

PRODUCT DATA SHEET

Sika® Ebonex®

DISCRETE IMPRESSED CURRENT CATHODIC PROTECTION ANODES

PRODUCT DESCRIPTION

Sika® Ebonex® is a discrete impressed current cathodic protection anode, specifically designed to protect reinforced concrete structures and steel framed buildings. The anode utilizes an innovative ceramic / titanium composite, combined with an integral gas venting system. The system includes Sika® Ebofix Grout, a high density, acid buffering grout used for long term performance. Sika® Ebonex® discrete anodes are available in a wide range of sizes to provide excellent design flexibility.

USES

- Bridges
- Tunnels
- Multistorey Car parks
- Heritage Structures
- Marine structures
- Steel framed buildings

CHARACTERISTICS / ADVANTAGES

- Embedded installation - provides discrete installation, with no added dead weight loading or increase to physical dimensions of the structure.
- Gas Venting – no build-up of anodic gases can be installed under membranes, coatings and strengthening systems.
- Economical - low cost method of providing galvanic corrosion prevention to extend the initiation of reinforcement corrosion around patch repairs.
- Long lasting – Longest life expectancy of any discrete CP - in excess of 25 - 50 years depending upon design.
- Highest level of protection – capable of satisfying the 100mV depolarization criteria for effective cathodic protection.
- Proven technology – field verified performance.
- Deep installation – address multi levels of steel and difficult access.
- Cost Competitive – Compared to other types of ICCP anodes.
- High operating current – suitable for use in areas of high density steel.
- Versatile – can be used in many sectors within the construction industry

PRODUCT INFORMATION

Packaging	Packaging varies depending upon the anode size
Shelf Life	12 months
Storage Conditions	Store properly in original unopened, sealed and undamaged packaging in dry and cool conditions.

TECHNICAL INFORMATION

Design Considerations

Design Criteria

Sika® Ebonex® is a discrete cathodic protection system providing long term durability to both new and existing structures under highly aggressive conditions. In line with other cathodic protection systems Sika® Ebonex® discrete anode systems should be designed by corrosion specialists and installed by knowledgeable and experienced contractors.

Anode Diameter	Current rating per 100mm anode length * (mA)
8mm Ebonex	2.0
10mm Ebonex	2.8
12mm Ebonex plus, 18mm Ebonex	5.1
18mm Ebonex plus, 28mm Ebonex	7.9

Level of Protection

Sika® Ebonex® works by distributing sufficient electrical current to overcome ongoing corrosion in the structure. Sika® Ebonex® anodes are connected to an external DC power supply, which provides the electrical current that mitigates corrosion activity. The anodes are connected to the positive terminal.

According to industry standards, an ICCP system is considered to be providing cathodic protection when the steel is sufficiently polarized to result in a 100mV depolarisation.

SYSTEM INFORMATION

System Structure

- Sika® Ebonex® Grout: Grout formulated for Sika® Ebonex Anodes
- Sika® Ebonex® Titanium Wire pack: Titanium feeder wire 40 m x 1.5 mm dia
- Sika® Ebonex® Titanium Crimps: 80 per pack
- Sika® Ebonex® Venting pack: 20m PVC tube plus 40 connecting T-Pieces
- Sika® Crimping Tool: Tool for crimping titanium crimps

APPLICATION INSTRUCTIONS

APPLICATION

Preparation

Sika® Ebonex® discrete anodes are installed in pre-drilled holes 4 to 8 mm larger than the nominal anode diameter and typically no further than 600 mm apart. The holes and Sika® Ebonex® discrete anodes should be located to minimize their proximity to the steel reinforcement in order to provide an even current distribution to the steel within the local vicinity.

Cut a slot of minimum 10 mm depth and 8 mm width into the concrete or mortar joint between the holes.

This cut will accommodate the titanium feeder wire interconnecting the Sika® Ebonex® anodes, and the gas-ventilation tubing.

A 3 mm cut can be used if the venting pipes are not interconnected. Prior to application the holes and cuts

should be blown or vacuum cleaned of all debris and pre-soaked with water.

Sika® Ebofix Grout:

Sika® Ebofix Grout should be mixed with a slow speed drill (400-500 rpm) and paddle mixer.

Place between 3.0-4.0 litres of potable water into a suitable mixing container, add one full 10 kg bag of Sika® Ebofix Grout and mix for three minutes until fully homogeneous.

Application Method

- Standing water should be removed from the drilled anode hole and the Sika® Ebofix grout placed to the rear of the hole to avoid air entrapment, ensuring sufficient grout is placed to cover the entire length of the active Sika® Ebonex® discrete anode once installed. The thixotropic nature of Sika® grout will prevent significant flow from vertical and overhead holes.
- Wet each Sika® Ebonex® anode with clean water, but

do not immerse for more than 10 seconds, before gently inserting into the hole. Ensure the vent pipe is unobstructed and that sufficient tail wire remains exposed to enable connection with the feeder wire.

- Place the Sika® Ebonex® grout within 30 minutes of mixing to gain benefit of the expansion system and allow to cure for a minimum of 24 hours, without physical disturbance. When cured, the open end of the gas vent network can be directed to a well-ventilated location.
- Connect strings of Sika® Ebonex® discrete anodes together as recommended by the CP design engineer using coated or non-coated titanium feeder wire and electrical connectors or titanium crimp connectors.
- All wire jointing requires the use of titanium metal crimps, secured using an appropriate crimping tool.
- After connections have been made continuity should be tested with a resistance meter. Any reading found to have a resistance greater than 1 ohm requires re-crimping the connection.
- When the integrity of the connection is established the tail of each Sika® Ebonex® discrete anode can be gently bent, thus settling the wire into the saw cut groove.
- The cut is filled with Sika® Ebofix grout or a Sika® R4 or R3 cementitious mortar, and left undisturbed for a minimum of 4 days before connecting to the power system.

LIMITATIONS

In chloride contaminated structures, particular attention should be paid to the control of applied voltage. Potentials greater than 7 volts should not be applied to the titanium connecting wires. Performance of the Sika® Ebonex® discrete anode is dependent upon the correct design, installation and maintenance of the cathodic protection system. For further information consult Sika® Ltd

VALUE BASE

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.

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ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

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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