

Sika® Galvashield® CC

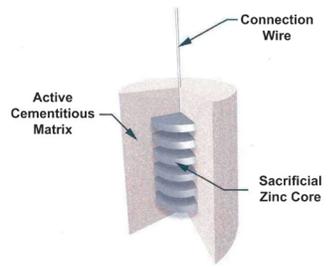
Embedded Galvanic Anode for Corrosion Control

Description Sika® Galvashield® CC embedded galvanic anodes are used to control on-going corrosion and to prevent the initiation of new corrosion activity in concrete structures. Galvashield® CC anodes consist of a sacrificial zinc core that is activated by the surrounding specially formulated precast cementitious mortar. The cylindrical anode, available in a variety of standard sizes, is quickly and easily installed into concrete that is mechanically sound but has on-going corrosion activity. Once installed, the zinc core corrodes preferentially to the surrounding rebar, thereby providing galvanic corrosion control to the adjacent reinforcing steel. Custom size anodes are available for specific project needs.

- Where to Use**
- Balconies.
 - Columns and beams.
 - Bridge decks.
 - Parking garages.
 - Piers and wharfs.

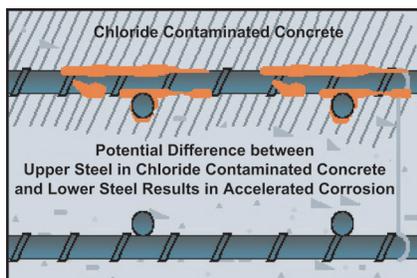
- Advantages**
- **Proven technology:** supported by independent test program.
 - **Focused protection:** discrete anodes can be installed to provide corrosion protection in areas with high corrosion potentials or active corrosion.
 - **Economical:** save money by only protecting the remaining chloride-contaminated (unrepaired) areas.
 - **Versatile:** effective in chloride-contaminated and carbonated concrete. Can be used for both conventionally reinforced and prestressed or post-tensioned concrete.
 - **User friendly:** installation is quick and easy.
 - **Low maintenance:** requires no external power source or system monitoring.
 - **Measurable:** anode performance can be easily monitored if required.
 - **Long lasting:** 10 to 20 year service life* reduces the need for future repairs.
- *As with all galvanic protection systems, service life is dependent upon a number of factors including reinforcing steel density, concrete conductivity, chloride concentration, humidity and anode spacing.

Specification Embedded galvanic anodes shall be Sika® Galvashield® CC [specify product number, ie. CC65], a pre-manufactured anode consisting of zinc in compliance with ASTM B 418-95a Type I cast around an integral bright steel tie wire for making connection to the reinforcing steel and encased in an activated cementitious mortar with pH of 14 or greater. The cementitious mortar shall contain no chlorides or other corrosive constituents detrimental to the reinforcing steel as per ACI 222R.

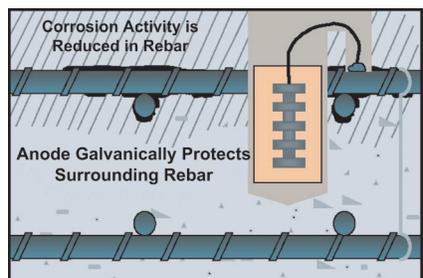


Cut-away of Sika Galvashield CC

Level of Protection	Description	Galvashield® CC
Corrosion Prevention	Preventing new corrosion activity from initiating	●
Corrosion Control	Significantly reducing or stopping on-going corrosion activity	●
Cathodic Protection	Highest level of protection intended to stop on-going corrosion activity	



Corrosion (without Galvashield CC)



Galvashield CC reduces corrosion

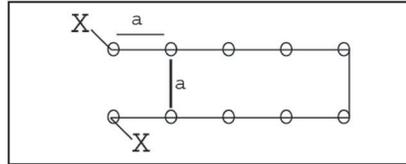


How It Works

When two dissimilar metals are coupled together in an electrolyte, the metal with the higher potential for corrosion (more electronegative) will corrode in preference to the more noble metal. In concrete repair applications, the zinc core of the Galvashield® CC anode will corrode in favour of the reinforcing steel, thus providing corrosion control to the adjacent reinforcing steel.

