



PRODUCT DATA SHEET

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CSC Master Format™ 03 01 20
MAINTENANCE OF CONCRETE REINFORCING

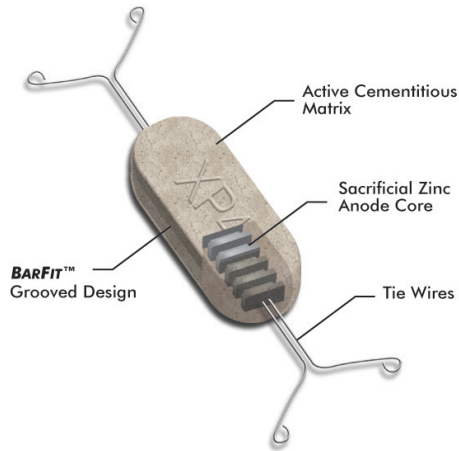
Sika® Galvashield® XP Product Line

EMBEDDED GALVANIC ANODES WITH 2G TECHNOLOGY™

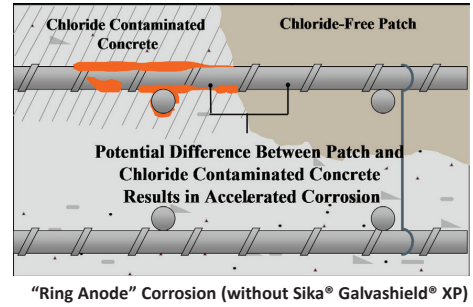
Description	The Sika® Galvashield® XP range of embedded galvanic anodes utilize an innovative zinc anode core design surrounded by an enhanced formulated cement-based mortar to provide corrosion mitigation to reinforced concrete structures. The anodes are alkali-activated (Type A) with an internal pH of 14 or greater to keep the zinc active over the life of the anode while being non-corrosive to reinforcing steel. The anodes utilize 2G Technology™ to provide higher current output. Once installed, the zinc anode corrodes preferentially to the adjacent reinforcing steel, thereby providing galvanic corrosion prevention or corrosion control.
Where to Use	<ul style="list-style-type: none"> ▪ To mitigate incipient anode formation (halo effect) in patch repair. ▪ Bridge widening and other structure modifications. ▪ Slab replacements, expansion joint repairs and other interfaces between new and existing concrete. ▪ Repair of prestressed and post-tensioned concrete. ▪ Chloride contaminated or carbonated concrete. ▪ Repair of structures with epoxy-coated rebar.
Advantages	<ul style="list-style-type: none"> ▪ Proven technology: Sika® Galvashield® anodes have an extensive 10+ year track record in the field and have received British Board of Agrément (BBA) approval. ▪ Type A anode: Alkali-activated to maintain activity of zinc while being non-corrosive to reinforcing steel. ▪ 2G Technology™: Provides enhanced current output and protection. ▪ Cast zinc core: Provides high anode utilization in addition to a secure long-term connection between the zinc and the lead wires. ▪ Integral steel lead wires: Allows for quick and convenient anode installation. Provides dependable steel-to-steel contact with no intermediate materials such as galvanizing (which can corrode over time) that may compromise the long-term electrical connection. ▪ BarFit™ design: Grooved edges on Galvashield® XP2 and XP4 anodes facilitate the positioning and optimize the contact between the anode and the rebar. ▪ Economical: Provides localized protection where it is needed the most, at the interface of the repair and the remaining contaminated concrete. ▪ Versatile: Can be used for both conventionally reinforced and prestressed or post-tensioned concrete. ▪ Low maintenance: Requires no external power source or system monitoring. ▪ Long lasting: 10 to 20 year service life* reduces the need for future repairs. <p>*As with all galvanic protection systems, service life and performance is dependent upon a number of factors including reinforcing steel density, concrete conductivity, chloride concentration, humidity and anode spacing.</p>

Specification Clause Embedded galvanic anodes shall be pre-manufactured with [add zinc mass] of zinc in compliance with ASTM B6 Special High Grade zinc casted around a pair of steel tie wires in compliance with bright annealed ASTM A82 and encased in a highly alkaline cementitious shell with a pH of 14 or greater. The cementitious shell shall contain no added sulfate nor shall it contain chloride, bromide or other constituents that are corrosive to reinforcing steel. Anodes shall be supplied with integral unspliced wires with loop ties for tying to the reinforcing steel.

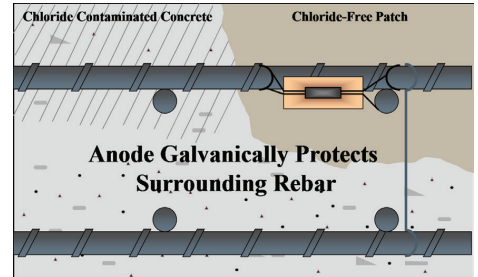
Level of Protection	Description	Sika® Galvashield® XP/XPT	Sika® Galvashield® XP2/XP4
Corrosion Prevention	Mitigates initiation of new corrosion activity	•	•
Corrosion Control	Reduces on-going corrosion activity		•
Cathodic Protection	Reduce or eliminate on-going corrosion activity		



Cut-away of Sika® Galvashield® XP4



"Ring Anode" Corrosion (without Sika® Galvashield® XP)



Sika® Galvashield® XP prevents "Ring Anode" Corrosion

How It Works

When two dissimilar metals are coupled together in an electrolyte (in this case concrete), the metal with the higher potential for corrosion (zinc) will corrode in preference to the more noble metal (reinforcing steel). Sika® Galvashield® XP-type anodes are embedded in concrete repairs to provide corrosion prevention or corrosion control to the reinforcing steel in the adjacent area.

