

**SECTION 07190
WATER REPELLENTS**

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Exterior water repellent coatings for:
 - a. Cast in place concrete.
 - b. Precast concrete.
2. Extended written warranty.

1.02 SUBMITTALS

- A. Comply with Section 01300, unless otherwise indicated. Substitution requests must be submitted 14 days prior to bid date.
- B. **Product Data: Manufacturer's** specifications and technical data including the following:
1. Detailed specification of construction and fabrication.
 2. Manufacturer's installation instructions.
 3. Certified test reports indicating compliance with performance requirements specified herein.
- C. **Quality Control Submittals:**
1. Statement of qualifications.
 2. Statement of compliance with Regulatory Requirements.
 3. Field Quality Control Submittals as specified in Part 3.
 4. Manufacturer's field reports.

1.03 QUALITY ASSURANCE

- A. **Manufacturer's Qualification:** Not less than 5 years of experience in the actual production of specified products.
- B. **Installer's Qualifications:** Firm experienced in installation or application of systems similar in complexity to those required for this project, plus the following:
1. Acceptable to or licensed by manufacturer.
 2. Not less than 3 years of experience with systems.
 3. Successfully completed not less than 5 comparable scale projects using this system.
- C. **Product Qualifications:**
1. Comply with the provisions of the following standards for concrete (precast, cast-in-place). Product must be greater than 40% silane in a solvent carrier.
 - a. Surface Appearance - No change in the surface appearance to texture.
 - b. NCHRP #244 Series II - 86.5% reduction in water absorption
87.3% reduction in chloride ion intrusion
 - c. NCHRP #244 Series IV - 99% reduction in chloride ion intrusion
 - d. ASTM C642 "Water Absorption of Hardened Concrete" 48 hours water soak.
less than 0.50% absorption.
control (untreated) concrete absorbs more than 3.5%.
 - e. ASTM C672 "Deicer Scaling of Concrete"
treated sample 0+ after 60 cycles
untreated sample 5 after 40 to 50 cycles
 - f. Penetration - 0.20 inches average (on NCHRP #244 Concrete)
- D. **Regulatory Requirements:** Products shall comply with State and local regulations concerning AIM (Architectural, Industrial and Maintenance) coatings regarding Volatile Organic Content (VOC).
1. The use of 1,1,1 trichloroethane shall not be allowed.

1.04 DELIVERY STORAGE AND HANDLING

- A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.
- B. Storage and Protection: Comply with manufacturer's recommendations.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Maintain ambient temperature above 40 degrees F during and 24 hours after installation.
 - 2. Do not proceed with application on materials if ice or frost is covering the substrate.
 - 3. Do not proceed with application if ambient temperature of surface exceeds 100 degrees F.
 - 4. Do not proceed with the application of materials in rainy conditions or if heavy rain is anticipated with 4 hours after application.
- B. Sealer Coordination:
 - 1. Verify compatibility with curing compounds, patching materials, repair mortar, paints, sealants, etc. to be used on masonry surfaces to ensure compatibility with the water repellent.

1.06 SPECIAL WARRANTIES

- A. Manufacturer shall stand behind installed system for period of 10 years from Date of Substantial Completion against all the conditions indicated below. When notified in writing from Owner, Manufacturer shall, promptly and without inconvenience and cost to Owner correct said deficiencies.
 - 1. Loss of water repellency:
 - a. Concrete: 1.0 mil/20 minutes or greater (80 mph wind driven rain equivalent).

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Acceptable manufacturers and products for Cast-in-place and precast concrete:
 - 1. Protectosil® BHN, Evonik 1-800-828-0919.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Install coverings to protect adjacent surfaces.
- B. Surface Preparation:
 - 1. Remove dirt, dust and materials that will interfere with the proper and effective application of the penetrating sealer. It is the responsibility of the Contractor to prepare the surfaces of the concrete as recommended by the Water Repellent Manufacturer and acceptable to the Engineer.
 - 2. Sealants, patching materials, and expansion joints shall have been installed and approved by the Engineer.

3.03 FIELD QUALITY CONTROL

- A. Spray Test: After water repellent has dried, spray coated surfaces with water.
 - 1. After surfaces have adequately dried, recoat surfaces that show water absorption.
- B. Manufacturer's Field Services:
 - 1. Furnish written certification that surface preparation method and final condition has manufacturer's approval and comply with the warranty.
 - 2. Test area: Furnish results of test area absorption on each type of substrate. Test results shall determine application rate.
- C. Test Area:
 - 1. Before a sealer application the following field evaluation will be done. The cost of the field testing will be the responsibility of the Water Repellent Manufacturer.
 - 2. Prepare a three feet by three feet area to be sprayed with the water repellent. The area will be determined by the Owner. Apply the water repellent in a flooding application, from the bottom up to cause the material to run down 6 to 8 inches below the spray pattern.
 - 3. After allowing five days for the sample to cure run a RILEM uptake test on the treated area. Place one tube on the brick and one tube on a mortar joint. Owner must be present for the application of the water repellent and the test.
 - 4. Acceptable minimum results are as stated in the warranty provisions. Coverage rate used to pass this test section must be used on entire project.

3.04 APPLICATION

- A. Product shall be applied as supplied by the manufacturer without dilution or alteration.
- B. Apply with a low-pressure (15 psi) airless spray equipment with a fan spray coarse nozzle, flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer.
- C. Apply at a rate of not less than 150 square foot/gallon (or use guidelines for substrate or test patch data) unless the field tests determine that a heavier rate of application is necessary to meet the performance requirements.
- D. Apply at temperature and weather conditions recommended by the manufacturer or written in this specification.
- E. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Contractor will be responsible to clean all surfaces that are contaminated by the water repellent.
- F. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Contractor will be responsible for replacing all plants, grass or vegetation damaged by the water repellent.
- G. Brush apply water repellent only at locations where overspray would affect adjacent materials and where not practicable for spray application.
- H. Start application at top of wall and work down surface with fog coat to break surface tension. Immediately apply treatment at full strength keeping a wet edge at all times. Avoid letting water repellent dry between passes.

3.05 CLEANING

- A. As work progresses: Clean spillage and overspray from adjacent surfaces using materials and methods as recommended by water repellent manufacturer.
- B. Remove protective coverings from adjacent surfaces when no longer needed.

3.06 COMPLETION

- A. Work that does not conform to specified requirements shall be corrected and/or replaced as directed by the Owners Representative at contractor's expense without extension of time.

END OF SECTION