



SECTION 071900 – WATER REPELLENTS

SPECIFICATION FOR ISO-TEK™ 8100

100% Silane Penetrating Water & Chloride Repellent Concrete Sealer

SPECIFIER NOTES: This guideline specification has been prepared to assist architects and design professionals in the preparation of project master specifications. It is intended for use by qualified design professionals and is not intended to be used verbatim. Appropriate modifications to meet specific project requirements may be required.

This specification is written according to the Construction Specifications Institute (CSI) Master Format '04. For more information, contact Ghostshield; KreteTek Industries, Inc., 66 River Road, Hudson, NH 03051 • Phone: (855) 573-8383 • Website: ghostshield.com • Email: support@ghostshield.com.

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:
 - 1. Cast-in-place concrete.
 - 2. Precast concrete.
 - 3. Cast stone.
 - 4. Concrete unit masonry.
 - 5. Clay brick masonry.
 - 6. Natural stone.
 - 7. Portland cement plaster (stucco).
- B. Related Requirements:
 - 1. Section 030130 "Maintenance of Cast-in-Place Concrete" for high-build penetrating polymer sealers for exterior traffic surfaces.
 - 2. Section 042000 "Unit Masonry" for integral water-repellent admixture for unit masonry assemblies.

1.2 PREINSTALLATION MEETINGS

- A. Attend a preconstruction conference to be held with the Owner's Representative, Architect, the General Contractor's field superintendent, and all other involved trades to discuss and coordinate the work covered under this Section.

1.3 ACTION SUBMITTALS

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



1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Applicator.
- B. Manufacturers' literature for all materials specified for use on this project, each properly labeled and referenced to appropriate Specification Section, in time to prevent delay of the project.
- C. Product Certificates: For each type of water repellent.
- D. Safety Data Sheets (SDS) for all materials to be used.
- E. Manufacturer's requirements and testing procedures for moisture conditions (moisture vapor emission rate, relative humidity, etc.) of the concrete at time of installation necessary to ensure proper bond.
- F. Manufacturer's written instructions regarding equipment, materials and workmanship requirements for surface repairs, surface preparation, and installation of water-repellent sealer materials.
- G. Preconstruction Test Reports: For water-repellent-treated substrates.
- H. Field quality-control reports.
- I. Special Warranty Article

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For water repellents to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Contractor and Installer Qualifications:
 1. The installer shall be licensed by the manufacturer of the products to be used on the project with a minimum of 5 yrs' experience in the application of similar impregnating water-repellent sealers and concrete repair materials.
 2. The Contractor's site superintendent shall have at least 5 yrs' experience supervising the installation of water-repellent sealer systems and concrete repair materials.
 3. Upon request, provide the Engineer with a list of five representative projects successfully completed by the contractor that are of similar scope and size. For each project, provide the project name, Owner's name, Owner's Representative name and phone number, description of the work, name of Impregnating Water-Repellent Concrete Sealer the sealer/impregnating water-repellent applied, Project supervisor, total cost of the impregnating water-repellent work vs. the total cost of the project, and the project completion date.
- B. Mockups: Prepare mockups of each required water repellent on each type of substrate required to demonstrate aesthetic effects, for preconstruction testing, and to set quality standards for materials and execution.

1. Locate mockups in locations that enable viewing under same conditions as the completed Work
 - a. Size: 25 sq. ft. (2.3 sq. m)
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- C. **Manufacturer's Field Representative:** The Contractor shall arrange with the manufacturer of the water-repellent sealer to have the services of a competent field representative at the site to approve surface preparation before installation of the sealer and any concrete repair material. The Manufacturer's Field Representative shall instruct the crew on proper installation of materials and observe the installation of the products at the beginning of the work. The Field Representative shall remain at the jobsite and continue to instruct until the field representative, Architect, and Owner's Representative are satisfied that the crew has mastered the technique of installing the products successfully.

1.7 PRECONSTRUCTION TESTING

- A. **Preconstruction Testing:** Engage a qualified testing agency to perform preconstruction testing of water repellents on field mockups.
1. In addition to verifying performance requirements, use mockups to verify manufacturer's written instructions for application procedure and optimum rates of product application to substrates.
 2. Propose changes to materials and methods to suit Project.

1.8 FIELD CONDITIONS

- A. **Limitations:** Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied in accordance with 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 (4.4 deg C) and below 110 deg F (43.3 deg C) and will remain so for 24 hours.
 4. In direct sunlight resulting in temperatures outside of the range listed above.
 5. Substrate is not frozen and substrate-surface temperature is above 40 deg F (4.4 deg C) and below 110 deg F (43.3 deg C).
 6. Rain or snow is not predicted within 24 hours.
 7. Not less than 24 hours have passed since surfaces were last wet.
 8. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.
 9. Prior to and during application of the water-repellent sealer, the concrete surface must be completely dry with a maximum moisture content of 4%, as tested with a moisture meter.

