

Sika Ferrogard® -903

Corrosion Inhibiting Impregnation

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| Product Description | <p>Sika Ferrogard® -903 is a surface applied mixed corrosion inhibiting, designed for use as an impregnation of steel reinforced concrete.</p> <p>Sika Ferrogard® -903 is based on organic compounds. Sika® FerroGard® -903 penetrates the concrete and forms a protective monomolecular layer on the surface of the reinforcing steel.</p> <p>Protection with Sika® FerroGard®-903 both delays the start of corrosion and reduces the corrosion rate. Corrosion protection with Sika® FerroGard® -903 increases the service and maintenance life cycles by up to 15 years when used as a part of a complete Sika Concrete Repair and Protection System.</p> |
| Uses | <ul style="list-style-type: none">■ For the corrosion protection of steel reinforced concrete structures above and below the ground■ As a corrosion control treatment for undamaged reinforced concrete where reinforcing steel is corroding, or is at risk from corrosion due to the effects of carbonated or chloride contaminated concrete.■ Sika® Ferrogard®-903 is especially suitable for extending the service life of aesthetically valuable fair-faced concrete surfaces such as historic structures. |
| Characteristics / Advantages | <ul style="list-style-type: none">■ Complies to principle 11 of EN 1504-9 method 11.3 (applying inhibitor to the concrete).■ Does not change the appearance of the concrete structure■ Does not alter the water vapour diffusion properties of concrete.■ Long term protection and durability■ Can be applied to the surface of existing repairs and to surrounding areas to prevent the development of incipient anodes■ Protects both, cathodic (principle 9) and anodic (principle 11) zones of reinforcing steel■ Can be applied where other repair/prevention options are not viable■ Economical extension of the service life of reinforced concrete structures.■ Easy, economical application, renewable■ Can be used as part of a simple yet effective concrete repair and protection system■ Penetration depth can be tested on site using the Sika "Qualitative Analysis Test"- refer to your local Technical Service Department for details |
| Test Certificates | <ul style="list-style-type: none">■ BRE, The use of surface applied FerroGard 903+ corrosion inhibitor to delay the onset of chloride induced corrosion in hardened concrete, BRE Client Report No. 224-346, 2005■ Mott MacDonald, Evaluation of Sika FerroGard, Ref. 26'063/001 Rev. A April 1996.■ SAMARIS (Sustainable and Advanced Materials for Road Infrastructure) – Final Report, Deliverables D17a, D17b, D21 & D25a, Copenhagen, 2006■ Mulheron, M., Nwaubani, S.O. , Corrosion Inhibitors for High Performance Reinforced Concrete Structures, University of Surrey, 1999■ C-Probe Systems Ltd., Performance of Corrosion Inhibitors in Practice, 2000 <p>Sika Ferrogard® -903 has been tested as per SCAQMD Rule 1168' Result VOC Content < 25 g/L</p> |
| Product Data | |
| Colour | Transparent liquid. |
| Packaging | 5 kg and 20 kg pails 200 kg drums Bulk Tanks packing available upon request |
| Storage/ Shelf Life | Stored in unopened original containers in cool conditions, shelf life is at least 12 months from date of production. |

Construction



Technical Data

Density (20°C) ~1.04 kg/l

Viscosity (20°C) ~ 24 mPas.s

pH-value ~10

Penetration Rate Site surveys and experimental tests have shown that Sika® FerroGard®-903 can penetrate through concrete at a rate of a few millimetres per day and to a depth of approximately 25 to 40 mm in 1 month. This penetration rate can be faster or slower dependent on the porosity of the concrete. Sika® FerroGard®-903 penetrates through both liquid and vapour phase diffusion mechanisms.

Note:

If after application of Sika® FerroGard®-903, the concrete surface is coated with protective coatings (cement based, acrylic or impregnation) or hydrophobic impregnation, the rate of diffusion of the inhibitor is reduced but not stopped as the mechanism of diffusion liaises then only on the vapour phase.

As concrete quality and permeability differ, it is recommended to perform some preliminary depth profile testing by the Sika "Qualitative Analysis" to assess the specific penetration rate.

Application Data

Consumption

Total consumption 0.300 - 0.500 kg/m².

Minimum total quantity to be applied not less than 0.300 kg/m².

To assess project requirements, consumption and depth of penetration shall be checked on site using the Sika "Qualitative Analysis" – refer to the relevant method statement.

Substrate Quality

The concrete shall be free from dust, loose material, surface contamination, existing renders, laitance, coatings, oil and other materials which reduce or prevent penetration.

