



SECTION 07 19 00
Water Repellents

SPECIFIER NOTE: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-part format. The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building codes. Coordinate this section with other specification sections and the drawings. Delete all “Specifier Notes” when editing this section.

SPECIFIER NOTE: This section covers StarSeal EF water repellent series. StarSeal EF [Weather Seal] [Weather Seal Plus] [Weather Seal 100] are silane based penetrating sealers which will penetrate deeper and impart a greater amount of reactive material into the surface providing greater protection than comparable silicone based products.

StarSeal EF [Weather Seal] [Weather Seal Plus] [Weather Seal 100] provides long term protection against salt corrosion, deicing chemicals, mildew, water, wind driven rain, airborne contaminants surface spalling from freeze/thaw cycles and other harsh weather conditions

SPECIFIER NOTE: StarSeal EF products are high performance building materials that are dedicated to reducing their environmental foot print by improving the environmental performance of buildings, the air quality of its inhabitant’s and reducing the effects of volatile organic compounds (VOC’s) on the environment.

SPECIFIER NOTE: This guide specification is provided as a start point for the design professional. Any modifications to the specification are the responsibility of the design professional. Contact Vexcon Chemicals with any questions regarding this product.

SPECIFIER NOTE: The products in this section are not recommended for below grade application. Before editing this section, consult with Vexcon to obtain complete product information on the water repellent required for the project.

PART 1 – GENERAL

1.1 SUMMARY

- A. This section specifies StarSeal EF water repellent protective material for new construction and major renovations applied to exterior [vertical] [and] [horizontal] [pre-cast concrete] [cast in place] [stucco] [brick] [stone] concrete and masonry surfaces.

SPECIFIER NOTE: Edit the list of related sections as required for the project. List other sections dealing with the work directly related to this section.

- B. Related Sections:
 - 1. Section 03 30 00 – Cast-In-Place Concrete
 - 2. Section 03 41 00 – Pre-Cast Structural Concrete
 - 3. Section 03 47 00 – Site Cast Concrete
 - 4. Section 04 21 00 – Clay Unit Masonry
 - 5. Section 04 22 00 – Concrete Unit Masonry
 - 6. Section 09 25 00 – Portland Cement Plastering

1.2 SUBMITTALS

- A. Comply with Section [01 33 00] [__ __ __].
- B. Product Data: Submit manufacturer's product data sheet. Include generic description, surface preparation, and application instructions.
- C. Safety Data Sheets indicating VOC content and safety precautions.
- D. Manufacturer's Quality Assurance: Submit manufacturer's certification that sealer complies with specified requirements and is suitable for intended application.
- E. Warranty: Submit manufacturer's standard warranty.
- F. Applicator Qualifications: Submit list of projects referenced as documented in this Specification under Quality Assurance Section.
- G. Quality Control Submittals:
 - 1. Provide protection plan of surrounding areas and non-work surfaces.

1.3 QUALITY ASSURANCE

- A. Comply with Sections [01400] [__ __ __].
- B. Manufacturer Qualifications: Manufacturer shall demonstrate that they have manufactured specified products for a minimum of ten years.
- C. Applicator Qualifications: Company shall have a minimum of five years experience in the application of specified products on projects of similar size and scope and is acceptable to the product manufacturer.

SPECIFIER NOTE: A test application is recommended to determine coverage rate, performance. Allow a minimum of 14 days prior to testing permitting the product to react fully. If a test application is not required, delete this Section

D. Field Test Sample:

1. Install at a project site a field sample following manufacturer's instructions on the structure accessible to all parties as directed by the architect.
2. Furnish written certification that the surface preparation method and final condition has manufacturer's approval and complies with warranty.
3. Mock up shall be a minimum of 50 square feet (4.6 m²) applied at the specified rate to include surface preparation allowing for evaluation of water-repellent performance.
4. Conduct absorption testing on the cured field sample. If required, adjust application to achieve required water-repellency.
 - a. Filled to 0.0 mL graduation, after 20 minutes, the water level should be no lower than the 1.0 mL graduation.
5. Architect shall provide written approval of field sample prior to the application of the specified products.
6. Maintain mock-up during construction for workmanship standard.
7. Mock-up may be incorporated into final construction upon architect's approval.
8. Field sample will be standard for judging workmanship on remainder of project.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep containers sealed until ready for use.
- C. Handling: Protect materials during handling and application to prevent damage or contamination.
- D. Do not use materials beyond manufacturer's shelf life limits

1.5 PROJECT CONDITIONS

A. Environmental Requirements

1. Do not apply unless substrate and ambient temperatures are 40°F (4°C) and rising at installation time and remain above 40°F (4°C) for at least 4 hours after installation.

