

SECTION 03910
Corrosion Inhibitor Treatment

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Surface applied concrete steel reinforcement corrosion inhibitor:
2. Extended written warranty.

1.02 SUBMITTALS

- A. Comply with Section 01300, unless otherwise indicated. Substitution requests must be submitted 14 day prior to bid date.
- B. **Product Data: Manufacturer's** specifications and technical data including the following:
1. Detailed specification of construction and fabrication.
 2. Manufacturer's installation instructions.
 3. Certified test reports indicating compliance with performance requirements specified herein.
- C. **Quality Control Submittals:**
1. Statement of qualifications.
 2. Statement of compliance with Regulatory Requirements.
 3. Field Quality Control Submittals as specified in Part 3.
 4. Manufacturer's field reports.

1.03 QUALITY ASSURANCE

- A. **Manufacturer's Qualification:** Not less than 5 years of experience in the actual production of specified products.
- B. **Installer's Qualifications:** Firm experienced in installation or application of systems similar in complexity to those required for this Project, plus the following:
1. Acceptable to or licensed by manufacturer.
 2. Not less than 3 years of experience with systems.
 3. Successfully completed not less than 5 comparable scale projects using this system.
- C. **Product Qualifications:** The corrosion inhibitor shall conform to the following characteristics:
1. Color: Slightly amber (fugitive dye may be added)
Density: 7.3 to 7.4 lbs/gallon
Nitrite content: less than 1%
Chloride content: less than 20 ppm
pH: 6.5 to 8
 2. Material must reduce total corrosion of heavily corroding concrete rebar by an average of 90%, at an internal concrete relative humidity of 75% or greater.
 3. ASTM G 109 – Must move active corrosion into the passive region after 12 months of cyclic salt water ponding..
 3. Must reduce corrosion by 90% or greater using FHWA RD-98-153 test protocol on crack slab black bars subjected to 48 weeks of cyclic salt water ponding.
 4. Must increase the resistance of chloride ions using AASHTO T277 "Rapid Determination of the Chloride Permeability of Concrete" by 90% minimum.

Note: A qualified independent laboratory must perform all corrosion and chloride data.

- D. **Regulatory Requirements:** Products shall comply with State and local regulations concerning AIM (Architectural, Industrial and Maintenance) coatings regarding Volatile Organic Content (VOC).

1.04 DELIVERY STORAGE AND HANDLING

- A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.
- B. Storage and Protection: Comply with manufacturer's recommendations.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Maintain ambient temperature above 40 degrees F during and 24 hours after installation.
 - 2. Do not proceed with application on materials if ice or frost is covering the substrate.
 - 3. Do not proceed with application if ambient temperature of surface exceeds 100 degrees F.
 - 4. Do not proceed with the application of materials in rainy conditions or if heavy rain is anticipated with 4 hours after application.

1.06 SPECIAL WARRANTIES

- 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 relate 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. The following performance standards shall be specifically covered under the warranty:

Using a device which employs linear polarization with a guard ring (device should be certified under SHRP) the corrosion current of the treated concrete shall be less then 0.5 $\mu\text{A}/\text{cm}^2$ for the life of the warranty period.

- B. The Corrosion Inhibitor Manufacturer shall be responsible for providing labor and material to retreat areas of the structure that does not comply with the warranty requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Inhibitor shall be ready-to-use, non-water-borne, surface applied product manufactured in an ISO 9002 certified facility, meeting or exceeding the physical and performance characteristics of the following approved product:
 - 1. Protectosil® CIT- Evonik 1-800-828-0919.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection:
 - 1. Unless inhibitor does not effect adhesion of sealants, paints and patching materials all adjacent surfaces shall be protected as necessary in accordance with the manufacturer's recommendations.
 - 2. Follow the manufacturer's recommendations regarding condition of concrete surfaces before, during and after application.

- B. Surface Preparation:
1. All caulking, joint sealants, repairing, and patching of concrete surfaces shall be installed and cured before application of inhibitor. If specified, apply corrosion inhibitor to routed cracks prior to application of sealant. Confirm with Inhibitor Manufacturer compatibility of materials.
 2. Prior to application of corrosion inhibitor, concrete surfaces shall be dry and cleaned of all dust, dirt, debris, grease, oil, grout, mortar, and other foreign matter. Concrete patches and all existing surfaces shall be prepared as recommended by the corrosion inhibitor manufacturer and acceptable to the Engineer.

3.03 FIELD QUALITY CONTROL

- A. Test Applications: Before application of inhibitor will be accepted, a test panel will be applied to the concrete to verify performance under the warranty provisions.

3.04 APPLICATION

- A. Product shall be applied as supplied by the manufacturer without dilution or alteration.
- B. Corrosion inhibitor shall be applied in accordance with the use of either spray, brush, or roller as per manufacturer's recommendations. Corrosion inhibitor shall be applied at a net coverage rate of 75 to 100 ft²/gallon in two or three equal coats with a minimum one hour dry time between coats.
- E. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Contractor will be responsible to clean all surfaces that are contaminated by the corrosion inhibitor.
- F. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Contractor will be responsible for replacing all plants, grass or vegetation damaged by the corrosion inhibitor.

3.05 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.

3.06 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