

## SECTION 09 61 05

### CONCRETE MOISTURE CONTROL SYSTEM FOR APPLIED FLOORING

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. This Section includes: Provision of concrete moisture and alkalinity control system to new and existing interior concrete surfaces scheduled to receive moisture sensitive floor coverings.
- B. Testing for concrete moisture-vapor emission and alkalinity levels.
  - 1. Pre-installation testing, to be conducted by Owners independent 3<sup>rd</sup> party testing lab. Conduct testing per ASTM F1869 and ASTM F 2170 standard.
- C. Related Sections include:
  - 1. Division 1 – LEED Requirements
  - 2. Division 9 - Flooring

##### 1.2 SUBMITTALS

- A. Product Data: Manufacturer's technical data, MSDS, installation instructions for concrete moisture-vapor control system. Electronic submittals are recommended.
- B. Product Performance Test Reports: From a qualified independent testing agency indicating concrete moisture-vapor control system complies with specified performance requirements for ASTM E96, D1308, D4541 and V.O.C. Content.
- C. LEED Submittals:
  - 1. Credit EQ 4.2: Manufacturer's product data for moisture-vapor control system, including printed statement of VOC content and chemical components.
  - 2. Credit MR 2: Construction waste management. Product data or manufacturer's certificate signed by manufacturer indicating packaged material to be non metal and waste reducing.
- D. Warranty: Special warranty specified in this Section.

##### 1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain specified products from one source from a single manufacturer with resources to provide products of consistent quality in appearance and physical properties without delaying the work.
- B. Manufacturer Qualifications: Company with minimum of 5 years in manufacturing modified polymer-based (non-silicate) concrete moisture-vapor emission and alkalinity control products, and capable of providing field service representation during construction. Company is to be the exclusive manufacture of specified

moisture control system, underlayment primer and underlayment. Resellers are not permitted as to ensure single source responsibility of product utilized.

- C. Installer Qualifications: Manufacturer direct installation or certified applicator to have a minimum of 3 years of successful experience in applying concrete moisture-vapor emission control systems; all personnel trained and approved in writing by manufacturer.
  - 1. Provide certified installer certificate.
  - 2. Provide job history depicting installation experience and jobs completed. Provide a minimum of 5 projects of like scope and size.
  - 3. Provide copy of warranty request document to be submitted to moisture control system manufacturer for specified project.
- D. Regulatory Requirements: Comply with the rules of the governing air quality management district covering architectural coatings. Product shall meet volatile organic compound (VOC) requirements applicable at time of application.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store materials in a dry, secure area protected from exposure to harmful weather conditions and at temperature levels as recommended by manufacturer.

#### 1.5 PROJECT CONDITIONS

- A. Conduct moisture-vapor emissions, relative humidity and alkalinity testing within temperature and conditions as recommended per ASTM F 1869 and F 2170 standards.
- B. Environmental Limitations: Comply with concrete moisture-vapor control system manufacturer's written instructions for substrate temperature, ambient temperature, humidity, ventilation, and other conditions affecting system installation.
- C. Close spaces to traffic during application of concrete moisture-vapor control system and for not less than 12 hours afterwards, unless manufacturer recommends longer period.

#### 1.6 WARRANTY

- A. Extended Warranty: Written warranty as provided by manufacturer against failure of finish flooring system due to excess concrete moisture-vapor emission and alkalinity. Warranty is to include replacement of finish flooring material, flooring adhesive, concrete moisture-vapor control system, and all associated labor costs.
  - 1. Warranty Period: Minimum 10 years. Coverage includes the following:
    - a. Manufacturing defects.

- b. Warranty to be additionally signed by certified applicator for Installation defects and workmanship.
- c. Single-source warranty for systems consisting of moisture control barrier and underlayment by one manufacturer when utilized.

**PART 2 - PRODUCTS**

**2.1 CONCRETE VAPOR EMISSION CONTROL SYSTEM**

- A. Products: Subject to compliance with requirements, provide one of the following Systems:
  - 1. Advanced Moisture Control, Inc., [www.vaporsafe.com](http://www.vaporsafe.com), (949)788.1490  
Vapor Emission System: "Vapor-Green FC"
- B. Moisture-Vapor Control System: Two-component, synthetic polymer chemistry capable of meeting specified performance requirements.
  - 1. Microbial Resistance: Polymer formulation shall be resistant to the growth of mold, mildew and micro-organisms.
  - 2. Environmental Properties: Non-corrosive, non-marine pollutant, non-flammable and Shall not contain harmful fumes or vapors when in a wet mixed or unmixed state.
  - 3. Compatibility: All floor finishes, adhesives and primers.
  - 4. Physical Properties:
    - a. 

