

Galvanic corrosion control system for reinforced concrete structures

Use

Global corrosion control of steel in reinforced concrete

Advantages

- Cost effective corrosion control.
- Protects against residual chlorides.
- Adaptable to local / global site corrosion conditions
- Quick and easy installation.
- Requires no external power source.
- Extends maintenance cycle.
- Measurable performance.
- Suitable for prestressed/post tensioned structures.
- Proven technology.

Description

A sacrificial metal embedded within a specially formulated cementitious mortar. Galvashield CC units are inserted into pre-drilled holes and encapsulated within Galvashield CC Embedding Mortar.

Available in two sizes:

Galvashield CC65 65mm long x 45mm wide units for use in concrete in excess of 100mm thick e.g. bridges, swimming pools, in-situ concrete framed buildings.

Galvashield CC45 45mm long x 45mm wide units for use where restricted depth of 80-100mm of concrete e.g. slim car park decks, precast panels.

Design criteria

The Galvashield CC system shall be installed in a grid configuration designed to protect steel reinforcement of established density and configuration.

Specification clause

The sacrificial anode shall be Galvashield CC, a sacrificial metal surrounded by a highly alkaline cementitious mortar which has a pore solution pH which is sufficiently high for corrosion of the anode to occur and for passive film formation on the anode to be avoided as described in patent no PCT/GB94/01224.

Application instructions

Preparation

Prior to application a survey of the structure including position/ depth of steel, levels of chloride, carbonation and concrete spalling should be carried out. Continuity of the steel shall be checked. Any loss of continuity will require additional electrical connections or restoration of continuity by normal means.

The position of the steel shall be established and an appropriate grid for drilling locations marked out. Care shall be taken to avoid marking drilling locations immediately over the steel whilst maintaining a maximum distance from the steel of 100mm. Spacing of Galvashield CC units shall be in accordance with the design tables provided.

50mm diameter holes shall be drilled at marked locations using a rotary percussive drill. Galvashield CC65 units require a 90mm-100mm deep hole, with Galvashield CC45 units requiring a 70mm-90mm deep hole. Avoid cutting any steel reinforcement.

Additional 50mm diameter holes shall be drilled to facilitate electrical connection to the steel reinforcement. An electrical connection shall be established at each end of every string linking a maximum of 10 Galvashield CC units.

Drilled holes shall be linked by 4mm wide x 15mm deep saw cuts to allow for the recessing of electrical wiring.

Installation

Electrical connection shall be established by drilling a 5-7 mm deep hole into the steel reinforcement using a 3.5mm drill bit and by pop riveting the supplied copper wire to the steel using a 3.2mm stainless steel rivet. This connection is insulated by sealing with an appropriate Fosroc sealant.

Pre-soak the required number of Galvashield CC units in water for between 10 to 30 minutes. Presoak holes and saw cuts with water. Install units whilst still wet.

Mix Galvashield CC Bedding Mortar using a slow speed (400/ 500 rpm) drill fitted with a Fosroc mixing paddle. Add 0.8 litres of drinking water to the mixing drum, then add a full pack of Galvashield CC Bedding Mortar whilst mixing. Mix for 3 minutes until a smooth even consistency is obtained. Part bags should not be used.

Connect individual pre-soaked Galvashield CC units to the electrical wiring using the connectors supplied. Check the continuity of each individual Galvashield CC unit with the steel reinforcement during installation.

Galvashield® CC

Galvashield CC units shall be embedded into drilled holes using Galvashield CC Bedding Mortar. Cover to the embedded Galvashield CC units shall be minimum 20mm.

Recess interconnecting wiring into the saw cuts. Saw cuts and drilled holes shall be made good with Galvashield Bedding Mortar. A full installation guide is available.

Repair materials

Galvashield CC should be used in conjunction with Fosroc's extensive range of compatible cementitious repair mortars and acrylic bonding/curing agents. Galvashield CC is not suitable for use with epoxy or polyester based repair mortars.

Estimating

Galvashield CC65

Steel surface area per m ² concrete	Maximum grid dimensions (a)		Units per m ²
	s Grid	n Grid	
<0.4	650 mm	600 mm	3
0.41 - 0.54	550 mm	500 mm	4
0.55 - 0.67	500 mm	450 mm	5
0.68 - 0.80	450 mm	400 mm	6
0.81 - 0.94	410 mm	380 mm	7
0.95 - 1.07	380 mm	355 mm	8
1.08 - 1.2	360 mm	335 mm	9

Galvashield CC45

Steel surface area per m ² concrete	Maximum grid dimensions (a)		Units per m ²
	s Grid	n Grid	
<0.4	500 mm	450 mm	5

s Equilateral triangle grid

n Square grid to be staggered centres

Units per m² are approximate.

For greater steel densities consult Fosroc.

Supply

Galvashield CC is supplied in boxes of 20 units, complete with interconnecting wire and snap connectors. Galvashield CC Bedding Mortar is supplied in 5kg bags. 1 bag typically sufficient for 15 No. Galvashield CC units.

Storage

Store in dry conditions in the original unopened packs.

Precautions

Galvashield CC units and Galvashield Bedding Mortar should be handled with gloves and other protection equipment

† See separate data sheet

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telephone

++91 80-22240018/120

fax

++91 80-22233474

e-mail

india@fosroc.com



Fosroc Chemicals (India) Pvt. Ltd.

Head Office

111/3, Hafeeza Chamber II Floor,
K H Road, PBNo. 2744, Bangalore 560027

www.fosroc.com

Regional Offices

Bangalore

Shankar House, IV Floor
1 & 18, RMV Extension
Bangalore 560 080
Ph:080-2361 3161/2361 2004
Fax : 080-2361 7454
email: Bangalore@fosroc.com

Mumbai

208/209, Persepolis
Sector 17, Vashi
Navi Mumbai 400 703
Ph:022-2789 6412/14
Fax: 022 - 2789 6413
email:Mumbai@fosroc.com

Delhi

First floor,1/2 East Patel Nagar
Opp: Vivek Cinema, Main Patel Rd
New Delhi 110 008
Ph:011-25884903/4
Fax: 011- 25884422
email:Delhi@fosroc.com

Kolkata

30/B Jodhpur Park
Ground Floor
Kolkata 700 068
Ph: 033 2472 5482
Fax: 033-2472 9921
email:Kolkata@fosroc.com

● Ahmedabad : (079) 26762799 ● Ankleshwar : (02646) 220704/224687 ● Bhubaneshwar : (0674) 2521176 ● Chennai (044) 24899949/24853383
● Chandigarh : (0172) 2639360 ● Cochin : (0484) 2356668 ● Coimbatore : (0422) 2472966 ● Goa : (0832) 2542465 ● Guwahati (0361) 2548793
● Hyderabad : (040) 27662324/27662425 ● Hubli (0836) 3402597 ● Indore : (0731) 504339/5061477 ● Jaipur : (0141) 2235349 ● Lucknow : (0522) 22239044 ● Nagercoil (04652) 2224849 ● Mangalore: (0824) 22272234 ● Visakhapatnam : (0891) 2564850

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