

SECTION 07 19 00

WATER REPELLENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:
 - 1. Cast stone.
 - 2. Concrete unit masonry.
 - 3. Clay brick masonry.
 - 4. Natural stone.

1.3 PERFORMANCE REQUIREMENTS

- A. General Performance: Water repellents shall meet performance requirements indicated without failure due to defective manufacture, fabrication, or installation.
 - 1. Water Repellents: Comply with performance requirements specified, as determined by testing substrate assemblies representing those indicated for this Project.
- B. Water Absorption: Minimum 85 percent reduction of water absorption after 24 hours in comparison of treated and untreated specimens.
 - 1. Cast Stone: ASTM C 1195.
 - 2. Concrete Masonry Units: ASTM C 140.
 - 3. Clay Brick: ASTM C 67.
 - 4. Natural Stone: ASTM C 97.
- C. Water-Vapor Transmission: Comply with the following:
 - 1. Minimum 100 percent water-vapor transmission in comparison of treated and untreated specimens, according to ASTM D 1653.
- D. Water Penetration and Leakage through Masonry: Minimum 100 percent reduction in leakage rate in comparison of treated and untreated specimens, according to ASTM E 514.
- E. Durability: Maximum 5 percent loss of water-repellent properties after 2500 hours of weathering according to ASTM G 154 in comparison to water-repellent-treated specimens before weathering.

F. Chloride-Ion Intrusion in Concrete: NCHRP Report 244, Series II tests.

1. Reduction of Water Absorption: 85 percent.
2. Reduction in Chloride Content: 86 percent.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's standard colors.
3. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.
4. Printout of current "MPI Approved Products List" for each product category specified in Part 2 that specifies water repellents approved by MPI, with the proposed product highlighted.

B. Qualification Data: For qualified Applicator.

C. Product Certificates: For each type of water repellent, from manufacturer.

D. Preconstruction Testing Reports: For water-repellent-treated substrates.

E. Field quality-control reports.

F. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

1.6 PROJECT CONDITIONS

A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:

1. Concrete surfaces and mortar have cured for not less than 28 days.
2. Building has been closed in for not less than 30 days before treating wall assemblies.
3. Ambient temperature is above 40 deg F and below 100 deg F and will remain so for 24 hours.
4. Substrate is not frozen and substrate-surface temperature is above 40 deg F and below 100 deg F.
5. Rain or snow is not predicted within 24 hours.
6. Not less than 24 hours have passed since surfaces were last wet.

7. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer and Applicator agree(s) to repair or replace materials that fail to maintain water repellency specified in "Performance Requirements" Article within specified warranty period and as follows.
 1. Warranty Period: 10 years from date of Substantial Completion.
 2. Loss of water repellency:
 - a. Brick Masonry: 1.0 mil/20 minutes or greater (80 mph wind driven rain equivalent)

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

- A. Silane, Penetrating Water Repellent: Clear, containing not less than 100 percent solids of alkyltrialkoxysilanes with 400 g/L or less of VOCs.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Protectosil CHEM-TRETE BSM 400, Evonik Degussa A&S Division
 - b. Equivalent products approved by COTR.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
 1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in 3 representative locations by method recommended by manufacturer.
 2. Inspect for previously applied treatments that may inhibit penetration or performance of water repellents.
 3. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
 4. Verify that required repairs are complete, cured, and dry before applying water repellent.

- B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.
- 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 General Contractor.
 - 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.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions and as follows:
 - 1. Cast Stone and Concrete Unit Masonry: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents according to ASTM E 1857.
 - 2. Clay Brick Masonry: ASTM D 5703
 - 3. Natural Stone: ASTM C 1515
- B. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.
- C. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.
- D. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
 - 1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

- E. Water repellant shall not leave any residue on adjacent glass, metal or painted finishes.

3.3 APPLICATION

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.
- B. Apply a heavy-saturation coating of water repellent, on surfaces indicated for treatment, using 15 psi pressure spray with a fan-type spray nozzle to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.
- C. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.4 CLEANING

- A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by COTR.
- B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 07 19 00