then spread at the specified thickness with a screed box or gage rake.
  - 5. Finish smooth with hand and/or power trowel.
- D. Broadcast Coat
  - 1. The Broadcast coat shall be comprised of a liquid resin and a liquid hardener that is mixed in the ratio of 3 parts resin to 1 part hardener and installed per the manufacturer's recommendations.
  - 2. The topcoat shall be squeegee applied and back rolled with a coverage rate of 100 sf/gal.
  - 3. Colored Flake shall be broadcast into the wet resin at a rate of .2 lbs per sq ft.
  - 4. Allow to cure overnight before sweeping excess flake. Once the excess flake is removed used a clean stiff broom or a plastic scraper to remove sharp edges of flake. Use a vac or leaf blower to ensure all flake is removed.
- E. Grout Coat
  - 1. The Grout Coat shall be comprised of a Part A Resin and Part B Hardener in a 3:1 mix ratio, which is mixed and installed per the manufacturer's recommendations.
  - 2. The Grout Coat shall be squeegee applied and back-rolled with a coverage rate of 100-110 sf/gal.
- F. Topcoat
  - 1. The topcoat shall be roller applied at the rate of 550-600 sf/gal to yield a dry film thickness of 3-4 mils.
  - 2. The topcoat shall be comprised of a liquid resin and hardener that is mixed at the ratio of 1 part resin to 2 parts hardener per the manufacturer's instructions.
  - 3. The finished floor will have a nominal thickness of 1/4 inch.

### 3.4 FIELD QUALITY CONTROL

- A. Tests, Inspection
  - 1. The following tests shall be conducted by the Applicator:
    - a. Temperature
      - 1. Air, substrate temperatures and, if applicable, dew point.
    - b. Coverage Rates
      - 1. Rates for all layers shall be monitored by checking quantity of material used against the area covered.

### 3.5 CLEANING AND PROTECTION

- A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
- B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.