DESIGN CRITERIA Standard Units			
Anode Type	Description	Unit Size diameter x length	Minimum Hole Size diameter x depth
Galvashield® CC65	Standard unit for moderate steel density	46 x 62 mm (1 3/4 x 2 1/2 in)	50 x 95 mm (2 x 3 3/4 in)

Typical layout for series connection



- O Galvashield CC units
- X Minimum number of rebar connections
- Interconnecting cable
- a Maximum spacing

Galvashield® CC65	
Steel density ratio (steel surface area/ concrete surface area)	Maximum grid dimensions* mm (in)
< 0.2	700 mm (28 in)
0.21 - 0.4	600 mm (24 in)
0.41 - 0.54	500 mm (20 in)
0.55 - 0.67	450 mm (18 in)
0.68 - 0.80	400 mm (16 in)
0.81 - 0.94	380 mm (15 in)
0.95 - 1.07	355 mm (14 in)
1.08 - 1.2	335 mm (13 in)

*Maximum grid dimensions are based on typical conditions. Spacing should be reduced as appropriate for severe environments or to extend the expected service life of the anode.

Packaging	
Galvashield® CC anodes	20 units per box
Additional Accessories	
Galvashield® Embedding Mortar	5 kg (11 lb) one bag per 10-20 anodes
Rebar Connection Kit	20 rebar connectors per box
Anode Connection Kit	15.2 m (50 ft) insulated cable 25 wire connectors
Setting Tool	1 unit per box

How to Use

The location and spacing of the Galvashield® CC anodes shall be on a grid pattern as specified by the engineer. Using a rebar locator, locate all existing steel within the area designated for protection and mark areas to drill anode installation holes. When possible, anodes should be installed a minimum of 100 mm (4 in) from reinforcing grid.

Series Connection: A single circuit shall contain no more than 10 Galvashield® CC units. Drill a minimum of two 12 mm (1/2 in) rebar connection holes per string of anodes. Saw cut a single continuous groove approximately 6 mm (1/4 in) wide by 12 mm (1/2 in) deep into the concrete to interconnect rebar connection holes and anode connection holes.

Individual Connection: Drill one rebar connection hole per anode location. Saw cut a groove approximately 6 mm (1/4 in) wide by 12 mm (1/2 in) deep into the concrete to interconnect the rebar connection hole and anode connection hole.

Reinforcing steel connections should be made using the Galvashield® CC Rebar Connection Kit. Place the weighted end of the connector into the drilled hole until the steel coil contacts the reinforcing steel. Feed the steel connector wire through the Galvashield® CC Setting Tool and set into place by striking with a hammer. Connect the anode directly to the rebar connection wire using a wire connector. If installing in series, connect the anodes to the interconnecting cable with a wire connector. (Cable and wire connectors are available as the Galvashield® CC Anode Connection Kit). Verify continuity between anode locations and rebar connections with a multi-meter. A resistance of 1 ohm or less is acceptable.

Drill holes as per the dimensions listed above to accommodate the anodes. Presoak anodes for a minimum of 10 to a maximum of 30 minutes in a shallow water bath. A suitable embedding material, consisting of a Sika recommended mortar or grout should be used to install the still wet anodes into presoaked (saturated-surface dry) holes (consult Sika Canada Technical Services for advice). Place the mixed embedding material into the bottom 2/3 of each hole and slowly press in the anode allowing the material to fill the annular space ensuring there are no air voids between the anode and the parent concrete. The minimum anode cover depth shall be 20 mm (3/4 in). Place wires into grooves and top off anode holes and saw cuts flush to the concrete surface with embedding material. Embedding material should be wet cured or cured with a curing compound and protected from traffic for 24 hours.



Limitations

- Galvashield® CC anodes are not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer.
- Galvashield® CC anodes are designed to provide galvanic corrosion control. Corrosion control products significantly reduce on-going corrosion. Concrete repairs should be completed using Sika® Galvashield® XP anodes around the boundary of the patch prior to installing Galvashield® CC anodes in the remaining unrepaired areas. For more information on corrosion mitigation strategies, contact Sika Canada Inc.

Storage

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

Caution

As with all cement-based materials, contact with moisture can release alkalis which may be harmful to exposed skin. Galvashield® CC should be handled with suitable gloves and other personal protective equipment in accordance with standard procedures for handling cementitious materials. Mix left over water from the anode bath with cementitious material and dispose by normal means after hardening.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

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Patents: US 6022469, 6303017, 6193857 © 2010 Vector Corrosion Technologies



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