

**SECTION 09 96 00  
EPOXY FLOOR COATING**

**PART 1-GENERAL**

**1.1 DESCRIPTION**

- A. Section includes surface preparation and application of high-performance coating system on interior concrete floor, including integral cove base.
- B. Section specifies, for floor slabs to receive coating system, moisture mitigation of slabs with excessive moisture test values.

**1.2 DEFINITIONS**

- A. DFT: Dry film thickness.
- B. Gloss Levels: Tested in accordance with ASTM D 523.

<u>Gloss Level</u>	<u>Description</u>	<u>Units at 60 degrees</u>
G6	Gloss	70 to 85
G7	High Gloss	>85

- C. VOC: Volatile organic compound.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:  
Before work is started, or sample panels are prepared, submit manufacturer's literature, including moisture testing, surface preparation and application recommendations. Sample Panels:
  - 1. After coating materials have been approved and before work is started submit sample panels showing each type of finish and color specified.
  - 2. Panels to show color: Composition board, 100 by 250 by 3 mm (4 inch by 10 inch by 1/8 inch).
  - 3. Attach labels to panel stating the following:
    - a. Federal Specification Number or manufacturers name and product number of coatings used.
    - b. Product type and color.
    - c. Name of project.
- C. Manufacturers' Certificates indicating that product complies with specified requirements, and that it meets or exceeds performance of coating specified.

#### **1.4 DELIVERY AND STORAGE**

- A. Deliver materials to site in manufacturer's sealed container marked to show following:
  - 1. Name of manufacturer.
  - 2. Product type.
  - 3. Batch number.
  - 4. Instructions for use.
  - 5. Safety precautions.
- B. In addition to manufacturer's label, provide a label legibly printed as following:
  - 1. Surface upon which material is to be applied.
  - 2. State coat types; prime, body or finish.
- C. Maintain space for storage, and handling of coating materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.
- D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

#### **1.5 MOCK-UP PANEL**

- A. Before starting application, apply coating as specified to an area of approximately 9 m<sup>2</sup> (100 ft<sup>2</sup>), selected by Resident Engineer.
- B. Finish and texture approved by Resident Engineer will be used as a standard of quality for remainder of work.
- C. Approval of mockups does not constitute approval of deviations from the Contract Documents except as specifically approved in writing.

#### **1.6 FIELD CONDITIONS**

- A. Comply with manufacturer's written instructions for installation conditions. If not addressed by manufacturer's instructions, comply with the following:
  - 1. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

### **PART 2 - PRODUCTS**

## 2.1 COATING SYSTEM MANUFACTURER/PRODUCT AND APPLICATOR

- A. Basis of Design: Subject to compliance with requirements, provide the following coating system, or an equivalent by another acceptable manufacturer.
1. Dudick Inc.; Steri-Seal HC System
    - a. Epoxy primer
    - b. Two coats of epoxy finish coating
      - 1) Color: Selected by Resident Engineer from full range of manufacturer's standard colors.
- B. Applicator: Installation shall be performed by one of the following:
1. Coating manufacturer.
  2. Applicator who regularly installs high-performance floor systems and coatings, and who is approved by the coating manufacturer to execute the installation for this Project. Submit the following:
    - a. Description of applicator's verifiable qualifications and experience.
    - b. Letter from manufacturer, referencing the project, stating the applicator is qualified to install the coating system.

## 2.2 COATING SYSTEM PROPERTIES

- A. 100% Solids, pigmented high chemically resistant epoxy coating, 10-20 mil thickness.
1. No volatile organic compounds.
  2. Low installation odor.
  3. Low emitting material.
  4. Contains anti-microbial agents.
- B. High chemical resistance to:
1. Dilute inorganic acids
  2. Aliphatic Hydrocarbons
  3. Sodium Hydroxide
  4. Salt & Brine Solutions
  5. Mineral Oils
- C. Typical Physical Properties:
- |                             |                          |             |
|-----------------------------|--------------------------|-------------|
| 1. Taber Abrasion           | 120 mg.                  | ASTM D-4060 |
| 2. Tensile Elongation       | 10%                      | ASTM D-638  |
| 3. Tensile Strength, Binder | 2,870 PSI (20 MPa)       | ASTM D-638  |
| 4. Specular Gloss Factor    | ASTM D-523               | 85-90       |
| 5. Flame Spread             | <5 mm/self extinguishing | ASTM D635   |

- 6. Tensile Bond Strength      Cohesive Failure of Concrete ASTM D-4541
- 7. Fungus Resistance          No Growth  
   U.S.MilStd.810E

**2.3 REGULATORY REQUIREMENTS/QUALITY ASSURANCE**

- A. Coating materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction for the following:
  - 1. Volatile Organic Compounds (VOC)2.      Lead-Base Coating:
    - a. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
    - b. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.
  - 2. Asbestos: Materials shall not contain asbestos.
  - 3. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc-chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.
  - 4. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.

