Construction

Sika FerroGard® 903

Penetrating, corrosion inhibiting, impregnation coating for hardened concrete

Description	Sika FerroGard 903 is a corrosion inhibiting impregnation coating for hardened concrete surfaces. It is designed to penetrate the surface and then to diffuse in vapor or liquid form to the steel reinforcing bars embedded in the concrete. Sika FerroGard 903 forms a protective layer on the steel surface which inhibits corrosion caused by the presence of chlorides as well as by carbonation of concrete.
How it Works	Sika FerroGard 903 is a combination of amino alcohols, and organic and inorganic inhibitors that protects both the anodic and cathodic parts of the corrosion cell. This dual action effect dramatically delays the initiation of corrosion and greatly reduces the overall corrosion activity. Sika FerroGard 903 protects the embedded steel by depositing a physical barrier in the form of a protective layer on the surface of the steel reinforcement. This barrier inhibits corrosion of the steel.
Where to use	Sika FerroGard 903 is recommended for all steel-reinforced, prestressed, precast, post tensioned or marine concrete. Use of Sika FerroGard 903: ■ Steel-reinforced concrete, bridges and highways exposed to corrosive environments (deicing salts, weathering) ■ Building facades and balconies ■ Steel-reinforced concrete in or near a marine environment ■ Parking garages ■ Piers, piles, and concrete dock structures ■ As part of Sika's system approach for buildings and civil engineering structures
Advantages	Sika FerroGard 903 offers owners, specifiers, port authorities, DOTs, and engineers, a new technology in corrosion inhibition that can easily be applied to the surface of existing concrete to extend the service life of any reinforced concrete structure. ■ Protects against the harmful effects of corrosion by penetrating the surface of even the most dense concrete and diffusing to the steel to inhibit corrosion. ■ Enhances the durability of reinforced concrete. ■ Does not require concrete removal. ■ Environmentally sound. ■ Does not contain calcium nitrite. ■ Easily applied by either spray or roller to all existing reinforced concrete. ■ Can be applied to reinforced concrete that already exhibits corrosion. ■ Adds additional benefits when used prior to protective coatings in concrete restoration systems. ■ Water based for easy handling and application. ■ Not a vapor barrier; allows vapor diffusion. ■ FerroGard has been proven effective in both laboratory (ASTM G109/Cracked Beams) and field analysis. ■ ANSI/NSF Standard 61 potable water approved
Coverage	For normal concrete, application is 200 ft.²/gal. each coat. A minimum of two coats is always recommended. For dense concrete, application may exceed 300 ft.²/gal. Therefore, more than two coats may be required to achieve the **total application rate: 100 ft.²/gal.**
Packaging	5 gallon pails with spout, 55 gallon drums.

Typical Data *[at 73°F(23°C)]*

RESULTS MAY DIFFER BASED UPON STATISTICAL VARIATIONS DEPENDING UPON MIXING METHODS AND EQUIPMENT, TEMPERATURE, APPLICATION METHODS, TEST METHODS, ACTUAL SITE CONDITIONS AND CURING CONDITIONS.

Shelf life	18 months minimum in original, unopened container
Storage Conditions	Store at 40°-95°F (4°-35°C). Protect from freezing. If frozen, discard.
Color	Pale Yellow
Viscosity	15 cps
Flash Point	None (water based)
Density	1.13 (9.4 lbs./gal.)
pH	11 (±1)
Application Rate	100 ft.² /gal. total application rate

How to Use

Surface Preparation

Before applying Sika FerroGard 903 be sure the surface is clean and sound. Remove all dirt, dust, oil, grease, efflorescence or existing coatings from concrete surface by steam cleaning, waterblasting or slightly sandblasting. Allow concrete surface to dry prior to application of Sika FerroGard 903. The dryer the surface the better the penetration and effectiveness.

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Key Criteria	Performance Level	Test Method/Institute
Corrosion inhibition	FerroGard corrosion inhibitors delay the onset of corrosion and reduce the rate of corrosion by 65% versus control specimen after 1 year.	1
Penetration Rate in hardened concrete	FerroGard 903 penetrates independently of orientation (horizontal, vertical, overhead) at a rate of 1/10 to 4/5 inches (2.5 to 20 mm)per day, depending on the density of the concrete.	2
Depth of Penetration	FerroGard 903 penetrates up to 3 inches (76 mm) in 28 days.	2
Protective layer on steel	FerroGard 903 forms a protective layer on the reinforcing steel of high integrity measured at as much as100 Å in thickness.	3
Displacement of chlorides from steel surface	FerroGard 903 forms a continuous film on the reinforcing steel and displaces chloride ions from the steel surface.	3
Corrosion Rate Field Monitoring	Reduction of corrosion rates in excess of 65%.	4

Test Method/Institute:

1. Cracked Concrete Beam Test (adapted from ASTM G109).
2. Secondary Neutron Mass Spectroscopy (SNMS) / Institute for Radiochemistry, Karlsruhe (Germany), Prof. Dr. J. Goschnick.
3. X-ray Photon Spectroscopy (XPS) and Secondary Ion Mass Spectroscopy (SIMS) / Brundle and Associates, San Jose, CA and University Heidelberg (Germany), Prof. M. Grunze.
4. Performance of Corrosion Inhibitors in Practice, Graeme Jones, C-Probe Technologies Ltd., 2000.

Application

Sika FerroGard 903 is applied by roller, brush or spray on concrete surfaces. When spraying, use a conventional airless spray system or hand-pressure equipment. **A minimum of two coats is always recommended.** Dense substrates may require more coats. Waiting time between coats of Sika FerroGard 903 is at least 1 hour. Allow a minimum of one day to allow Sika FerroGard 903 to dry and penetrate.

When Sika FerroGard 903 is used prior to the application of a repair mortar, concrete overlay, protective coating, Sikafloor system or any other application, care must be taken to remove any residue remaining on the surface from the application of Sika FerroGard 903. Clean the substrate in such a manner (i.e. push the water in one direction away and off from the surface to be overcoated) to completely remove any residue. Horizontal surfaces require pressure washing (2,000 psi minimum) to remove the residue. Vertical surfaces may be rinsed with water or pressure washed. The use of Sika Armatec 110 EpoCem as a bonding agent prior to the application of repair mortars or concrete overlays is suggested. Drying times depend on environmental conditions, absorbency of the substrate and maximum recommended moisture content for the subsequently applied system.

Limitations

- Minimum ambient and substrate temperatures 35°F.
- Do not apply when temperature is expected to fall below 35°F within 12 hours.
- If the applied surfaces will be submerged after the application of Sika FerroGard 903, a waterproofing coating must be applied prior to submersion.
- Substrate should be as dry as possible prior to the application.
- Protect glass, wood, brick, galvanized steel, copper and exposed aluminum during the application.
- Maximum chloride content of concrete structures intended to be treated with Sika FerroGard 903 is 6 lbs./y^3 (measured at the level of the reinforcing steel). For levels up to 10 lbs./y^3, consult technical service.

Caution

Irritant - Skin and eye irritant. Vapors may cause respiratory tract irritation. Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. Remove contaminated clothing.

First Aid

In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician immediately. For respiratory problems, remove person to fresh air. Wash clothing before re-use.

Clean Up

In case of spills or leaks, wear suitable protective equipment, contain spill, collect with absorbent material, and transfer to a suitable container. Ventilate area. Avoid contact. Dispose of in accordance with current, applicable local, state, and federal regulations.

Visit our website at www.sikausa.com **1-800-933-SIKA NATIONWIDE**

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