**SECTION 030510**

**CONCRETE MOISTURE VAPOR REDUCTION ADMIXTURE (MVRA)**

This master specification section has been prepared by ISE Logik Industries, Inc. for use in the preparation of a project specification section covering MVRA 900 moisture vapor reduction admixture for concrete.

This specification is a part of the SpexPlus™ system, which comprises a full architectural master specification that can be used to specify all project requirements.

The following should be noted in using this specification:

Hypertext links to specific websites are included after manufacturer names and names of organizations whose standards are referenced within the text, to assist in product selection and further research. Hypertext links are contained in parenthesis and shown in blue, e.g.:

([www.spexplus.net](http://www.spexplus.net))

Optional text requiring a selection by the user is enclosed within brackets, e.g.: "Section [090000.] [\_\_\_\_\_.]"

Items requiring user input are enclosed within brackets, e.g.: "Section [\_\_\_\_\_ - \_\_\_\_\_\_\_\_]."

Optional paragraphs are separated by an "OR" statement, e.g.:

\*\*\*\* OR \*\*\*\*

Sustainable requirements are included for projects requiring LEED certification, and are included as green text. For additional information on LEED, visit the U.S. Green Building Council website at [www.usgbc.org](http://www.usgbc.org).

For assistance on the use of the products in this section, contact ISE Logik Industries, Inc. by calling 877-549-5159, by email at [decraft@iselogik.com](mailto:decraft@iselogik.com), or visit their website at [www.iselogik.com](http://www.iselogik.com).

For assistance with obtaining or using the SpexPlus™ Master Specification System contact SpexPlus by calling 1-888-877-SPEX (1-888-877-7739), by email at [chaney@spexplus.net,](mailto:chaney@spexplus.net,) or visit our website at [www.spexplus.net](http://www.spexplus.net).

1. **GENERAL**
   1. SUMMARY

Edit the following paragraphs to include only those items specified in this section.

* + 1. Section Includes:
       1. Moisture Vapor Reducing Admixture (MVRA) for new concrete footings, foundations, slabs on grade, elevated slabs, roof deck, stair treads and landings, and exterior balconies.

Coordinate the following paragraphs with other sections in the project manual.

* + 1. Related Sections:
       1. Division 01: Administrative, procedural, and temporary work requirements.
       2. Section [033000 - Cast-in-place Concrete:] [072600 - Vapor Retarders:] [\_\_\_\_\_\_ - \_\_\_\_:] Underslab vapor retarder.
       3. Section [096139 - Water Vapor Emission Control:] [\_\_\_\_\_\_ - \_\_\_\_:] Surface-applied water vapor reduction system.
  1. DEFINITIONS
     1. Cementitious Materials: Portland cement alone or in combination with one or more of following:
        1. Blended hydraulic cement.
        2. Fly ash and other pozzolans.
        3. Ground granulated blast-furnace slag.
        4. Silica fume.
  2. REFERENCES
     1. American Concrete Institute (ACI) [(www.concrete.org)](http://www.concrete.org):
        1. 302.2R-06 - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring.
        2. 305R-10 - Guide to Hot Weather Concreting.
        3. 306R-10 - Guide to Cold Weather Concreting.
     2. ASTM International (ASTM) [(www.astm.com](http://www.astm.com))):
        1. C494/C494M: Standard Specification for Chemical Admixtures for Concrete.
        2. D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.
        3. E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
        4. E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
        5. F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
        6. F1869 - ASTM F 1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
        7. F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
     3. National Ready Mix Concrete Association (NRMCA) [(www.nrmca.org](http://www.nrmca.org))) - Certification of Ready Mixed Concrete Production Facilities.
  3. SUBMITTALS

Limiting submittals to only those actually required helps to minimize liability arising from the review of submittals. Minimize submittals on smaller, less complex projects.

Include the following for submission of shop drawings, product data, and samples for the Architect's review.