2. Do not apply above 85°F (29°C) or below 40°F (4°C).
3. Weather Conditions: In accordance with manufacturer's instruction, do not apply sealer in snow, rain, or mist or when such conditions are expected. Allow surface to attain temperature ranges and conditions recommended by manufacturer before proceeding with installation.
4. Do not apply water repellent treatment on windy days
5. Keep from freezing. Do not apply to frozen surfaces.
6. Protect from spillage or overspray with specialty coated glass, plastic windows, bituminous roofing products and asphalt. Check compatibility before application.
7. Check the compatibility of all caulking, patching and traffic marking materials to be used with the penetrating sealer.
8. Sealants, patching materials and expansion joints shall have been installed and approved by the engineer.
9. Do not apply in rain or when rain is expected within 8 hours before or after application.
10. Compliance: Follow manufacturer's instructions with regard to safety, health, and state and local environmental regulations.

B Ventilation: Provide adequate ventilation and airflow during and after application. Building air intakes should be protected from allowing vapors to enter the building.

C. Protection:

1. Wear protective goggles, gloves, and clothing during the application of the material.
2. Warn personnel against breathing vapors and contact of materials with skin or eyes.
3. In confined areas workmen shall wear approved chemical-cartridge type masks.
4. Keep products away from heat, sparks and flames. Do not allow the use of spark producing equipment during application and until vapors are gone.
5. Post "No Smoking" signs.

1.6 WARRANTY

- A. Provide manufacturer's single source performance warranty, co-signed by contractor under provisions of section (01700), (01740). Warranty should state that structurally sound treated surfaces shall retain water and salt repellent properties for ten (10) years from date of application. Comply with manufacturer's warranty registration procedures.

PART 2 – PRODUCTS

2.1 Acceptable Manufacturer

A. Vexcon Chemicals 7240 State Road Philadelphia PA 19135
Toll Free Technical Assistance 888.Vexcon1, fax 215.332.997, website www.vexcon.com
email sales@vexcon.com.

B. Substitutions: Not permitted

2.2 Acceptable Material

SPECIFIER NOTE: Refer to Vexcon Chemicals product data sheet or contact Vexcon to determine the appropriate water repellent treatment to be specified. Edit this list to include only those products to be included in the work.

A. Product: StarSeal EF Weather Seal

B. Description: Low VOC 20% solids silane water repellent

C. Compliances:

1. ASTM C-672 – Scaling rating – 40 freeze/thaw cycles – 0 (no scaling)
2. ASTM E-96 – Water Vapor Permeability - >80%
3. ASTM D-2047 – Coefficient of Friction – 0.84 average – minimum required 0.50
4. NCHRP 244 Series II and IV
 - Reduces Water Absorption (ASTM C-64 and ASTM C-642)
 - a. Water Loss Reduction, Coated samples, 14 days/50% RH - >80%
 - b. Water Loss Reduction, Coated samples, 21 days/50% RH - >80%
 - c. Reduction of Chloride Penetration into Concrete
 - 0-1" – Coated - >80% - UV - >80%
 - 0-2" – Coated - >80% - UV - >80%
5. VOC <100 gr./L – Waterproofing Concrete/Masonry Cleaner
6. LEED NC 2.2 EQ 4.1

