

## SECTION 096150

### WATER VAPOR EMISSION AND ALKALINITY CONTROL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes corrective water vapor emission and alkalinity control system for the following surfaces, where indicated on the Drawings:
  - 1. Existing horizontal concrete surfaces scheduled to receive resilient sheet flooring and resilient tile flooring.
- B. Related Sections include, but are not limited to, the following:
  - 1. Division 09 Section "Resilient Tile Flooring."

##### 1.2 SYSTEM DESCRIPTION

- A. Water Vapor Emission and Alkalinity Control Systems:
  - 1. Corrective System: Liquid applied, two-coat polymer-resin penetrating (non-silicate) moisture-alkaline suppression barrier to repair, suppress and reduce moisture-alkaline and relative humidity for compliance with subsequent flooring or coating materials, at any grade level. Corrective system shall be applied in areas where moisture testing determines excessive results.

##### 1.3 SYSTEM PERFORMANCE

- B. Corrective System: Third party testing reports indicating compliance with the following:
  - 1. ASTM E 96: Water vapor reduction of 70% per wet method vs. uncoated samples.
  - 2. ASTM D 1308: No effect when exposed to 14pH solution at 30 day exposure.
  - 3. ASTM D 4541: Adhesion to concrete: up to 500psi or concrete cohesive failure.
  - 4. ASTM F 1869: Reduce concrete moisture levels from 10 lbs. to below 3.0 pounds.

##### 1.4 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Certification: Of installer's qualifications.
- C. Testing: Procedures for calcium chloride testing prior, during, and after applications, with locations map.
- D. Shop Drawings: If required by results of alkalinity, adhesion, and moisture testing; floor plans, drawn accurately to scale, indicating areas to receive Corrective Water Vapor Emission and Alkalinity Control System treatment and measurement of total area to receive treatment.
- E. ASTM Testing: Independent laboratory testing to support specified ASTM performance.

F. Warranty Certificate: Manufactures standard warranty certificate as specified.

G. Insurance Certificate: Product liability insurance certificate as specified.

#### 1.5 QUALITY ASSURANCE

A. Installer's Qualifications: Water Vapor Emission and Alkalinity Control Systems to be installed by manufacturer only.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials to the project site in manufacturer's original, unopened containers with seals unbroken and labels indicating brand names, colors, patterns, and quality designations legible and intact.

B. Do not open containers or remove labels until materials have been inspected and accepted.

C. Store and protect accepted materials in accordance with manufacturer's directions and recommendations.

#### 1.7 PROJECT CONDITIONS

A. Environmental Conditions: Install system treatments in environmental conditions recommended by the manufacturer.

#### 1.8 EXTENDED WARRANTY

A. Corrective System: Warrant against delamination and other deterioration of floor coverings installed over water vapor emission and alkalinity control system for a period of fifteen (15) years. In the event substrate moisture vapor emission rates exceed 3.0 pounds and alkaline value greater than 9.0pH, manufacture and installer shall include replacement of flooring materials, adhesives, water vapor emission and alkalinity control systems, and labor costs for removal and replacement of those products.

1. Warranty shall not list limitations of dew point, concrete salts, upper moisture limits or ACI documents.

B. Warranty shall cover manufacturing defects, installation defects and improper installations for a period of ten (10) years.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

A. Basis-of-Design Products: The design for water vapor emission and alkalinity control systems is based on polymer-resin-based (non-silicate) products of Synthetics International.

