SECTION 090561.13 - MOISTURE VAPOR EMISSION CONTROL

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

Fluid-applied, resin-based, membrane-forming systems that control the moisture-vapor-emission rate of high-moisture, interior concrete to prepare it for floor covering installation.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. MVE: Moisture vapor emission.
				2. MVER: Moisture vapor emission rate.
			1. SUBMITTALS
				1. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product.
				5. Sustainable Design Submittals:

Coordinate "Qualification Data" paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For Installer and manufacturer.
				2. Product Test Reports: For each MVE-control system, for tests performed by a qualified testing agency.

Retain "Preinstallation testing reports" paragraph below if Contractor is responsible for preinstallation testing.

* + - * 1. Preinstallation testing reports.

Retain "Field quality-control reports" paragraph below if Contractor is responsible for field quality-control inspecting.

* + - * 1. Field quality-control reports.
			1. QUALITY ASSURANCE
				1. Manufacturer Qualifications: Employs factory-trained personnel who are available for consultation and Project-site inspection.
				2. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
			2. DELIVERY, STORAGE, AND HANDLING
				1. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating directions for storage and mixing with other components.
			3. FIELD CONDITIONS
				1. Environmental Limitations: Comply with MVE-control system manufacturer's written instructions for substrate and ambient temperatures, humidity, ventilation, and other conditions affecting system installation.

Store system components in a temperature-controlled environment and protected from weather and at ambient temperature of not less than 65 deg F and not more than 85 deg F at least 48 hours before use.

Maintain ambient temperature and relative humidity in installation areas within range recommended in writing by MVE-control system manufacturer, but not less than 65 deg F or more than 85 deg F and not less than 40 or more than 60 percent relative humidity, for 48 hours before installation, during installation, and for 48 hours after installation unless longer period is recommended in writing by manufacturer.

Install MVE-control systems where concrete surface temperatures will remain a minimum of 5 deg F higher than the dew point for ambient temperature and relative humidity conditions in installation areas for 48 hours before installation, during installation, and for 48 hours after installation unless longer period is recommended in writing by manufacturer.

For a descriptive specification, consider inserting a "Warranty" Article here. Manufacturers' warranties vary and manufacturer liability is typically limited to replacement of the MVE-control system.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and Masterworks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS
				1. MVE-Control System Capabilities: Capable of suppressing MVE without failure where installed on concrete that exhibits the following conditions:

MVER: Maximum 25 lb of water/1000 sq. ft. when tested according to ASTM F1869.

Relative Humidity: Maximum 100 percent when tested according to ASTM F2170 using in situ probes.

* + - * 1. Water-Vapor Transmission: Through MVE-control system, maximum 0.10 perm when tested according to ASTM E96.
				2. Tensile Bond Strength: For MVE-control system, greater than 400 psi with failure in the concrete according to ASTM D7234.
			1. MVE-CONTROL SYSTEM

* + - * 1. [Products:](http://www.specagent.com/Lookup?ulid=12426) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Custom Building Products](http://www.specagent.com/Lookup?uid=123457153239); CustomTech™ TechMVC™ 100% Solids Epoxy Moisture Vapor Control.

[H.B. Fuller Construction Products Inc. / TEC](http://www.specagent.com/Lookup?uid=123457127746); H.B. Fuller Construction Products / TEC LiquiDam.

[Laticrete International, Inc](http://www.specagent.com/Lookup?uid=123457127744).; Laticrete Vapor Ban™ Primer ER.

Approved equivalent.

* + - * 1. MVE-Control System: ASTM F3010-qualified, fluid-applied, two-component, epoxy-resin, membrane-forming system; formulated for application on concrete substrates to reduce MVER to level required for installation of floor coverings indicated and acceptable to manufacturers of floor covering products indicated, including adhesives.

Substrate Primer: Provide MVE-control system manufacturer's concrete-substrate primer if required for system indicated by substrate conditions.

Cementitious Underlayment Primer: If required for subsequent installation of cementitious underlayment products, provide MVE-control system manufacturer's primer to ensure adhesion of products to MVE-control system.

* + - 1. ACCESSORIES
				1. Patching and Leveling Material: Moisture-, mildew-, and alkali-resistant product recommended in writing by MVE-control system manufacturer and with minimum of 3000-psi compressive strength after 28 days when tested according to ASTM C109.
				2. Crack-Filling Material: Resin-based material recommended in writing by MVE-control system manufacturer for sealing concrete substrate crack repair.

Verify warranty requirements with manufacturers. ARDEX's warranty requires use of their cementitious underlayment over the cured MVE-control system membrane to ensure that the membrane is protected if removal and replacement of floor covering materials occurs during the warranty period. Alternatively, specify cementitious underlayment in Section 035413 "Gypsum Cement Underlayment" or Section 035416 "Hydraulic Cement Underlayment."

* + - * 1. Cementitious Underlayment: If required to maintain manufacturer's warranty, provide MVE-control system manufacturer's [**gypsum**] [**hydraulic**] cement-based underlayment.
1. EXECUTION
	* + 1. EXAMINATION
				1. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of the Work.
				2. Proceed with installation only after unsatisfactory conditions have been corrected.