1.9 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 for pre-application approval.

PART 2 - PRODUCT**2.1 PERFORMANCE REQUIREMENTS**

- A. Performance: Water repellents shall meet the following performance requirements as determined by preconstruction testing on substrates representing those indicated for this Project.
- B. Water Absorption: Minimum 87.7 percent reduction of water absorption after 24 hours for treated compared to untreated specimens when tested in accordance with the following:
 - 1. Cast-in-Place Concrete: ASTM C642.
 - 2. Precast Concrete: ASTM C642.
- C. Water-Vapor Transmission: Comply with the following:
 - 1. Minimum 75.3 percent water-vapor transmission loss of treated compared with untreated specimens, in accordance with Alberta B 388, Type 1b.
- D. Water Penetration and Leakage through Masonry: Minimum 95 percent reduction in leakage rate of treated compared with untreated specimens, in accordance with ASTM E514/E514M.
- E. Durability: Minimum 73 percent performance after abrasion testing in accordance with Alberta B 388, Type 1b.
- F. Chloride-Ion Intrusion in Concrete: NCHRP Report 244, Series II tests.
 - 1. Reduction of Water Absorption: Minimum 80 percent.
 - 2. Reduction in Chloride Content: 95.5 percent.

2.2 PENETRATING WATER REPELLENTS

- A. Silane, Penetrating Water, Salt, and Chloride Repellent: Clear, containing 100 percent or more actives of isooctyltriethoxysilanes with alcohol, mineral spirits, water, or other proprietary solvent carrier; and with 350 g/L or less of VOCs.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Ghostshield; KreteTek Industries, Inc.; ISO-TEK™ 8100.
 - 2. Substrate Penetration Depth: 0.10 inch (2.54 mm) minimum as tested in accordance with OHD L-40

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 in accordance with water-repellent manufacturer's requirements. Check moisture content in three representative locations by method recommended by manufacturer.
 - 2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
 - 3. Verify that required repairs are complete, cured, and dry before applying water repellent.
- B. Test pH level in accordance with water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, in accordance with repellent manufacturer's written instructions.
- B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product in accordance with water-repellent manufacturer's written instructions or as follows:
 - 1. Cast-in-Place Concrete, Precast Concrete, Cast Stone, and Concrete Unit Masonry: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents in accordance with ASTM E1857
 - 2. Clay Brick Masonry: ASTM D5703.
 - 3. Natural Stone: ASTM C1515 or ASTM D5107.
 - 4. Portland Cement Plaster (Stucco): ASTM E1857
- C. 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.
- D. 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.
- E. 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.

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 water-repellent sealer to prepared substrates within three days after completion of the surface preparation.
- C. Stir and mix materials thoroughly to ensure uniformity and in accordance with the manufacturer's recommendations. Do not dilute or thin product.
- D. Apply coating of water repellent on surfaces to be treated using **15 psi- (103 kPa-)** pressure spray with a fan-type spray nozzle, roller, or brush 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.
- E. 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.
- F. It may take up to 2 or more hours for the sealer to completely penetrate if the substrate is of high density. The treated surface may remain dark for up to seven days before it returns to normal appearance.
- G. Do NOT apply sealer to concrete surfaces:
 - 1. that are damp or have damp repairs. If rain suddenly begins during installation, immediately stop application of sealer and cover the newly impregnated areas.
 - 2. if the conditions (e.g., weather or surface conditions) do not meet the requirements of Para. 1.8 above or are not expected to meet the requirements for anytime within a 24 hr. period after installation.
- H. Do not disturb sealed surfaces for a minimum of 6 hrs after the application of the product. Early water repellency will be developed after 24 hrs; however, full curing of the sealer may take up to seven days or longer. Do not install concrete repairs for a minimum of 72 hrs after application of the sealer.

3.4 FIELD QUALITY CONTROL

- A. Testing of Water-Repellent Material: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when water repellent is being applied:
 - 1. Owner will engage the services of a qualified testing agency to sample water-repellent material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance of water-repellent material with product requirements.
 - 3. Owner may direct Contractor to stop applying water repellents if test results show material being used does not comply with product requirements. Contractor shall remove noncomplying material from Project site, pay for testing, and correct deficiency of surfaces treated with rejected materials, as approved by Architect.

3.5 CLEANING

- A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses.
- B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071900