

## PRODUCT DATA SHEET

# Sika® FerroGard®-315 Duo

### HYBRID ANODE FOR CORROSION MITIGATION

#### DESCRIPTION

Sika® FerroGard®-315 Duo is a hybrid anode based on a dual technology which combines Impressed Current Cathodic Protection and Galvanic Cathodic Protection systems. Sika® FerroGard®-315 Duo discrete anodes are placed into sound but chloride contaminated concrete outside of any concrete repaired areas.

The anodes work in 2 phases:

1<sup>st</sup> phase - an impressed current is driven from the Sika® FerroGard®-315 Duo anodes to the steel using a temporary power supply. During this stage, the reinforcement's passive film is strengthened and aggressive ions are drawn away.

2<sup>nd</sup> phase - at the end of the 1<sup>st</sup> phase the power is removed. The anodes then act as a long-term sacrificial anode preventing further corrosion.

#### USES

Sika® FerroGard®-315 Duo may only be used by experienced professionals.

- 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
- 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
- Cost effective long term durable corrosion control solution
- No risk of hydrogen embrittlement (Design dependent)

## PRODUCT INFORMATION

<b>Composition</b>	Zinc compound
<b>Packaging</b>	25 anodes per box, vacuum packed in separate pouche
<b>Appearance / Colour</b>	Cylindrical zinc core partial covered in an activated coating, separate white spacers and an integral titanium connecting wire
<b>Shelf life</b>	5 years from the date of production
<b>Storage conditions</b>	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. Pouches should only be opened when product is required. Any part used pouches should be re-sealed.
<b>Length</b>	~ 80 mm
<b>Diameter</b>	~ 18 mm
<b>Zinc Weight</b>	~ 120 g
<b>Charge Capacity</b>	> 125 to 1000 kC* *Dependent on local conditions, including chloride concentration, concrete properties, humidity and temperature.

## SYSTEMS

<b>System Structure</b>	Other anode sizes are available with different zinc contents and profiles:										
	<table><thead><tr><th><b>Name</b></th><th><b>Zinc content</b></th></tr></thead><tbody><tr><td>Sika® FerroGard®-310 Duo</td><td>~ 65 g</td></tr><tr><td>Sika® FerroGard®-320 Duo</td><td>~ 180 g</td></tr><tr><td>Sika® FerroGard®-325 Duo</td><td>~ 275 g</td></tr><tr><td>Sika® FerroGard®-330 Duo</td><td>~ 365 g</td></tr></tbody></table>	<b>Name</b>	<b>Zinc content</b>	Sika® FerroGard®-310 Duo	~ 65 g	Sika® FerroGard®-320 Duo	~ 180 g	Sika® FerroGard®-325 Duo	~ 275 g	Sika® FerroGard®-330 Duo	~ 365 g
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## APPLICATION INFORMATION

<b>Hole Dimension</b>	Depth	110 mm
	Diameter	25 mm
<b>Ambient Air Temperature</b>	+5 °C min	
<b>Substrate Temperature</b>	+5 °C min	

# 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 Sika® FerroGard®-300s Duo Hybrid Galvanic Anodes" for further details. This is summarised below:

Sika® FerroGard®-315 Duo anodes are installed following the guidelines in EN 12696:2016 and CEN/TS 14038-2:2010 (E).

The anodes are typically positioned at a density of 4–9 /m<sup>2</sup> of surface concrete. Spacing between anodes: 300–500 mm.

Install into pre-drilled (25 mm diameter holes with a depth of ~110 mm) previously filled with Sika® FerroGard®-300 DuoCrete activating and embedment mortar to completely encapsulate the anode.

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/m<sup>2</sup> steel surface.

After ~1 week (depending on site measurements), 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.

## FURTHER INFORMATION

Sika Method Statement: "Corrosion Control using Sika® FerroGard®-300s Duo Hybrid Galvanic Anodes"

## IMPORTANT CONSIDERATIONS

In order that suitable current flow and longevity can be achieved from the Sika® FerroGard®-315 Duo anodes, certain practical considerations must be taken into account.

- The concrete repair material cover for Sika® FerroGard®-315 Duo unit must be a minimum depth of 20 mm
- Concrete repairs must be undertaken in accordance to an acknowledged national standard such as EN 1504
- Any discontinuous steel must 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®-315 Duo anodes and must 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 must be undertaken by an experienced qualified corrosion design engineer.
- Installation must be carried out in accordance with engineer's 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.

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### Product Data Sheet

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