Product Comparison

Product Name	Anode Class	Anode Dimension (nominal)	Zinc Mass (g)
Sika® Galvashield® XPT	Type AP	25 mm x 125 mm x 25 mm	60
Sika® Galvashield® XP	Type AP	65 mm (dia.) x 30 mm	60
Sika® Galvashield® XP2	Type AC	65 mm x 80 mm x 30 mm	100
Sika® Galvashield® XP4	Type AC	65 mm x 120 mm x 30 mm	160

Anode Class

First Letter Activation Method (A = Alkali)

Second Letter Application (P = Corrosion Prevention; C = Corrosion Control)

Installation Instructions

Concrete shall be removed from around and behind all corroding rebar in accordance with good concrete repair practices such as ICRI Guideline R310.1R. Exposed reinforcing steel should be cleaned to remove all residual rust and concrete residue.

The anodes and repair material should be installed immediately following preparation and cleaning of the steel reinforcement. The location and spacing of the anodes shall be as specified by the designer (refer to design criteria). The units can be placed around the perimeter of the repair or on a grid pattern to protect a second mat of steel if required.

Securely fasten the anodes units from the side or beneath the exposed rebar as close as practical to the surrounding concrete (preferably within 100 mm (4 in) while ensuring that enough space remains to fully encapsulate the unit in the repair. The minimum cover of the repair material over the anodes should be 20 mm (¾ in).

Anode-to-steel continuity and steel-to-steel continuity within the patch should be verified with an appropriate meter; discontinuous steel should be tied to continuous bars using steel tie wire and re-tested. A value between 0 and 1 ohm should be achieved.

Packaging

Sika® Galvashield® XP	20 units per box	5.2 kg (11.5 lb)
Sika® Galvashield® XPT	30 units per box	5.7 kg (12.5 lb)
Sika® Galvashield® XP2	20 units per box	5.9 kg (13 lb)
Sika® Galvashield® XP4	20 units per box	9.5 kg (21 lb)

Anode Spacing for Low to Moderate Corrosion Risk (Chloride Content* < 0.8 % or Carbonated Concrete)								
Protection Level	Corrosion Prevention				Corrosion Control			
Sika® Galvashield® Anode	XP or XPT		XP2		XP2		XP4	
Steel Density Ratio	mm	in	mm	in	mm	in	mm	in
< 0.3	750	30	750	30	600	24	750	30
0.31 - 0.6	600	24	700	28	500	20	700	28
0.61 - 0.9	500	20	650	26	400	16	550	22
0.91 - 1.2	450	18	550	22	350	14	450	18
1.21 - 1.5	400	16	500	20	250	10	425	17
1.51 - 1.8	350	14	450	18	200	8	375	15

Anode Spacing for High Corrosion Risk (Chloride Content* 0.8 % to 1.5 %)							
Protection Level	Corrosion Prevention				Corrosion Control		
Sika® Galvashield® Anode	XP or XPT		XP2		XP4		
Steel Density Ratio	mm	in	mm	in	mm	in	
< 0.3	600	24	750	30	600	24	
0.31 - 0.6	500	20	600	24	500	20	
0.61 - 0.9	400	16	500	20	400	16	
0.91 - 1.2	350	14	450	18	350	14	
1.21 - 1.5	250	10	400	16	250	10	
1.51 - 1.8	200	8	350	14	200	8	
1.81 - 2.1	175	7	300	12	150	6	

*Chloride content is based on percent by weight of cement.

Repair Materials For optimum performance, use a repair material with resistivity less than 15 000 ohm-cm. If a higher resistivity repair material is to be used or if the resistivity of the material is unknown, pack Sika® Repair-223 patching mortar mixed with water between the anode and the substrate to provide ionic conductivity to the substrate. Prior to placing the repair material, pre-wet the concrete substrate and the anodes to achieve a saturated surface dry condition, then complete the repair. Do not soak the anodes for more than 20 minutes.

Limitations

- Sika® Galvashield® XP-type anodes are intended to provide localized corrosion prevention or corrosion control and do not address or repair structural or concrete damage. Where structural damage exists, consult a structural engineer. To provide protection to a broader area, install Sika® Galvashield® CC anodes on a grid pattern or consult a Sika Technical representative for further product recommendations.
- For extremely high corrosion risk applications (> 1.5 % chloride content), contact Sika Canada Inc. for technical assistance.
- Maximum spacing dimensions are based on typical conditions. Spacing should be reduced as appropriate for severe environments or to extend the expected service life of the anodes.

Storage Store in dry conditions in the original unopened box. Avoid extremes of temperature and humidity. Anodes should be installed within one year.

Health and Safety Information For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent SAFETY DATA SHEET containing physical, ecological, toxicological and other safety-related data.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

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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, within their shelflife. 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 recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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 or may be downloaded from our website at: www.sika.ca

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Certified ISO 9001 (CERT-0102780)
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