

PRODUCT DATA SHEET

Sika® FerroGard®-440 CC

INTERCONNECTED GALVANIC ANODE SYSTEM THAT ACTS TO PREVENT CORROSION OF REINFORCING STEEL IN CONCRETE

DESCRIPTION

Sika® FerroGard®-440 CC is a galvanic anode encapsulated in an activating mortar matrix. The anodes are designed to be connected in series and are suitable for both patch repair and new construction applications. Sika® FerroGard®-440 CC anodes are placed along the perimeter of the repair area and fixed to the reinforcement prior the application of a concrete repair system. The reinforcement outside the repaired area is at greatest risk owing to the passive condition of the reinforcement within the repaired area.

Sika® FerroGard®-440 CC can also be placed at specific positions on steel reinforcement when used in new construction to prevent corrosion in marine environments.

Once installed, the Sika® FerroGard®-440 CC anodes will corrode preferentially to the surrounding reinforcement, offering protection against corrosion damage.

USES

Sika® FerroGard®-440 CC may only be used by experienced professionals.

- Controlling the incipient anode effect by electrically balancing the anodic and cathodic areas of reinforcement
- Targeted treatment applied to concrete repaired areas to prevent incipient corrosion damage
- For reinforced concrete structures such as bridges, car parks, coastal structures, industrial structures and residential high rise
- Coastal reinforced structures both in and above the tidal zones
- Corrosion prevention in new construction (pourable concrete or shotcrete, spray mortar)

CHARACTERISTICS / ADVANTAGES

- Sika® FerroGard®-440 CC anodes corrode preferentially to the surrounding reinforcement, offering protection from further corrosion damage
- Suitable for new build and repair applications
- Protect against incipient anode effect outside of repaired area
- Corrosion resistant connection system. Mitigates future corrosion risk
- Strengthens passive film on reinforcement
- No long term maintenance costs
- Quick installation
- Prevents electrical shorts on installation
- Measurable performance - Performance can be monitored
- Cost effective corrosion control solution
- Conform to the latest EN 12696:2016 standard, when designed appropriately

PRODUCT INFORMATION

Chemical Base	Zinc alloy compound and mortar casing of pH >14
Packaging	25 anodes per box
Appearance / Colour	Zinc anode core surrounded by an activating mortar casing with an integral titanium tie wire on one side.
Shelf Life	5 years from date of production
Storage Conditions	Product must be stores in original, unopened and undamaged sealed packaging in dry conditions at temperature between +5°C and +30°C. Always refer to packaging. Do not allow contact with oxidizing materials.
Length	~ 235 mm
Diameter	~ 32 mm
Zinc Weight	~ 370 g

TECHNICAL INFORMATION

Current Density	> 0,2–3 mA/m ² * in corrosive environment. * Dependent on local conditions, including chloride concentration, concrete properties, humidity and temperature.
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APPLICATION INFORMATION

Ambient Air Temperature	+5 °C min
Substrate Temperature	+5 °C min

SYSTEM INFORMATION

System Structure

- Sika® FerroGard®-440 CC anodes installed in series
- Sika® FerroGard® XLPE Coated Titanium Wire
- Sika® FerroGard® Monitoring Enclosure (optional)
- Reference Anode Sika® FerroGard® MN 15 RE (optional)

BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

FURTHER DOCUMENTS

Sika Method Statement: "Corrosion Control using Discrete Galvanic Anodes Sika® FerroGard®-440 Patch"

LIMITATIONS

In order that suitable current flow and lifetime, be achieved from the Sika® FerroGard®-440 CC anode, certain practical considerations must be taken into consideration:

- The concrete or repair material cover for Sika® FerroGard®-440 CC unit must be a minimum depth of 20 mm and 50mm in coastal structures
- Concrete repairs must be undertaken in accordance to an acknowledged national standard such as EN 1504
- When placed in existing repair area (or patch repair), resistivity of repair material has to be between 50-200% of the parent concrete's
- Any discontinuous reinforcement must be electrically bonded to ensure continuity
- The time to achieve passivity will be dependent on-site conditions. Depolarisation of treated reinforcement will be slower in moist conditions
- Design of the galvanic protection system must be undertaken by an experienced qualified corrosion design engineer
- Installation must be carried out in accordance with engineer's design and specification

ECOLOGY HEALTH AND SAFETY

REGULATION (EC) NO 1907/2006 - REACH

This product is an article as defined in article 3 of regulation (EC) No 1907/2006 (REACH). It contains no substances which are intended to be released from the article under normal or reasonably foreseeable conditions of use. A safety data sheet following article 31 of the same regulation is not needed to bring the product to the market, to transport or to use it. For safe use follow the instructions given in this product data sheet. Based on our current knowledge, this product does not contain SVHC (substances of very high concern) as listed in Annex XIV of the REACH regulation or on the candidate list published by the European Chemicals Agency in concentrations above 0.1 % (w/w)

APPLICATION INSTRUCTIONS

APPLICATION

Strictly follow installation procedures as defined in method statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

Reference must be made to the Sika Method Statement: "Corrosion Control using Discrete Galvanic Anodes Sika® FerroGard®-440 Patch" for further details. This is summarised below:

Sika® FerroGard®-440 CC anodes are typically applied at a spacing of 350mm - 800mm. The units are installed in a grid configuration to concrete slabs, and in rows along the length of beams or columns, typically in strings of up to 40 interconnected units.

Immerse the Sika® FerroGard®-440 CC units in water for not more than 10 minutes. (Note: The water will be absorbed rapidly into the bedding harden mortar of the anodes – DO NOT soak for longer than 10 minutes as this may be detrimental to Sika® FerroGard®-440 CC performance). Remove the anodes and allow the surface water to escape.

Attach the individual Sika® FerroGard®-440 CC units to the side or rear of the exposed reinforcing bars using the plastic zip ties provided. Connect the units to the feeder wire using the polymeric screw connectors provided. Tighten each screw connector using a ring spanner and twist excess wire from the Sika® FerroGard®-440 CC unit around the feeder wire to ensure continuity. Using steel rivets, connect the feeder wire at both ends of each string of anodes to the exposed steel.

Electrical continuity of the Sika® FerroGard®-440 CC anodes to the feeder wire, and the feeder wire to the reinforcing steel, shall be confirmed.

The repair shall be reinstated, or the concrete poured (or shotcrete/mortar to spray) for new constructions, ensuring that the Sika® FerroGard®-440 CC units are fully encased.

The Sika® FerroGard®-440 CC units shall be encased in a repair mortar or concrete ensuring complete coverage of the anode surface. The resistivity of the patch repair material or concrete should be in the range 50-200% of the parent concrete under the same conditions; if the resistivity is outside this range then a bridging mortar of low resistivity shall be applied between the anode and the edge of the patch.

Only repair mortar and concrete (or shotcrete) with a resistivity lower than 20'000 Ω-cm shall be used to repair the concrete and encase the Sika® FerroGard®-440 CC anodes. If the repair design requires a material with high resistivity, encase the anodes and bridge the area between the anodes and the existing concrete with a low resistivity mortar and after hardening con-

tinue to fill the repair area with the design repair mortar.

The Sika® FerroGard®-440 CC anode installation can be monitored using half-cell potential surveys, current outputs and reinforcement corrosion rate measurements.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

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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Product Data Sheet

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