B. Subject to compliance with requirements, provide the named products or a comparable product by one of the following:

1. Creteseal.

2. Floor Seal Technology, Inc.
3. Accepted equal.

## 2.2 WATER VAPOR EMISSION AND ALKALINITY CONTROL SYSTEMS

### A. Corrective System:

1. Basis-of-Design Product:
  - a. Synthetics International; Synthetic 30.

### B. Physical Properties:

1. Product Color: Clear
2. Application: Two (2) coat minimum
3. Film Forming: Polymer sheen
4. Dry to Touch: 10 minutes
5. Foot Traffic: 1 hour
6. Compatibility: Adhesive applied flooring
7. Film Thickness: 6 mill total
8. Solid Content: 36 to 40 percent
9. Spread Rate: 200 square feet total
10. Crack Control: Crack bridging
11. Chemistry: Single or two-component polymer (non-silicate)
12. VOC Content: 50 grams/liter per EPA method 24
13. Environmental: Solvent free, non-corrosive
14. Vapor Reduction: 40 -70% per ASTM E 96
15. Alkali Resistance: 12.5pH - 14pH per ASTM D 1308
16. Concrete Adhesion: 300 – 500psi per ASTM D 4541
17. Moisture Result: 10 pounds reduced to 2.5 lbs. ( $\pm 0.50$ ) per ASTM F 1869
18. Relative Humidity: 85% suppression per ASTM F 2170
19. Alkalinity Control: 14pH per ASTM F 710
20. Water Retention: 0.40 kg/m<sup>2</sup> per ASTM C 156

## PART 3 - EXECUTION

### 3.1 ALKALINITY, ADHESION, AND MOISTURE TESTING

- A. General: Prior to installation of floor coverings, perform alkalinity, adhesion, and moisture testing of horizontal concrete surfaces by calcium chloride tests as specified under applicable Division 09 Sections. Perform tests by qualified testing personnel and agency. Tests shall determine the change in weight of moisture-absorbing anhydrous calcium chloride, and represent the amount of moisture emitted from the concrete surfaces. The value shall be expressed in pounds, and is equivalent to the weight of water emitted from 1,000 square feet of concrete surface area in a 24 hour period.
- B. Conduct testing in the presence of the manufacturer's representative and the Architect directly to control systems surface. Submit a locations map of each test result per ASTM F 1869 procedures.

- C. If required by test results, apply corrective water vapor emission and alkalinity control system to meet flooring manufacturer's tolerances below 3 to 5 pounds, depending on flooring type and manufacturer. Do not install floor coverings to horizontal concrete surfaces with moisture levels above flooring manufacturer's requirements. Installation constitutes acceptance of existing conditions and full acceptance of unsatisfactory conditions.

### 3.2 CORRECTIVE SYSTEM

- A. Preparation:
1. General: Prepare surfaces in accordance with manufacturer's written recommendations.
  2. Measure areas to receive Corrective System and indicate on Shop Drawings.
  3. Shot-blast, hydro-blast or sand surfaces to receive prescribed systems prior to installation of water vapor emission and alkalinity control systems.
  4. Prepare control joints and cold joints with manufacturer's recommended joint-crack treatment system.
- B. Application:
1. General: Install systems in accordance with manufacturer's written recommendations and the following performance rates:
    - a. Water Vapor Reduction of 70% per ASTM E 96.
    - b. Chemical resistance to 14pH per ASTM D 1308
    - c. Concrete adhesion of 500psi or concrete cohesive failure per ASTM D 4541.
  2. Method of Application: Apply penetrants and coatings by squeegee and roller method to saturate concrete surfaces.
  3. Application: Apply system type as prescribed by results of alkalinity, adhesion, and moisture testing.
  4. Coverage: Coverage rates shall be in accordance with manufacturer's written recommendations for prescribed system and concrete density and porosity.

### 3.3 WATER VAPOR EMISSION AND ALKALINITY CONTROL SYSTEMS SCHEDULE

- A. Existing Horizontal Concrete Surfaces Scheduled To Receive Resilient Tile Flooring:
1. Perform alkalinity, adhesion, and moisture testing as specified under this and other applicable Division 09 Sections.
  2. If required by test results, apply Corrective System.
  3. Verify moisture reduction of floor to below 2.0 ( $\pm 0.50$ ) pounds per ASTM F 1869 and system adhesion of 500psi or concrete cohesive failure. Apply additional materials to correct moisture levels above flooring manufacturer's tolerance levels, at no additional cost to Owner.

END OF SECTION 096150