



SECTION 09699

MOISTURE RESISTANT/WATER-PROOF FLOORING ADHESIVE FOR CONCRETE SLABS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Testing and application of systems for the reduction of moisture resistant or water-proof adhesives for interior concrete slabs scheduled for floor finish of VCT, vinyl flooring, rubber flooring, wood, carpet, and/or epoxy flooring systems.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In Place Concrete: Installation and curing requirements according to ACI 302.
- B. Section 09620 – Resilient Sheet Flooring: Installation requirement.
- C. Section 09650 - Resilient Flooring: Rubber sheet and vinyl tile installation requirements.
- D. Section 09652 – Vinyl Sheet Flooring.
- E. Section 09680 - Carpet: Installation requirements.
- F. Section 09681 – Carpet Tile: Installation requirements.

1.3 REFERENCES

- A. American Society of Testing and Materials (ASTM):
 1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
 2. C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.
 3. F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 4. F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- B. International Concrete Repair Institute (ICRI) Guideline No. 310.2-1997 (formerly 03732): Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Manufacturer's specification.
 2. Installation instructions.
 3. Independent test data.

4. Certification requirements.
5. Warranty information.
- C. Pre-Construction Testing: Submit insitu relative humidity data. Test shall be performed according to ASTM F2170. Test shall be performed by the Owner and submitted to the Architect, Contractor, and manufacture's site representative.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 1. The moisture resistant or water-proof adhesives shall be specifically formulated and marketed for water vapor resistance and alkalinity control. System design shall provide warranted adhesive bond suitable to 99% in situ relative humidity per AST F2170.
- B. Installer Qualifications:
 1. Applicator shall be approved by the manufacturer, experienced in surface preparation and application of the material and shall be subject to inspection and control by the manufacturer.
 2. Installer shall have no less than five years experience installing resilient flooring materials.
- C. Product Performance History:
 1. Submit list of product use and performance history, for the same formulation and system design, listing reference sources. Similar projects shall have documented insitu relative humidity values according to ASTM F2170.
- D. Mock-up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 1. Finish areas designated by Architect.
 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to the job site in their original unopened containers, clearly labeled with the manufacturer's name and brand designation.
- B. Store products in an approved ventilated dry area; protect from dampness, freezing, and direct sun light. Product should not be stored in areas with temperatures in excess of 90 degrees F (32 degrees C) or below 50 degrees F (10 degrees C).
- C. Handle product in a manner that will prevent breakage of containers and damage products.

1.7 PROJECT CONDITIONS

- A. The Owner shall select a floor covering system scheduled for the treated concrete substrate having the ability to withstand the potential moisture exposures documented by ASTM F2170.
- B. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
 1. Do not apply moisture resistant or water-proof adhesives to surfaces when water is accumulated on the surface of the concrete.
 2. Do not apply moisture resistant or water-proof adhesives when temperature is lower than 50 degrees F (10 degrees C) or expected to fall below this temperature within 24 hours from time of application.
 3. Allow continuous ventilation and indirect air movement at all times during application and curing

process of the moisture resistant or water-proof adhesive.

1.8 SCHEDULING

- A. Before installation of VCT, sheet vinyl, rubber flooring, or carpet over the interior concrete slabs, in situ relative humidity testing shall be performed per ASTM F2170 by the Owner to determine the level of relative humidity in the slab.
- B. The Owner will coordinate the scheduling of the moisture resistant or water-proof adhesive mock-up, allowing adequate time to apply and review results.

1.9 WARRANTY

- A. Manufacturer shall provide the Owner with a system warranty including adhesives and surface preparation products for a period of no less than ten (10) years at no additional cost.
- B. Installer of moisture resistant or water-proof adhesives shall provide standard installation warranty for workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Substitutions:
- B. Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Provide materials of one manufacturer throughout the project.