If the substrate is to be over-coated, the surface profile shall be sufficient to provide the required adhesion

Substrate Preparation

Delaminated, weak, damaged and deteriorated concrete shall be repaired using SikaTop® or Sika repair mortars.

For fair-faced concrete or concrete to be further over-coated by coatings or hydrophobic impregnation, water blast the concrete surface with pressure (up to 18 MPa – 180 bars)

For concrete surface to be further over-coated by cementitious material, roughen the surface using suitable abrasive blast cleaning techniques or high pressure water blasting (up to 60 MPa – 600 bars).

For optimum penetration the substrate shall be allowed to dry out prior to the application of Sika® FerroGard®-903.

Application

Application Temperature Substrate and ambient temperature min + 5 °C, max. + 35 °C.

Application Procedures The number of coats to be applied depends on the absorbency of the substrate. Normally 3 - 5 coats are needed to apply a total of 400 gr/m² which are required.

Application Sika Ferrogard® -903 is supplied ready for use and may not be diluted. The product must be applied to saturation by brush, roller or low pressure hand-spray equipment. If possible do not apply in direct sunshine.

Application Method / Tools Sika® FerroGard®-903 shall be applied to saturation by brush, roller, low pressure or airless spray equipment.

After the application of the last coat, as soon as the surface become mat, do a low pressure water cleaning (water hose).

The day after application, the treated surfaces shall be cleaned by pressure washing (~ 10 MPa – 100 bars).

**Waiting Time /
Overcoatability**

Number of coats:

This is dependent on the porosity and moisture content of the substrate and the weather conditions.

Vertical surfaces:

Normally, 2 to 3 coats are necessary to achieve the required consumption. In case of dense concrete, additional coats may be required.

Horizontal Surfaces:

Saturate surface by 1-2 coats, take care to avoid ponding.

Waiting time between coats:

This is dependent on the porosity of the concrete and the weather conditions, normally 1-6 hours. Allow the surface to dry out between coats to a matt damp appearance.

OVERCOATING:

When Sika® FerroGard®-903 is used within a patch repair or before a cementitious overlay, Sika repair or overlay system can then be used. Standard preparation (prewetting) shall then be applied.

When using a smoothing coat/pore filler over surface treated with Sika® FerroGard®-903, products such as SikaTop®-121, Sikagard®-720 EpoCem® or SikaTop®-Seal 107, etc can be used.

Cementitious levelling mortars shall only be used if there is a well prepared open textured surface that is completely cleaned of residue.

If other Sika products are to be used, site trials are recommended to confirm preparation and suitability

If non Sika products are to be used, please contact the manufacturer technical department for confirmation of compatibility with Sika® FerroGard®-903+or undertake compatibility and adhesion site trials.

Cleaning

Use water to clean implements

Limitations

Do not apply when rain or frost is expected.

The following construction materials have to be protected from splashes of Sika® FerroGard®-903+ during application:

- Aluminium, copper, galvanised steel, marble and other similar natural stone
Visible concrete defects (spalling, cracks etc) must be repaired using conventional repair methods (removal of delaminating or loose concrete, treatment of reinforcement, reprofiling etc.)

Alternatively to the method described above, Sika® FerroGard®-903 can be applied **after** repair works (but **not** overlay) has been carried out (after hardening of the repair material) – freshly repaired area might not need to be treated with the inhibitor. If this is nevertheless done, lower diffusion is then expected at the zones that were repaired.

Typical maximum chloride content at rebar level is 1% by weight of cement of free chloride ions (corresponding to 1.7% of sodium chloride). Above this limit, according to site conditions and level of corrosion activities, increased consumption of Sika® FerroGard®-903 can be considered. Trials and corrosion rate monitoring to confirm consumption and effectiveness shall be carried out.

To provide efficient protection, concentration of Sika® FerroGard®-903 at rebar level shall be minimum 100ppm when measured by chromatography ionic – detailed method available upon request.

Do not apply in tidal zones or to substrates saturated with water.

Avoid application in direct sun and/or strong wind and/or rain.

Do not apply to concrete in direct contact with drinking water.

Depending on substrate conditions, the application of Sika® FerroGard®-903 may lead to a slight darkening of the surface. Proceed with preliminary testing.

All surface treatments are to be carried out using cold potable water.

Construction

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| Curing Details | Sika® FerroGard®-903+ does not require any special curing but must be protected from rain for at least 4 hours |
| Safety Instructions | |
| Ecology | The product is a light water contaminant. Do not dispose of into soil or waters but according to local regulations. |
| Transport | Non-hazardous |
| Safety precautions | Only use in well ventilated areas. Wear goggles and rubber gloves. |
| Toxicity | Non-toxic under the relevant health and safety codes. |
| Legal notes | The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request. |



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