* + 1. Submittals for Review:
       1. Product Data: Manufacturer’s descriptive data for admixture.
       2. Warranties:
          1. Sample lifetime warranty against flooring/coating failure due to concrete moisture vapor emission (MVE).
          2. Sample adhesion warranty.

Include the following for submission of quality control submittals. These submittals are intended for the Owner's record purposes and are not intended to be reviewed by the Architect.

* + 1. Quality Control Submittals:
       1. Certificate of Compliance: Manufacturer’s statement certifying admixture provided meets or exceeds specified requirements.
       2. Test Reports: Test results performed by qualified independent testing agency evidencing compliance of products with specified requirements of moisture vapor transmission based on ASTM D5084.

Include the following for submission of sustainable design submittals.

* + 1. Sustainable Design Submittals:
       1. Regional Materials.
       2. Low-Emitting Materials.
       3. Material must have a published Health Product Declaration (HPD).
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications:
        1. Firm experienced in manufacture of concrete MVRA.
        2. Proof of compliance with specified performance requirements.
        3. Proof of compliance with ASTM C494/C494M testing protocols, from independent AASHTO approved laboratory.
     2. Pre-Installation Conference:
        1. Convene at Project site minimum [2] [\_\_] weeks prior to beginning work of this Section.
        2. Attendance: [Architect,] [Design/Builder,] [Contractor,] [Construction Manager,] Testing Laboratory, MVRA 900 manufacturer, and concrete supplier, either in person or via teleconference.
        3. Review and discuss:
           1. Concrete mix designs.
           2. Procedures for ensuring quality of concrete materials.
     3. Ready Mixed Concrete Manufacturer Qualifications:
        1. Firm experienced in manufacturing ready-mixed concrete products.
        2. Comply with ASTM C94/C94M requirements for production facilities and equipment.
        3. Manufacturer certified according to NRMCA certification procedures.
     4. Slab Moisture Testing and Evaluation:
        1. Determination of whether concrete slab is prepared to receive flooring, coatings, or roofing rests with MVRA 900 manufacturer.
        2. Concrete slabs dosed with MVRA do not require testing per ASTM F 1869 nor ASTM F 2170.
     5. Obtain concrete moisture vapor reducing admixtures from same manufacturer.
     6. Slabs to Receive Moisture Sensitive Coatings or Material: Comply with ACI 302.2R-06.
  2. DELIVERY, STORAGE AND HANDLING
     1. Store products in temperature-controlled area above 40 degrees, protected from exposure to harmful weather conditions
     2. Do not allow products to freeze.
  3. WARRANTIES
     1. Provide manufacturer’s lifetime warranty against concrete induced moisture vapor failure, providing coverage for:
        1. Repair or removal of failed flooring or roofing.
        2. Placement of topical moisture remediation system.
        3. Replacement of flooring or roofing materials to match original including material and labor.
     2. Provide manufacturer’s adhesion warranty, matching terms of adhesive or primer manufacturer's material adhesion warranty.

1. **PRODUCTS**
   1. MANUFACTURERS
      1. Contract Documents are based on MVRA 900 by ISE Logik Industries, Inc. ([www.iselogik.com](http://www.iselogik.com)). Please contact **ISE Logik Industries at 877-549-5159 for all bid pricing or questions.**

Edit the following to indicate whether or not substitutions will be permitted for the products in this section.

* + 1. Substitutions: [Under provisions of Division 01.] [Not permitted.]
  1. MATERIALS
     1. MVRA 900, Concrete Moisture Vapor Reduction Admixture (MVRA), by ISE Logik Industries:
        1. Non-toxic, volatile organic compound (VOC) free, liquid admixture formulated to react with hydroxide ions produced by cement hydration process, creating additional hydration products within capillary pores, blocking moisture vapor movement through concrete.
        2. Physical characteristics:
           1. Hydraulic conductivity: Project specific maximum of 6.0 E-8 cm/s per ASTM D5084.
           2. Toxicity: None.
           3. Odor: None.
           4. Flammability: None.
           5. Volatile Organic Compound (VOC) content: 0 grams per liter.
           6. Freeze temperature: 32 degrees F (0 degrees C).
           7. pH: 11.3.
  2. ACCESSORIES

Ensure that related sections include a sheet vapor retarder complying with ASTM E1745, having maximum permeance of 0.1 US perms and minimum thickness of 0.01 inch, and including manufacturer's recommended seam adhesive or pressure-sensitive seam tape.