2.2 SYSTEM

- A. Moisture resistant or water-proof flooring adhesive having the performance profile to withstand elevated alkaline moisture identified per ASTM F2170. The adhesive selection shall have a warranty for bond to include replacement of flooring and labor for ten (10) years. This warranty will replace and supercede the manufacturer's recommended adhesive and will not affect the manufacturer's warranty of construction or wear.
 - 1. Product: Formulators' Hydro-Seal MAXX. Suitable for application to prepared concrete exhibiting in situ relative humidity reading <90%RH.
 - 2. Product: Formulators' Aquaflex. Suitable for application to prepared concrete exhibiting in situ relative humidity reading >90%RH.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared per ASTM F710.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Inspect surfaces with manufacturer's representative to determine its suitability to receive the moisture resistant or water-proof flooring adhesive. Provide an uncontaminated, sound surface.
- B. Clean surfaces to receive moisture resistant or water-proof flooring adhesive. Remove defective materials, and foreign matter such as dust, adhesives, leveling compounds, paint, dirt, floor hardeners, bond breakers, oil, grease, curing agents, form release agents, efflorescence, laitance, etc. Mechanically grind surface to achieve CSP 1, concrete surface profile per ICRI guidelines.
- C. Repair cracks, expansion joint, control Joints, and open surface honeycombs.
 - 1. Use Formulators Aquaflex Crack Fix. Force mixture into cracks and joints with a trowel or putty knife. Comply with requirements listed in manufacturer's technical data information. No exceptions. Consult with manufacturer.
- D. Do not acid etch surface.
- E. Verify that the substrate surface does not deteriorate due to the presence of sulphurous compounds, fly ash or alkaline aggregate/silica reaction encountered in certain areas.
 - 1. Consult with vapor reduction system manufacturer prior to application.
 - 2. Testing for concrete deficiencies / contamination such as alkaline silica reaction, untreated silicates, organic residue, etc. is the responsibility of the Owner.
- F. The surface substrate shall remain uncontaminated, absorptive, and sound prior to receiving moisture resistant or water-proof flooring adhesive. Comply with all requirements as listed in manufacturer's technical data information. No exceptions.

3.3 APPLICATION

- A. Adhesive Application:
 - 1. The coverage rates for the moisture resistant or water-proof flooring adhesive are dependant on the surface texture and porosity of the substrate.
 - 2. Product selection and required application rate relative to existing levels of moisture per ASTM F2170:
 - a. <90%RH use Formulators Hydro-Seal MAXX.
 - b. >90%RH use Formulators Aquaflex.

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3.4 TESTING

- A. Initial Tests:
 - 1. ASTM F2170, insitu relative humidity testing shall be performed by the installer.
 - 2. Provide initial results of ASTM F2170 to Owner. Tests shall be performed on properly prepared concrete. No exceptions!
 - 3. Conduct ASTM F2170 tests at the same temperature and humidity as designed normal occupancy. If this is not possible, test conditions shall be 75 degrees F +/-10 degrees (24 degree C +/- 5 degrees) and 50 percent +/-10 percent relative humidity. Maintain these conditions 48 hours prior to and during tests.
 - 4. Installer shall provide test results with a marked up floor finish plan showing test placement. Owner shall provide a written clarification on status of the ambient air temperature and humidity before and

during the testing procedures.

B. Post-Treatment / Pre-Flooring Tests:

1. Before installation of VCT, sheet vinyl, rubber flooring, and/or carpet, and after mechanical preparation of concrete surface, conduct a porosity test. This test will involve placing a single droplet of water on the concrete surface and spreading to the size of a quarter dollar. Water should absorb within 30 seconds.
2. The installer shall provide test results of the level of in situ relative humidity (%RH) and absorption test of the concrete slab to all parties involved. The flooring manufacturer and installer shall accept the floor condition and certify that the flooring application materials and methods are compatible with the test results and floor condition.

C. Adhesion

1. The flooring installer shall verify the usage of Aquaflex cementitious materials prior to the installation of any patches.
2. The flooring installer will consult the Formulators 72hrs prior to adhesive application concerning installation strategy and technique.

3.5 CLEANING

- A. Remove all debris resulting from installation from project site.

3.6 PROTECTION

- A. Protect applied adhesive during specified cure period from any kind of traffic, topical water and contaminants.

END OF SECTION