Guide Specification

MULTIGARD™

Section 07180

ADVANCED CHEMICAL TECHNOLOGIES, INC.

"Protecting the World's "Infrastructure"

SIL-ACT MULTIGARD™ silane is a VOC compliant chemical treatment which when applied with our proprietary system renders concrete, masonry and many natural stones permanently repellent to water, salt and other waterborne contaminants. The small molecular size of **SIL-ACT MULTIGARD™** enables silane to penetrate deeply into the pores of substrates but does not change the appearance or vapor permeability of treated surfaces. It is manufactured by ADVANCED CHEMICAL TECHNOLOGIES, INC., the leader in high-performance silane water repellents since 1976.

SPECIFICATION COORDINATION: Use this guide specification for buildings, parking garages, vertical surfaces, and horizontal structures such as balconies and plazas. For bridges, roads, and other surfaces subject to extreme exposure of ware, contact ADVANCED CHEMICAL TECHNOLOGIES, INC. for appropriate specifications.

Edit guide specification in accordance with Project requirements. Delete, modify, or add text as required. Coordinate with other sections for general requirements and related work. Obtain current copies of manufacturer's technical data sheet and other product literature before editing. This guide specification is also available on computer diskette.

F**OR ADDITIONAL INFORMATION:** Contact your local **SIL-ACT™** representative or

ADVANCED CHEMICAL TECHNOLOGIES, INC.
100 West Wilshire Boulevard, Suite C-1
Oklahoma City, OK 73116
Phone: 405-843-2585 or 800-535-0433
Fax: 405-843-2596
advchem@advchemtech.com
http://www.advchemtech.com/

PART 1. GENERAL

1.01 SUMMARY

A. Section includes water repellent treatments.

Edit Related Sections in accordance with project requirements.

- Concrete and stucco: Specification of moist curing methods are recommended. Film forming curing compounds must be removed prior to application of water repellents.
- Coatings and joint sealers: SIL-ACT MULTIGARD™ is compatible with most solvent based coatings and sealants but can inhibit the adhesion of water based products.

1.02 RELATED SECTIONS

A. Section (03300 – Cast-In-Place Concrete): (_____-_____): Surface preparation and cleaning.
B. Section (03400 – Precast Concrete): (_____-_____): Surface preparation and cleaning.
C. Section (04200 – Unit Masonry): (_____-_____): Surface preparation and cleaning.
D. Section (04400 – Stone): (_____-_____): Surface preparation and cleaning.
E. Section (07900 – Joint Sealers): (_____-_____): Scheduling of installation.
F. Section (09200 – Stucco): (_____-_____): Surface preparation and cleaning.
G. Section (09900 – Painting): (_____-_____): Coatings applied over water repellent treated surfaces.

H. PERFORMANCE REQUIREMENTS

I. Treated surfaces shall resist penetration by water and water-borne salts, ions, and other substances.
J. Water repellent shall penetrate into and chemically bond with substrate to provide permanent protection.
K. Water repellent shall not change surface (skid resistance), texture, appearance, or vapor permeability.

1.03 SUBMITTALS

A. Comply with Section (01300), (01340).
B. Product Data: Submit manufacturer's product description and application instructions. Submit copies of test reports from independent laboratories.
C. Applicator Qualifications: Submit applicator qualifications.
D. Sample Warranty: Submit sample of manufacturer's warranty and warranty registration procedures.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be able to document that their silane products have maintained water repellency for over ten years of continuous field exposure.
B. Applicator Qualifications: Applicator shall be firm authorized by manufacturer.
C. Field Testing: Comply with Section (01400), (01425)
    1. Conduct prior to general application of water repellent. Provide two day notice to (Architect/Engineer) (_____) and manufacturer to allow test to be observed.
    2. Apply water repellent to one square foot area on each type of surface to be treated an allow to react with substrate for five days. Prepare surface and apply water repellent in accordance with specification and employing procedures proposed for use on project.
    3. Water Absorption Tests: Perform on treated and untreated surfaces to determine relative effectiveness of treatment. Comply with manufacturer's test procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Comply with Section (01600), (01610).
B. Deliver to jobsite in unopened, sealed containers with manufacturer's label identifying product and with numbered seals intact.
C. Store in sealed containers.

1.06 PROJECT CONDITIONS

A. Ventilation: Provide adequate ventilation and fresh air during and after application to comply with applicable requirements. (In enclosed areas, wear appropriate respirators as required).
B. Wear protective goggles, gloves, and clothing during application of water repellents.
C. Properly clean and dispose of spills.
D. Do not apply when wind is 15 m.p.h. or over; ambient or surface temperature is below 40°F or over 100°F; or when rain will occur within 60 minutes after application.
E. Walls: Protect against entry of water through exposed back side or top of walls; do not apply water repellent before (coping), (flashings), (and) (roofing), are installed; water trapped in walls has drained; and building materials have dried.

1.07 WARRANTY

Limited warranty is available with SIL-ACT MULTIGARD™ when water repellent is applied according to ADVANCED CHEMICAL TECHNOLOGIES, INC. instructions. Contact manufacturer for duration of warranty available to specific projects.