Installation of system indicates acceptance of surfaces and conditions.

* + - 1. PREPARATION
				1. Preinstallation Testing:

Retain "Testing Agency" subparagraph below to identify who shall perform preinstallation testing. If retaining second option in subparagraph, retain "Preinstallation testing reports" paragraph in "Informational Submittals" Article.

Testing Agency: Engage a qualified testing agency to perform tests.

Retain "Alkalinity Testing," "Moisture Testing," and "Tensile-Bond-Strength Testing" subparagraphs below to require Contractor to perform tests. If locations of MVE-control systems are not determined by testing and covered by an allowance or unit price, revise requirements pertaining to areas where MVE-control systems are to be installed to suit Project.

Coordinate "Alkalinity Testing" subparagraph below with requirements specified in other Division 09 Sections for floor coverings.

Alkalinity Testing: Perform pH testing according to ASTM F710. Install MVE-control system in areas where pH readings are less than 7.0 and in areas where pH readings are greater than 8.5.

ASTM F1869 (anhydrous calcium chloride test) and ASTM F2170 (internal relative humidity test) both recommend one test per 1000 sq. ft., but no fewer than three tests per test area.

Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

Retain "Anhydrous Calcium Chloride Test" or "Internal Relative Humidity Test" subparagraph below, or both. For adhered floor coverings, a maximum MVER of 3 lb of water/1000 sq. ft. of slab area in a 24-hour period according to ASTM F1869 and a maximum relative humidity level of 75 percent according to ASTM F2170 is generally accepted by the floor covering industry. Coordinate requirements with requirements specified in other Division 09 Sections for floor coverings.

Anhydrous Calcium Chloride Test: ASTM F1869. Install MVE-control system in locations where concrete substrate MVER exceeds 3 lb of water/1000 sq. ft. in 24 hours.

Internal Relative Humidity Test: Using in situ probes, ASTM F2170. Install MVE-control system in locations where concrete substrates exhibit relative humidity level greater than 75 percent.

Where MVE-control systems are applied, coordinate with moisture-testing requirements in other Division 09 Sections for floor coverings. ASTM F1869 states that it is not to be used to evaluate MVE where coatings are installed on concrete. To maintain the integrity of the cured membrane, do not perform destructive tests such as ASTM F2170, which uses in situ probes, after installing MVE-control systems.

Tensile-Bond-Strength Testing: For typical locations indicated to receive installation of MVE-control system, install minimum 100-sq. ft. area of MVE-control system to prepared concrete substrate and test according to ASTM D7234.

Proceed with installation only where tensile bond strength is greater than 400 psi with failure in the concrete.

* + - * 1. Concrete Substrates: Prepare and clean substrates according to MVE-control system manufacturer's written instructions to ensure adhesion of system to concrete.

Remove coatings and other substances that are incompatible with MVE-control system and that contain soap, wax, oil, or silicone, using mechanical methods recommended in writing by MVE-control system manufacturer. Do not use solvents.

Provide concrete surface profile complying with ICRI 310.2R CSP 3 by shot blasting using apparatus that abrades the concrete surface with shot, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.

After shot blasting, repair damaged and deteriorated concrete according to MVE-control system manufacturer's written instructions.

Protect substrate voids and joints to prevent resins from flowing into or leaking through them.

Fill surface depressions and irregularities with patching and leveling material.

Fill surface cracks, grooves, control joints, and other nonmoving joints with crack-filling material.

Allow concrete to dry, undisturbed, for period recommended in writing by MVE-control system manufacturer after surface preparation, but not less than 24 hours.

Before installing MVE-control systems, broom sweep and vacuum prepared concrete.

* + - * 1. Protect walls, floor openings, electrical openings, door frames, and other obstructions during installation.
			1. INSTALLATION
				1. Install MVE-control system according to ASTM F3010 and manufacturer's written instructions to produce a uniform, monolithic surface free of surface deficiencies such as pin holes, fish eyes, and voids.

Install primers as required to comply with manufacturer's written instructions.

* + - * 1. Do not apply MVE-control system across substrate expansion, isolation, and other moving joints.

Revise first paragraph below if preinstallation testing is not required.

* + - * 1. Apply system, including component coats if any, in thickness recommended in writing by MVE-control system manufacturer for MVER indicated by preinstallation testing.
				2. Cure MVE-control system components according to manufacturer's written instructions. Prevent contamination or other damage during installation and curing processes.
				3. After curing, examine MVE-control system for surface deficiencies. Repair surface deficiencies according to manufacturer's written instructions.

Retain paragraph below if cementitious underlayment is specified in Part 2.

* + - * 1. Install cementitious underlayment over cured membrane if required to maintain manufacturer's warranty and in thickness required to maintain the warranty.
			1. PROTECTION
				1. Protect MVE-control system from damage, wear, dirt, dust, and other contaminants before floor covering installation. Use protective methods and materials, including temporary coverings, recommended in writing by MVE-control system manufacturer.
				2. Do not allow subsequent preinstallation examination and testing for floor covering installation to damage, puncture, or otherwise compromise the MVE-control system membrane.

END OF SECTION 090561.13