

PRODUCT DATA SHEET

Sika® FerroGard®-310 Duo

HYBRID ANODE FOR CORROSION MITIGATION

DESCRIPTION

Sika® FerroGard®-310 Duo is a zinc based discrete anode which is fixed to corroding reinforcement steel to mitigate chloride and carbonation induced corrosion in reinforced concrete structures.

Sika® FerroGard®-310 Duo is a dual technology anode based on the use of a galvanic anode in both an impressed and sacrificial anode function. The complete anode component consists of a cylindrical zinc core covered in an activated coating, separate white spacers and a titanium connecting wire.

The anode works in 2 phases:

1st phase - an impressed current is driven from the Sika® FerroGard®-310 Duo anode to the steel using a temporary power supply. During this stage, the reinforcement's passive film is strengthened and aggressive ions are drawn away.

2nd phase - at the end of the 1st phase the power is removed. The anode then acts as a long term sacrificial anode preventing further corrosion.

USES

Sika® FerroGard®-310 Duo may only be used by experienced professionals.

- **ONLY TO BE APPLIED BY A SIKA NEW ZEALAND APPROVED CONTRACTOR**
- Targeted for global protection of reinforced concrete structures suffering corrosion damage induced by chlorides and/or carbonation.
- For reinforced and pre-stressed concrete structures such as bridges, car parks, coastal structures, industrial structures and residential high rise.

- The treatment of prestressed elements, such as bridge beams. This is a unique feature of Sika® FerroGard® Duo anode system as there is no risk of hydrogen embrittlement when designed properly.

CHARACTERISTICS / ADVANTAGES

- No long term power supply needed.
- A variety of sizes to suit the structure and life expectancy.
- Initially delivers an impressed current using a temporary power supply.
- Creates passive environment during impressed current activation and draws aggressive ions to the anode and the passive film is strengthened around the reinforcement.
- Acts as a sacrificial anode without the requirement for an external power supply.
- No long term maintenance.
- Further passivating charge can be applied if required.
- Minimal long term costs.
- Performance can be monitored if required.
- Cost effective long term durable corrosion control solution.
- No risk of hydrogen embrittlement (Design dependent).

PRODUCT INFORMATION

Chemical Base	Zinc compound
Packaging	25 anodes per box
Appearance / Colour	Anodes fitted with titanium wire

Shelf Life	5 years from the date of production
Storage Conditions	Product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging. Do not allow contact with oxidizing materials.
Length	37 mm
Diameter	18 mm
Zinc Weight	60 g

TECHNICAL INFORMATION

Charge Capacity	>125 to 1000 kC* *Dependent on local conditions, including chloride concentration, concrete properties, humidity and temperature.
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SYSTEM INFORMATION

System Structure	Typically density of 3–9 units per m ² . Other sizes of anode are available with different zinc contents and profile:										
	<table border="1"> <thead> <tr> <th>Name</th> <th>Zinc content</th> </tr> </thead> <tbody> <tr> <td>Sika® FerroGard®-315 Duo</td> <td>120 g</td> </tr> <tr> <td>Sika® FerroGard®-320 Duo</td> <td>190 g</td> </tr> <tr> <td>Sika® FerroGard®-325 Duo</td> <td>270 g</td> </tr> <tr> <td>Sika® FerroGard®-330 Duo</td> <td>380 g</td> </tr> </tbody> </table>	Name	Zinc content	Sika® FerroGard®-315 Duo	120 g	Sika® FerroGard®-320 Duo	190 g	Sika® FerroGard®-325 Duo	270 g	Sika® FerroGard®-330 Duo	380 g
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APPLICATION INFORMATION

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

APPLICATION INSTRUCTIONS

APPLICATION

Reference should also be made to the full Method Statement.

Sika® FerroGard®-310 Duo anodes are installed following guidelines in EN 12696:2012 and CEN/TS 14038-2:2010 (E).

The anodes are typically positioned at a density of 4–9 /m² of surface concrete. Spacing between anodes: 350–500 mm.

Install into pre-drilled 30 mm diameter holes (depth according to length of anode + 30 mm) using Sika® FerroGard®-300 DuoCrete embedding mortar.

Electrically connect each anode to a feeder wire which runs to the temporary power supply for the impressed current stage of the treatment (typically 1 week). During this period the anodes will distribute ~50–500 kC/m² steel surface.

After 1 week remove the feeder wire from the temporary power supply and connect to the reinforcement steel. In this final stage the anodes operate in a galvanic mode, maintaining the steel in a passive state. The size of each treated area on a structure may be varied to suit the client's requirements.

LIMITATIONS

In order that suitable current flow and longevity can be achieved from the Sika® FerroGard®-310 Duo anodes, certain practical considerations should be taken into account.

- The patch repair material cover for Sika® FerroGard®-310 Duo unit must be a minimum depth of 20 mm.
- When installed in a patch repair, the resistivity of the repair material should be in the range 50–200 % of the parent concrete.
- Any discontinuous steel should be either electrically bonded to or electrically isolated from the system negative.
- Any cracks or delamination in the concrete which affect ionic current flow will affect performance of the Sika® FerroGard®-310 Duo anodes and should be pre-treated before anode installation.
- During installation, electrical shorts between the anodes and other metal components must be avoided.
- The time to achieve passivity will be dependent on site conditions.
- Depolarisation of treated steel will be slower in moist conditions.
- Design of the galvanic protection system should be undertaken by an experienced qualified corrosion design engineer.
- Installation should be carried out in accordance with engineers design and specification.

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.

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.

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)

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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

Sika (NZ) Limited

85-91 Patiki Road
Avondale, Auckland 1026
New Zealand
0800 745 269
www.sika.co.nz



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