A. Provide manufacturer's limited warranty, co-signed by contractor and applicator, under provisions of section (01700), (01740). Warrant that structurally sound treated surfaces shall retain water and salt repellent properties for (_____) years from date of application. Comply with manufacturer's warranty registration procedures including reaction evaluation registration (and corrosion detector system).

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. ADVANCED CHEMICAL TECHNOLOGIES, INC.
100 West Wilshire Boulevard, Suite C-1
Oklahoma City, OK 73116
PHONE 405-843-2585 or 800-535-0433
FAX 405-843-2596

Water repellent substitutions require careful evaluation. Coordinate the following with Division One and bidding requirements.

B. Substitutions: Under provisions of Section (01600), (01630).
   1. Submit proposed substitutions to (Architect/Engineer) (_____) in writing not less than 10 days before bid date. Acceptance will be by Addendum.
   2. Submit manufacturer qualifications, product data, samples, installation instruction, test reports, warranty, (and) (_____). Clearly indicate discrepancies between proposed products and specified product.
   3. Submit letter from manufacturer certifying that proposed substitution is compatible with surfaces to be treated and other relation materials and will provide specified performance.
   4. Submit letters signed by manufacturer and applicator indemnifying Owner from infringement of applicable patents.

2.02 MATERIALS

A. Water repellent: SIL-ACT MULTIGARDTM Water Dispersed Silane Waterproofing. Treatment shall be an alkyltrialkoxy silane dispersion in water. Treatment shall comply with applicable volatile organic compound emission regulations and shall be non flammable.
B. Water shall be clean and potable.

2.03 EQUIPMENT

Contact ADVANCED CHEMICAL TECHNOLOGIES, INC. for equipment and ratio recommendations.

A. Dispersion Equipment: Type recommended by water repellent manufacturer. Water repellent and water shall be delivered separately to a static mixer where water repellent is micro-dispersed and hydrolyzed. Provide (6 to 1) (9 to 1) (_____) water to water repellent mixture.
B. Spray Equipment: Low pressure positive displacement airless spray equipment o type recommended by water repellent manufacturer. Fit with fan spray nozzle and adjust to provide a “wet spray” instead of a “mist spray”. (Use spray bar with multiple nozzles for large horizontal areas).
C. Equipment, tanks, and hoses shall be clean and free of water, oil residue, paints, and foreign matter.

PART 3. EXECUTION

3.01 EXAMINATION

A. Examine substrate and conditions under which water repellent is to be applied. Advise (Architect/Engineer) (_____) in writing of unsatisfactory conditions. Do not apply water repellent until conditions have been corrected.

3.02 PREPARATION

A. Substrates:
   1. (Concrete), (Mortar), (and) (Stucco): Allow to cure to design strength or 28 days prior to application.
   2. Repair surface cracks exceeding four mils wide (except where indicated to be sealed after application of water repellent). Allow repair to cure prior to application.
   3. (_____).

Specify cleaning methods which are compatible with surfaces and satisfy environmental and job site requirements.

B. Cleaning:
   1. Visual Criteria: Surfaces shall be free of laitance, dirt, dust, coatings, cure materials, grease, oil, efflorescence and contaminants.
   2. Absorption Criteria:
      a. Surfaces shall be capable of absorbing water repellent. Remove oils, dirt, dust, (curing compounds), coatings, and contaminations which could clog pores and capillaries in surfaces
      b. Spray dispersed water repellent on surfaces and observe rate at which dispersion penetrates surface. If dispersion does not begin to penetrate immediately, is not absorbed by the surface within a few seconds or if surface appears oily, surface shall be cleaned.
   3. Cleaning Method:
      a. (Clean surfaces as specified in other sections).
      b. (Waterblasting), (Low pressure water and scrub brushes). Allow surfaces to dry.
      c. (Shotblasting). (Sandblasting). (Power brooming). Sweep of air blast to remove dust.

Retain following when cleaning horizontal surfaces.

   4. Use cleaning equipment with traps, filters, drip pans, and other devices to prevent oil or other foreign materials from being deposited on clean surface.

C. Washing:
Prior to application of water repellent, clean glass, metal, (_____) and similar exposed surfaces which are not to be treated with water repellent. Notify (Architect/Engineer) (_____) in writing of surfaces which are damaged or can not be cleaned.

SIL-ACT MULTIGARD™ can leave visible deposits on window glass or framing. However, run-off from cementitious surfaces can also stain or etch glass or metal. To avoid job conflicts over the source of damage, clean glass and metal as specified above or mask glass and metal as specified below.

D. Masking:
Mask glass, metal, (_____) and similar surfaces.

E. Protection:
   1. Protect (plants), (_____) and other surfaces which are subject to damage from over spray.
   2. Close air-intake louvers, windows and other openings.