* + 1. Sheet Vapor Retarder: Specified in Section [033000.] [072600.]
  1. MIXES
     1. Moisture Vapor Reducing Admixture (MVRA) for new concrete, slabs below grade, slabs on grade, elevated slabs, roof deck, stair treads and landings, and exterior balconies.
     2. Add MVRA 900 to concrete mix in accordance with manufacturer’s instructions.

Mix designs outside of 0.40 to 0.54 w/cm may require adjustment and consultation with MVRA manufacturer prior to their use.

* + 1. Add MVRA 900 at rate of 12 ounces per 100 pounds (355ml/45kg) of total cementitious materials.
    2. Replace mix water on one-for-one basis in amount equal to amount of MVRA 900 added.
    3. Add MRVA 900 directly to freshly mixed concrete at end of the batch process with tail water.
    4. Ready-Mixed Concrete:
       1. Measure, batch, mix, and deliver concrete with MVRA 900 in accordance with ASTM C94/C94M.
       2. Furnish batch ticket information showing dosage of MVRA 900.
    5. Site Mixing:
       1. Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M.
       2. Add MVRA 900 to where it makes direct contact with ready mix, then rotate drum of batch truck on high for at least seven minutes prior to discharge.
    6. Freshening onsite with held back mix water is acceptable if in accordance with ACI guidelines and if amount does not exceed original water to cementitious material ratio or instructions of [Architect.] [Design/Builder.] [Structural Engineer.]

Use of fibers is acceptable but may compromise the lifetime MVE warranty; fibers can create their own unique routes of moisture vapor emission that the MVRA cannot control if the fibers are improperly incorporated into the mix.

* + 1. Use water reducing admixtures to achieve desired slump.
    2. Use of other admixtures in same batch as MVRA 900 is acceptable if each admixture is added separately.
    3. Do not use shrink reducing admixtures.

1. **EXECUTION**
   1. INSTALLATION
      1. Comply with requirements of Section [033000] [\_\_\_\_\_\_] for admixture dosing, concrete mixing, placing, finishing and curing.
      2. Install, protect and repair sheet vapor retarder in accordance with to ASTM E1643, ASTM F710, ACI 302.2R-06, and manufacturer's instructions.
      3. Cold Weather Placement: Comply with most current version of ACI 306R Guide to Cold Weather Concreting.
      4. Hot Weather Placement: Comply with most current version of ACI 305R Guide to Hot Weather Concreting.
   2. CURING
      1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306R-10 for cold-weather protection and ACI 305R-10 for hot-weather protection during curing.

Curing compound may require mechanical removal prior to installation of flooring in accordance with ASTM F710. Do not chemically remove. Cure and Seal products are not normally recommended by the flooring industry.

* + 1. Cure concrete slabs to receive moisture sensitive coatings according to ACI 302.2R-06 by one or more of following methods:
       1. Moisture-retaining cover curing.
       2. Self-dissipating curing compound.
  1. FIELD QUALITY CONTROL

Test slab surface pH in accordance with ASTM F710 prior to any manufacturer’s recommended bond testing.

* + 1. Project specific quality control process required by MVRA manufacturer necessary to convey concrete moisture vapor emission flooring failure warranty and stand-alone adhesion warranty.
    2. Project team: Upon request, provide batch tickets indicating presence and dosage of MVRA in mix.

END OF SECTION