



SECTION 03 01 00
Maintenance of Concrete

SPECIFIER NOTE: The purpose of this guide specification is to assist the Specifier in developing a project specification for the use of Vexcon Chemicals products. 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.

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes:
1. Certi-Vex[®] Penseal CT a penetrating corrosion inhibitor treatment for steel reinforced concrete.
 2. Extended written warranty.

SPECIFIER NOTE: Delete Sections not applicable.

- B. Related Sections:
1. Section 03 30 00 – Cast-in-Place Concrete
 2. Section 03 40 00 – Precast Concrete
 3. Section 04 22 00 – Concrete Unit Masonry
 4. Section 07 91 00 – Water Repellents

1.2 SUBMITTALS

- A. Comply with Section [01 33 00] [__ __ __].
- B. Product Data: Submit manufacturer's current product data sheet. Include generic description, surface preparation, and application instructions.
- C. SD 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 ten year 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 [01 40 00] [__ __ __].
- B. Applicator Qualifications: Company shall have a minimum of five years experience in the field of concrete repair and protection as well as in the application of specified products to 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

- C. Field Test Sample:
 - 1. Install at a project site a field sample on the structure accessible to all parties as directed by the engineer.
 - 2. Mock up shall be a minimum of 50 square feet (4.6 m²) to include surface preparation.
 - 3. Engineer shall provide written approval of field sample prior to the application of the specified products.
 - 4. Maintain mock-up during construction for workmanship standard.
 - 5. Mock-up may be incorporated into final construction upon architect's approval.
 - 6. Field sample will be standard for judging workmanship on remainder of project.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section [01 60 00].
- B. Deliver materials in manufacturer's original, unopened, sealed containers with all label identification intact.
- B. Store materials in unopened containers in dry, clean area between 35°F (2°C) and 100°F (37.8°C).

1.5 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not apply unless substrate and ambient temperature are 20°F (-6° 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 90°F (32°C) or below 20°F (-6°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 on windy days
5. Protect plant life and landscaping from over spray.
6. Protect non-porous surfaces.
7. Do not apply in rain or when rain is expected within 4 hours before or after application.
8. After rain and/or cleaning allow substrate to dry completely until there is no surface darkening. Depending on weather conditions, as a guide 24 – 72 hours.
9. 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. The system manufacturer shall furnish the Owner a written single source performance warranty that the concrete reinforcement corrosion inhibitor will be free of defects related to workmanship or material deficiency for a ten (10) year period from the date of completion of the work provided under this section of the specification.
- B. The corrosion inhibitor manufacturer shall be responsible for providing labor and materials to retreat areas on the structure that does not comply with the warranty requirements.
- C. For complete warranty details, contact manufacturer.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Vexcon Chemicals
7240 State Road
Philadelphia, PA 19135
Phone: 215.332.7709
Fax: 215.332.9997
Email: techservice@vexcon.com
www.vexcon.com
- B. Substitutions: Comply with Section [01 30 00]

2.2 MATERIAL

- A. Surface applied solution of alkaline corrosion and chloride ion inhibiting chemicals that penetrates concrete by diffusion and forms a protective film on steel reinforcement, meeting or exceeding the physical and performance characteristics of the following approved product.
 - 1. Product as basis of design: Certi-Vex Penseal CT by Vexcon Chemicals.

SPECIFIER NOTE: For line stripping add Certi-Vex Traffic Marking Paint by Vexcon Chemicals

- B. Corrosion Inhibitor shall have the following data performed by an independent lab. Minimum performance properties:
 - 1. ASTM G-109 – Corrosion Reduction : >99%
 - 2. ASTM C1202 Electrical Indication of Treated Concrete Ability to Rapidly Resist Chloride Penetration
 - i. Before coating 1463 coulombs
 - ii. After coating 443 coulombs
 - 3. ASTM C-876 – Corrosion Activity Test: Micro Cell Reduced >99% at 80% RH & 100°F
 - 4. ASTM C-1152 – Chloride Ion Test: Reduction >95% @ 1” above top reinforcing bar, 270 days – 250 ppm.
 - 5. NCHRP 244 Series II and IV @ 250 sq.ft./gal
 - i. Reduction of Absorbed Chloride into Concrete
 - a. Series II – 98%
 - b. Series IV – 98%

6. NCHRP 244 Series II Water Weight Gain % Reduction – 95%
7. AASHTO T259/260- Chloride Ion Analysis – 90 day Salt Ponding
 - i. 1/16” – 1/2” 0.63 #/cu.yd. avg. @ 250 sq.ft./gal
 - ii. 1/2” – 1” 0.35 #/cu.yd. avg. @ 250 sq.ft./gal
8. ASTM C672 Scale rating - 100 freeze thaw cycles-0 (no scaling).
9. ASTM C457 Depth of Penetration - 0.150 -0.26", substrate dependant
10. ASTM E96 Water Vapor Permeability - 95%
11. ASTM D2047 Coefficient of Friction 0.84 average
12. ASTM C642- Water Absorption Reduction in Hardened Concrete > 98%
 - i. 24 hour immersion 0.33%
 - ii. 48 hour immersion 0.40%
 - iii. 24 hour boil 0.81%
 - iv. 50 days immersion 1.43%
13. VOC content <250 grams/liter

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 CONCRETE REPAIR

- A. Remove and repair delaminated, loose or spalled concrete.
- B. Non structural shrinkage cracks that are shallow in depth and dormant can be treated with multiple coats of Certi-Vex Penseal CT.
- C. Other cracks should be routed, treated with Certi-Vex Penseal CT and sealed with suitable solvent based sealant such as Vexcon’s PowerCoat® Epoxy Flexible Joint Sealant.

3.3 SURFACE PREPERATION

- A. Remove all traces of dirt, debris, oil, grease, curing compounds, sealers, paints, coatings, asphalt, laitance and other foreign materials form the concrete surface.

SPECIFIER NOTE: Use one of Vexcon Chemicals Surface Preparation products to properly clean the surface prior to application.

- B. Other acceptable cleaning methods are shot blasting, sandblasting, water blasting or grinding.

- C. All caulking, joint sealants, repairing and patching of concrete surfaces shall be installed and cured prior to application.

3.4 APPLICATION

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

3.5 SCHEDULE

- A. Apply corrosion inhibitor as directed on drawings.

3.6 CLEANING

- A. As Work Progresses: Clean spillage and overspray from adjacent surfaces using materials and methods as recommended by corrosion inhibitor manufacturer.
- B. Remove protective coverings from adjacent surfaces when no longer needed.

3.7 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

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