**PART 3 - EXECUTION**

**3.1 JOB CONDITIONS**

- A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of coating materials.
  - 1. Take necessary precautions to protect persons and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
  - 2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at end of each day's work.
- B. Atmospheric and Surface Conditions:
  - 1. Do not apply coating when air or substrate conditions are:
    - a. Less than 3 degrees C (5 degrees F) above dew point. Relative humidity shall be less than 90 percent.

- b. Below 10 degrees C (50 degrees F) or over 35 degrees C (95 degrees F), unless specifically pre-approved by the Resident Engineer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
2. Maintain interior temperatures until coatings are fully cured.
3. Apply only on clean, dry and frost free surfaces.

### **3.2 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. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.

### **3.3 SURFACE PREPARATION**

- A. Start of surface preparation will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Concrete: Prepare by shot blasting or other mechanical means to remove the surface laitance. Oils, grease and other contaminants shall be removed prior to surface preparation. Concrete shall be free of curing compounds and form release agents. Surface texture shall be similar to 60-80 grit sandpaper or the visual standard, CSP-3 from the International Concrete Repair Institute. The prepared surface should have a nominal tensile strength of 225 PSI per ASTM D-4541.
- C. CMU: Prepare by light abrasive blast to clean surface and impart texture to joints equivalent to texture specified for concrete. Remove laitance. Expose honeycombs and voids beneath the surface, and fill with Dudick "Scratch-Coat" or manufacturer-recommended compound.
- D. General:
  1. Remove prefinished items in surface to be coated for reinstallation after coating is cured.
  2. Remove items for reinstallation and complete coating of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
  3. Clean surfaces for coating with materials and methods compatible with substrate and specified finish. Remove any residue remaining

from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

### **3.4 MOISTURE TESTING**

- A. Notify Resident Engineer 3 business days in advance of testing operations, to permit witnessing testing-related activity.
- B. Moisture vapor emission rate testing: Perform three tests for the first 1000 sq. ft. of flooring. Add one test for each additional 1000 sq. ft. or fraction thereof. Conduct tests around the perimeters of the room, at columns, and where moisture may be evident.
  - a. Verify new concrete floors have cured a minimum of 28 days.
  - b. If coating manufacturer does not publish written instructions including acceptable test results, use the following:
    - 1) Calcium Chloride Test: ASTM F 1869, maximum moisture vapor transmission rate of 3 lb of water/1000 sf (1.36 kg of water/92.9 sq. m) in 24 hours. Refer to test standard requirements for minimum number of tests and spacing for additional tests, and grinding away of curing compounds or other foreign substances prior to testing

### **3.5 MOISTURE MITIGATION**

- A. Provide concrete that meets coating manufacturer's substrate requirements. Treat concrete to meet manufacturer's substrate requirements.
- B. Surface-Applied Vapor Retarder: Where moisture testing results do not indicate compliance with coating manufacturer's requirements, provide one of the following products, subject to compliance with requirements:
  - 1. Ardex Engineered Cements: MC Ultra; MC Plus; MC Rapid.
  - 2. Koster American Corporation: VAP I 2000; VAP I 2000 FS; VAP I 2000 UFS; VAP I 2000 HS.
- C. Vapor Retarder Performance Requirements:
  - 1. Permeance: Maximum 0.3 perms, when tested in accordance with ASTM E 96 (wet method).
  - 2. Alkalinity Resistance: Unaffected by a pH of 14 when tested in accordance with ASTM D 1308, minimum 14 days.
  - 3. May be installed on concrete with moisture vapor emission rates of up to 20 lbs of water per 1000 sq. ft. in 24 hours, when tested in accordance with ASTM F 1869, anhydrous calcium chloride test.

4. Adhesion to concrete: 500 psi or greater, as tested in accordance with ASTM D 4541 or ASTM D 7234.

### **3.6 COATING PREPARATION**

- A. Thoroughly mix coating materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. Do not thin except as directed by manufacturer's printed instructions.
- C. Mix two component and two part coating and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions.

### **3.7 APPLICATION**

- A. Install coating manufacturer's recommended product for filling floor-wall intersection, forming rounded fillet.
- B. Prime substrates using manufacturer's recommended epoxy primer.
- C. After priming, apply 2 coats of epoxy finish coating, each coat with wet film thickness of 10 to 12 mils.
- D. Apply each coat evenly and cover substrate completely.
- E. Comply with manufacturer's printed instructions to obtain optimum bonding and performance.
- F. Finish surfaces shall show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.

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