<u>Physical Property</u>	<u>Test Method</u>	<u>Acceptable Value</u>
1. Concrete Adhesion	ASTM D4541	Min. 500 psi
2. Water Vapor Trans.	ASTM E96	Min. 85% Reduction
3. Alkali & Acid Resistance	ASTM D4541	14pH, No effect
4. Volatile Organic Content	EPA Method24	70 g/liter or less
5. Hydrostatic Pressure		.45 psi
6. Relative Humidity	ASTM F2170	Resistant to 100%
  - 5. Acrylic, latex, silicate formulations, moisture tolerant adhesives, and other single-component products are not acceptable.

**2.2 MOISTURE TEST KITS**

- A. Calcium Chloride, Relative Humidity and pH Testing kits
  - 1. Moisture-Vapor Emission: Prepackaged anhydrous calcium chloride test kits conforming to requirements of ASTM F 1869.
  - 2. Alkalinity: Concrete pH test using calibrated digital 1 – 14 wide range pH meter to determine alkalinity level in accordance with ASTM F 710.
  - 3. Relative Humidity: Relative humidity concrete moisture testing equipment that conforms to ASTM F 2170 standard.

## 2.3 ACCESSORY MATERIALS

- A. Cement Overlay: Portland cement-based cement compound, compatible with flooring adhesive for scheduled finish flooring material, and applied to areas as recommended by moisture control manufacturer. Gypsum based products are not acceptable. Minimum underlayment cured strength: 4100 psi.
  - 1. Advanced Moisture Control, Inc. [www.vaporsafe.com](http://www.vaporsafe.com) , (949) 788.1490  
Cementious Underlayment: "Syment SL or Syment SC"

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Pre installation Moisture Testing: Conduct pre installation concrete moisture-vapor emissions, relative humidity and alkalinity testing of existing concrete slabs, on all interior concrete slab areas to receive finish flooring.
- B. Examine concrete substrates, with Installer present, for compliance with requirements for installation of concrete moisture-vapor and alkalinity control system. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Preparation: Scarify concrete slab surfaces to receive system treatment by mechanical means as recommended by manufacturer of moisture-control system (no exceptions). Acid etching is not allowed. Treat surface irregularities after application of moisture vapor emission control system with approved manufacturers cement underlayment material.
- B. Clean Surfaces: Remove all defective material and foreign matter such as dust, adhesives, leveling compounds, paint, dirt, floor hardeners, bond breakers, oil, grease, curing agents, form release agents, efflorescence, laitance, metal shot, drywall mud, crack and joint compounds, etc. Use of an industrial auto-scrubber may be necessary on prepared slabs with excess dust.
- C. Crack and Joint Preparation: Vacuum, clean and seal all cracks and joints with moisture-control system. Utilize a paint brush to coat the interior walls of the prepared crack, and then fill with a flexible sealant recommended by manufacturer.

### 3.3 APPLICATION

- A. Coordinate work of Sections 09 65 00 Resilient Flooring, 09 68 16 Sheet Carpet.  
*(Add additional specification sections per division 9 where moisture sealer is required)*
- B. Apply system in accordance with manufacturer's written instructions. Saturate concrete surfaces, cracks, and joints.

1. Apply vapor barrier by squeegee and roller application to saturate concrete surfaces.
  2. Conform with manufacturer's requirements for coverage rates and number of applications as needed to meet specified performance requirements.
- C. After application and curing of moisture-vapor control material, and post-installation moisture testing with satisfactory results is complete, install primer and cement overlay at areas to receive resilient finish flooring materials. Install to minimum thickness required to provide a smooth and continuous substrate suitable to receive finish flooring as necessary.

#### 3.4 FIELD QUALITY CONTROL

- A. Conduct post-installation moisture testing for moisture-vapor emissions and alkalinity, at areas receiving concrete moisture-vapor control system. Verify the following results:
1. Maximum moisture levels of 3.0 lbs per 1000 sq ft per 24 hours or less.
- B. If test results do not meet specified levels, apply additional moisture-vapor emission control material, or take other corrective action as recommended by manufacturer of concrete moisture-vapor control system to meet requirements at no additional cost to Owner.

#### 3.5 PROTECTION

- A. Protect moisture-vapor control system, and cementitious underlayment, from damage and surface moisture, during time prior to installation of finish flooring materials.

END OF SECTION 09 61 05