OT

A. Product: StarSeal EF Weather Seal Plus

B. Description: Low VOC 40% solids silane water repellent.

C. Compliances:

1. ASTM C-457 – Depth of Penetration – 0.15-0.26”
2. ASTM C-642 – Water Absorption Reduction in Hardened Concrete – >98%
 - 24 hour Immersion 0.21%
 - 48 hour immersion 0.51%
 - 24 hour boil 1.25%
 - 50days immersion 1.28%
3. ASTM C-672 – Scale rating 100 freeze/thaw cycles – 0 (no scaling)
4. ASTM D-2047 – Coefficient of Friction – 0.84 average
5. ASTM E-96 – Water Vapor Permeability 95% average
6. NCHRP 244 Series II and IV
 - Series II – 95%
 - Series IV – 95%
7. NCHRP 244 Series II Water Weight Gain % Reduction – 93%
8. AASHTO T259/260 – Chloride Ion Analysis – 90 day salt ponding
 - 1/16” – 1/2” 0.50#/cu.yd. avg. @ 125sq.ft./gal
 - 1/2” – 1” - 0.21#/cu.yd. avg. @ 125sq.ft./gal
9. VOC - <30 gr/L
 - US EPA, OCT, LADCO/MRPO, CEPA/EC – Waterproofing Concrete Masonry Sealer
 - CARB, SCAQMD – Reactive Penetrating Sealer
10. LEED NC 2.2 EQ 4.1

OT

A. Product: StarSeal EF Weather Seal 100

B. Description: Low VOC 100% solids silane water repellent.

C. Compliances:

1. ASTM C-457 – Depth of Penetration – 0.15 – 0.26” substrate dependant.
2. ASTM C-642 – Absorption Reduction in Hardened Concrete >98%
 - 24 hour immersion 0.33%

- 48 hour immersion 0.40%
 - 24 hour boil 0.81%
 - 50day immersion 1.43%
3. ASTM C-672 – Sale rating – 100 freeze/thaw cycles – 0 (no scaling)
 4. ASTM D-2047 – Coefficient of Friction – 0.84 average.
 5. ASTM E-96 - Water Vapor Permeability – 95%
 6. NCHRP 244 II and IV @250sq.ft./gal
 - Reduction of Absorbed Chloride into Concrete
 - i. Series II – 98%
 - ii. Series IV – 98%
 7. NCHRP 244 Series II Water Weight Gain % Reduction - 95%
 8. AASHTO T259-260 – Chloride Ion Analysis – 90 day salt ponding
 - 1/16” – 1/2” 0.63 #/cu.yd. avg. @250 sq.ft./gal
 - 1/2” – 1” 0.35 #/cu.yd. avg. @ 250 sq.ft./gal
 9. Alberta Transportation Concrete Sealer – Type 1C
 10. VOC <250 gr/Liter
 - US EPA, OCT, LADCO/MRPO, CEPA/EC – Waterproofing Concrete Masonry Sealer
 - CARB, SCAQMD – Reactive Penetrating Sealer
 11. LEED NC 2.2 EQ 4.1

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify substrate conditions are acceptable for sealer installation in accordance with manufacturer’s instructions. Do not proceed with work until any unsatisfactory conditions are corrected.
 1. General: Determine acceptable removal techniques for contaminants harmful to sealers performance, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, efflorescence, existing films and other water repellent coatings.
 2. Concrete: Verify concrete substrate has cured to full load bearing capacity (14-28 days).

3.2 SURFACE PREPARATION

- A. Protect plant life and all surfaces, including asphalt, not to be treated as directed by manufacturer.
- B. Repair cracks in substrate.
- C. Clean surface to be treated of all dirt, oil, grease, efflorescence, laitance, dust, and other contaminants according to manufacturer's instructions.
- D. Do not apply water repellent sealer if standing water or frost is visible.
- E. Surfaces shall be capable of absorbing water repellent.

3.3 APPLICATION

- A. Apply water repellent sealer according to manufacturer's instructions.
- B. Do not dilute material. Material should be agitated before and during application.
- A. Close air-intake louvers, windows and other openings.
- B. Apply water repellent to saturation.
- C. Do not apply when rain is anticipated within 4 hours or during windy conditions.

3.4 SCHEDULE

- A. Apply water repellent as directed on drawings.

END OF SECTION