

## SECTION 07 26 00

### VAPOR EMISSION AND ALKALINITY CONTROL FOR NEW CONCRETE

*[Note to Specifier: It is recommended that this section be referenced in the "Curing" sub-section of Section 03 30 00 – Cast-in-Place Concrete as the specified curing method for new concrete. If alternate curing methods are selected, this specification will no longer be applicable, and the alternate specification for existing concrete would be more appropriate.]*

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. Section Includes:
  - 1. Water vapor emission and alkalinity control treatment for new on, below, and above grade concrete slabs scheduled to receive moisture sensitive floor coverings and adhesives.
  
- B. Related Sections:
  - 1. Section 03 30 00 – Cast-In-Place Concrete
  - 2. Section 03 35 00 – Concrete Finishes
  - 3. Section 07 19 00 – Underslab Vapor Retarder
  - 4. Section 09 65 00 – Resilient Flooring
  - 5. Section 09 68 00 – Carpet Flooring

##### 1.02 REFERENCES

- A. ASTM C156-05 – Standard Test Method for Water Retention by Liquid Membrane-Forming Curing Compounds for Concrete.
- B. ASTM C309-98 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- C. ASTM C1315-07 – Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
- D. ASTM D1308-02 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
- E. ASTM D4541-02 – Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
- F. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.
- G. ASTM F710-05 – Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- H. ASTM F1869-04 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

### **1.03 SYSTEM DESCRIPTION**

- A. Curing/Sealing Treatment: Utilizes a modified resin compound, spray-applied to freshly poured horizontal concrete surfaces in lieu of other curing methods, to reduce water vapor emission levels for compliance with subsequent flooring materials.
- B. Remedial Treatment: Utilizes a two-component modified epoxy liquid penetrant to stabilize internal humidity by restricting excessive moisture and pH (alkalinity), and to mechanically regulate permeability and suppress the volume of moisture reaching concrete surfaces, for compliance with subsequent floor covering's written limits. Application methods determined by site conditions, presence of sub-slab vapor barriers for slabs-on-grade, concrete mix design and contaminants, age of concrete substrate, results of calcium chloride testing, and finish floor covering product recommendations.

### **1.04 SUBMITTALS**

- A. Product Data: Submit manufacturer's data for each component used in vapor emission control treatments.
- B. Include copy of warranty to be issued by manufacturer for vapor emission control coating system and certificate of underwriter's \$5,000,000 product liability policy.
- C. Include test reports conducted by nationally recognized independent testing agency indicating conformance with specified performance requirements.
- D. Manufacturer's Certification: Certify that applicator of vapor emission control treatments is trained and certified/employed by treatment manufacturer.
- E. Provide 5 project references documenting at least 10 years of manufacturer's experience in vapor emission control treatment production, and 5 project references documenting at least 5 years of applicators experience in applying vapor emission control treatments.
- F. Closeout Submittals: Provide test result documentation of the post cure and post seal coating application vapor emission and pH tests. Indicate test locations results on a floor plan.

### **1.05 QUALITY ASSURANCE**

- A. Application shall be performed by manufacturer's employed personnel or trained applicators.

### **1.06 DELIVERY, STORAGE AND HANDLING**

- A. Deliver, store, handle and protect in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging including application instructions.
- C. Keep materials from freezing.

### **1.07 SEQUENCING**

- A. Apply Curing/Sealing Treatment 4-24 hours after final finishing of each concrete slab pour.
- B. Apply Remedial Treatment to areas with moisture vapor emission rates exceeding floor covering manufacturer's written limits, as determined by calcium chloride testing. Coordinate with installation of floor coverings. Ensure flooring installation complies with vapor emission control system manufacturer's warranty requirements.

## **1.08 WARRANTY**

- A. Manufacturer's Warranty: Warrant vapor emission control treatment against manufacturing defects and improper installation for a period of 10 years. Warranty shall:
  - 1. Cover costs of treatment materials, cementitious compounds, and labor costs of application and preparation.
  - 2. Extend warranty to flooring material, adhesive, and installation labor for same period against moisture vapor emission related failure.
  - 3. Be underwritten by product liability insurance carrier having a minimum "A" rating from Best or equivalent rating system in the amount of \$5,000,000 per occurrence and naming Owner, Architect, and Contractor as co-insured.
  - 4. Guarantee moisture vapor and alkalinity emission rates to be at or below published requirements of floor covering manufacturers.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Floor Seal Technology, Inc. Contact: Tyler Lusk (800) 572-2344.  
[www.floorseal.com](http://www.floorseal.com)

### **2.02 MATERIALS**

- A. Curing/Sealing Treatment: VaporSeal 309 Curing/Sealing Membrane. Product must comply with ASTM C309-98.
- B. Remedial Treatment: MES 100.

### **2.03 ACCESSORIES**

- A. Cementitious Surfacing: 100 percent Portland cement based self-leveling compound. Cement must bond with subsequent floor coverings and adhesives. Approved products:
  - 1. Mapei Ultraplan 1 Plus by Mapei International
  - 2. Ardex K-15 by Ardex Engineered Cements, Inc.
- B. Anhydrous Calcium Chloride Vapor Emission Test Kits: Conforming to ASTM F1869-04. As manufactured by: Vaprecision, (800) 449-6194.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of Conditions: Examine substrates where work is to be performed. Provide written notification of deficiencies detrimental to proper or timely installation; do not proceed until corrected.

### **3.02 APPLICATION**

- A. General: Apply curing/sealing membrane material as recommended by manufacturer in writing when the surface of the concrete has hardened sufficiently to sustain foot traffic.
- B. Coordinate and schedule application of Curing/Sealing Treatment with concrete pour schedule as required, while conforming to manufacturer's written recommendations.
- C. Provide 100 percent coverage of interior floor slabs and concrete decks.
- D. Application shall be by curing/sealing membrane manufacturer's employed personnel or trained applicators.
- E. Following at least 28 days after placement of concrete and prior to floor covering installation, perform calcium chloride testing per guidelines listed in ASTM F1869-04, but modified as follows:
  - 1. Do not remove existing sealer. Place test kit directly upon cleaned, unscarified, sealed concrete. Follow all other guidelines listed in ASTM F1869-04.
  - 2. Perform alkalinity testing per ASTM F710-05.
- F. For areas emitting moisture and alkalinity at rates exceeding floor covering manufacturer's published limits, apply Remedial Treatment as follows:
  - 1. Mask and protect adjacent wall and floor surfaces from effects of scarification and application.
  - 2. Scarify slab surface in area of application by shot blasting or other method acceptable to coating treatment manufacturer.
  - 3. Prepare and treat cracks, control joints and cold joints per treatment requirements.
  - 4. Apply two-component epoxy penetrant and coating with roller and squeegee over entire treatment area; saturate surfaces to ensure a thorough mechanical bond.
  - 5. Clean and fill divots, chips, voids and other surface irregularities with 100 percent Portland cement based patching compound or cementitious fill.
  - 6. Apply cementitious surfacing over coating in areas to receive resilient and carpet floor coverings to facilitate adhesion; apply at a thickness of 1/8-inch.

END OF SECTION 07 26 00