

DIVISION 3 – CONCRETE

Section -

Part 1 – General

1.01 Summary

- A. This specification describes the treatment of concrete surfaces with a penetrating corrosion inhibitor to reduce the effects of corrosion in reinforced concrete.

1.02 Quality Assurance

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.
- D. Manufacturer must be capable of testing on-site for the presence of the corrosion inhibitor at the specified depth.

1.03 Delivery, Storage, and Handling

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.04 Job Conditions

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 35°F (2°C) and rising.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.05 Submittals

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).
- B. Corrosion rate field monitoring using linear polarization resistance by an independent, qualified monitoring and management company demonstrating an ability to reduce corrosion rates by a minimum of 65%.
- C. Proof of compliance with the properties specified in Section 2.03 Performance Criteria.

1.06 Warranty

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

Part 2 - Products

2.01 Manufacturer

- A. **Sika FerroGard 903**, as manufactured by Sika Corporation, is considered to conform to the requirements of this specification.

2.02 Materials

- A. General: Penetrating corrosion inhibiting impregnation coating
 1. The material shall be a organic and inorganic in nature and environmentally safe.
 2. The materials shall be water based.
 3. The materials shall be not contain calcium nitrite.
 4. The material shall not form a vapor barrier.
 5. The material shall be a mixed inhibitor.

2.03 Performance Criteria

- A. Typical Properties of the penetrating corrosion inhibiting impregnation coating::
 1. Viscosity (Brookfield Viscometer, Spindle #1, Speed 100) 15 cps.
 2. Color: Pale Yellow
 3. Density: 1.13 (9.4 lbs./ gal.)
 4. PH: 11 (+/-1)
 5. Flash point: None (water-based)
- B. Corrosion testing of penetrating corrosion inhibiting impregnation coating::
 1. The material must form a continuous film on the reinforcing steel and displace chlorides ions from the steel surface (X-ray Photon Spectroscopy (XPS) and Secondary Ion Mass Spectroscopy (SIMS).
 2. The material must penetrate independently of orientation (horizontal, vertical, overhead) at a rate up to 1/10 to 4/5 inches (2.5 to 20 mm) per day, depending on density of concrete. (Secondary Neutron Mass Spectroscopy (SNMS).
 3. The material must have demonstrated the reduction in corrosion currents after treatment as calculated by the Cracked Beam Corrosion Tests of concrete. (Adapted from ASTM G 109)
 4. The material must form a protective layer on the reinforcing steel of high integrity measured at 100A thickness. (X-ray Photon Spectroscopy and Secondary ion Mass Spectroscopy).
 5. The material must penetrate up to 3 inches (76 mm) in 28 days. (Secondary Neutron Mass Spectroscopy).
 6. The material must be capable of reducing active corrosion rates by a minimum of 65%. This reduction shall be demonstrated by project references and an independent corrosion engineer using linear polarization resistance.

Note: Tests above were performed with the material and curing conditions @ 71°F – 75°F and 45-55% relative humidity.

Part 3 – Execution

3.01 Surface Preparation

- A. Concrete surfaces must be prepared by suitable mechanical means, by abrasive blast cleaning or high pressure water at sufficient volume and pressure to remove all surface contaminants such as oil, grease, curing membranes, efflorescence, algae, moss, dirt, etc. All loose materials and any existing coatings must be removed to provide a clean, sound, dry, and absorbent surface prior to application of the Sika FerroGard 903.

3.02 Mixing and Application

- A. Apply Sika FerroGard 903 at a total minimum consumption rate 200 sf/gallon/coat by brush, roller, or low pressure spray in two coats (dependent on absorbency) for a total consumption of 100 sf./gallon.

Note: When Sika FerroGard 903 is to be applied before Sika mortars thoroughly wash down surfaces using clean water. Any white powdery residue must be removed by water jetting using adequate volume and pressure

Note: Best results are usually obtained by low pressure spray application.

Note: Between applying the subsequent coats of Sika FerroGard 903 allow the previous coats to be absorbed into the concrete and dry (approximately 2-6 hours minimum dependent on temperature and humidity).

Note: The treated area should be protected from rain or frost for a period of at least 24 hours after application of Sika FerroGard 903.

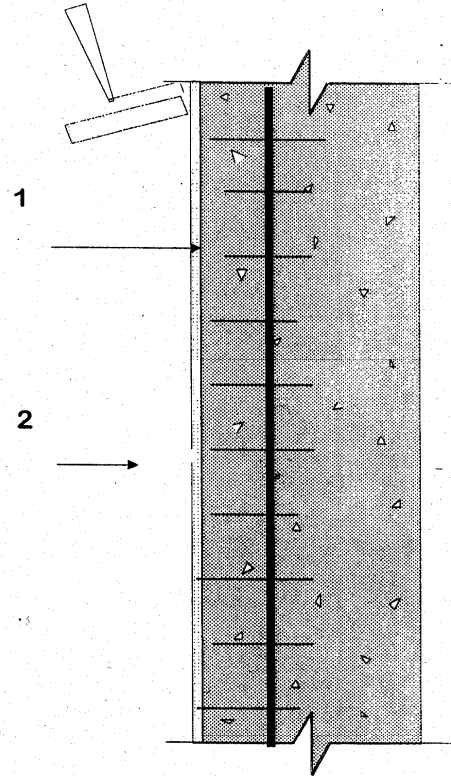
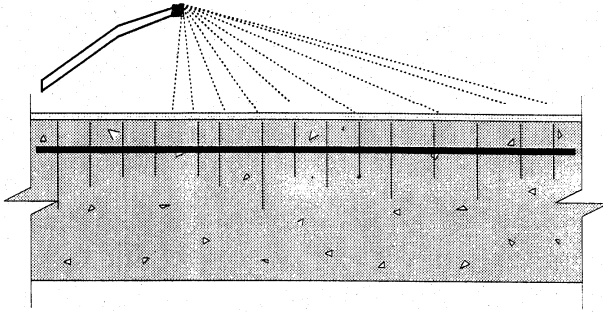
- B. Adhere to all procedures, limitations and cautions for this product in the manufacturer's current printed technical data sheet and literature.

3.05 Cleaning

- A. The material can be cleaned from tools with water.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

SC-203 Sika FerroGard® 903

Penetrating, corrosion-inhibiting
Impregnation coating



1. Substrate must be clean, sound and free of standing water.

NOTE: While residual moisture does not affect the treatment, the drier the substrate the better the penetration and protection.

2. Apply Sika FerroGard 903 by roller, brush or spray.

NOTE: When spraying, use a conventional airless spray system or hand-pressure equipment.

3. A minimum of two coats is always recommended. Waiting time between coats is 1 hour minimum.

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