F. Drying:
Substrates shall be substantially dry and free of frost and ice at time of application.

3.03 APPLICATION

TYPICAL COVERAGE RANGES: SIL-ACT MULTIGARD™ coverage varies depending on porosity, density, moisture content, temperature, and other surface conditions. Contact Advanced Chemical Technologies, Inc. for assistance evaluating Project requirements.

SURFACE	Sq. ft/gal	Sq. m/L
Concrete Brick or Block	75-125	1.84-3.07
Exposed Aggregate Concrete, Clay Brick, Stucco, Rough Stone, or Porous Concrete	100-200	2.46-4.90
Concrete Bridge Decks & Surfaces Subject to Abrasion	100-200	2.46-4.90
Smooth Precast Concrete	125-175	3.07-3.68
Steel Trowel Finished Concrete or Smooth Stone	150-250	3.68-6.13

A. Disperse water repellent with water using recommended equipment. Spray in a single uniform pass. Saturate treated surfaces.

B. Coverage Rate:
   1. Horizontal Surfaces: Apply proper quantity so that dispersion stands on surface a few minutes before completely penetrating. Do not exceed (_____) sq. ft/gal after dispersion in water.
   2. Vertical Surfaces: Treat surfaces from bottom up. Apply roper quantity so that dispersion runs down six to eight inches below spray pattern. Do not exceed (_____) sq. ft/gal after dispersion in water.

C. Work Stoppage:
   If entire application cannot be completed at one time, clearly mark place where application stopped. Seal and protect partially used containers against water and other contamination.

3.04 CLEANING AND PROTECTION

A. Cleaning: Promptly remove water repellent over spray from glass, metal, (_____,) and similar exposed surfaces with soap and water or alcohol; rinse with clean water. (Remove masking.)

B. Horizontal Surfaces: Protect against traffic for 45 minutes.

3.05 SCHEDULE

A. Apply Water repellent to surfaces shown on Drawings.

Omit above or below. Edit as required and coordinate with Drawings.

B. Apply water repellent to exterior cast-in-place concrete, precast concrete, brick masonry, concrete masonry units, mortar, stone, stucco, and (_____) surfaces of buildings, structures, pavements, and (_____).

Special Provision for Penetrating Concrete Surface Treatment

- Penetrating concrete surface treatment shall consist of cleaning concrete surfaces and applying a penetrating treatment to concrete surfaces as show on the plans and as specified in these special provisions and such additional areas as determined by the Engineer.
- Concrete surfaces designated on the plans to be treated shall be clean and dry. Once the extent of the treatment area has been determined and conditions are acceptable, concrete shall be cleaned using a power broom or other cleaning device approved by the Engineer. The surface to be treated shall receive a minimum of two consecutive passes of the cleaning equipment covering the full width of the surface to be treated. The cleaning process shall remove all dirt and laitance from the surface to be treated.
- Penetrating concrete surface treatment shall consist of an approved alkyltrialkoxy silane solution that is dispersed in water at a ratio of 1 part alkyltrialkoxy sailane solution to 9 part water immediately prior to application of the treatment to the concrete surface. Treatment shall consist of one application of the treatment to the concrete surface at 150 square feet per gallon.
- The manufacturer of the penetrating concrete surface treatment shall provide test data from an independent testing laboratory verifying that the alkyltrialkoxy silane treatment when dispersed in water at a ratio of one part alkyltrialkoxy silane solution to 9 parts water will meet the following laboratory test criteria at the specified rate of application.

NCHRP 244 Series II	Moisture Absorption Reduction 75%	Chloride Absorption Reduction 75%
Alberta Transportation D388-90 Sealer Test (1a)	Waterproofing Before Abrasion 82.6%	Waterproofing After Abrasion 75%
Alberta Transportation D388-90 Sealer Test (1a)	Waterproofing after KOH Treatment to pass	

- Each shipment of penetrating concrete surface treatment shall be accompanied by a Materials Safety Data Sheet and a Certificate of Compliance certifying that the material conforms to the requirement of these special provisions.
- The penetrating concrete surface treatment shall conform with applicable volatile organic compound regulation and shall be non flammable.
- The use of the penetrating concrete surface treatment shall conform with the manufacturer's recommendations and these special provisions. A manufacturer's representative shall be present on site during treatment application to verify compliance with accepted application procedures.
- Application of the penetrating concrete surface treatment shall be with spray equipment recommended by the manufacturer of the penetrating concrete surface treatment. The sprayer metering tip and nozzle shall be of a size and type designated by the manufacturer of the penetrating concrete surface treatment.
- The penetrating concrete surface treatment shall be applied only during favorable weather as recommended by the manufacturer. Application of the concrete surface treatment shall not be permitted when the atmospheric or surface temperature is below 40°F.
- Surfaces treated with the penetrating concrete surface treatment shall be measured and paid for by the square yard.
- The contract price paid per square yard for penetrating concrete surface treatment shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in applying the penetrating concrete surface treatment to the designated concrete surface including cleaning of the areas to be treated, complete in place, as shown on the plans as specified in the Standard Specifications and these special provisions and as directed by the Engineer.

END OF SECTION