

Galvashield CC65

Embedded sacrificial zinc anode grid system for corrosion control and protection in, as yet, undamaged concrete >100 mm thickness

SECTION A: GENERAL COMMENTS

This method statement should be read in conjunction with the "Application Instructions" section of the relevant technical data sheet(s). Please refer to the local Parchem office for advice on selection of the most appropriate product for your application.

HIGH AND LOW TEMPERATURE WORKING

It is suggested that, for temperatures above 35°C or below 5°C, the following guidelines are adopted as good working practise:

- I. Store unmixed materials in cool, dry conditions, in original unopened bags, avoiding exposure to direct sunlight.
- II. In high temperature environments, keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment that come into direct contact with the material itself.
- III. Try to avoid application during the hottest times of the day, arrange temporary shading as necessary.
- IV. At lower temperatures, *Galvashield CC65* should be applied only when the substrate temperature and the ambient temperature is above 5°C or 5°C and rising.
- V. Make sufficient material, plant and labour available to ensure that application is a continuous process.

EQUIPMENT

It is suggested that the following list of equipment is adopted as a minimum requirement for the correct application of this material (N.B. Product users must adhere to current OH&S requirements applicable to their site and statutory legislation):

- Protective clothing : - Protective overalls, safety helmet and safety shoes
 - Good quality gloves, goggles and facemask
- Preparation equipment : - Electric / rotary percussive drilling machine
 - High impedance multi meter
 - Cover meter
- Mixing equipment : + Parchem mixing paddle and mixing pail
- Application equipment : - Trowel
 - Multi grip pliers

APPLICATION – POINTS OF NOTE

Parchem operates a policy to encourage the use, where possible, of experienced applicators. This ensures that repairs are completed satisfactorily so that long-term performance of the materials is assured. For contractors who wish to apply the materials themselves, Parchem is also able to offer Technical Assistance.

SECTION B: APPLICATION METHOD

1.0 INSTALLATION AREA IDENTIFICATION

- 1.1 The area for *Galvashield CC65* anode installation shall be surveyed using a copper / copper sulphate half-cell meter in accordance with the supervising engineers instructions. Any location, outside a delaminated area, which provides a potential reading of -300 mV or greater, is to be plotted and the area marked out for anode installation. On completion of the half-cell survey a cover meter survey will be conducted to identify and mark rebar locations.
- 1.2 The area for *Galvashield CC65* anode installation shall be identified in accordance with the supervising engineers instructions. The locations and spacing within the identified area at which the *Galvashield CC65* anodes are to be installed will be indicated by the supervising engineer but are not to be at a distance greater than 100mm from the rebar. The supervising engineer, using the table detailed at paragraph 5.1 below, will determine *Galvashield CC65* anode spacing.

2.0 INSTALLATION AREA PREPARATION

- 2.1 Using an electric drilling machine fitted with a 20 mm bit, drill a series of holes in a grid pattern across the proposed zone of application in order that the rebar may be exposed for the purposes of continuity checking.
- 2.2 Using a high impedance multi meter on the ohm's setting, the rebar within the repair zone is to be checked for electrical continuity. Where electrical continuity does not exist, extra rebar is to be resistance welded or wired into place to restore such continuity.

3.0 UNIT INSTALLATION PREPARATION

- 3.1 At the identified anode placement sites a 50 mm diameter hole is to be drilled using a rotary percussive drill. The hole depth is to be 90-100 mm and is to be sufficiently deep as to permit a minimum cover of 20 mm over the top of the unit when placed. When the anode holes have been drilled, all are to be connected with a 5 mm wide x 15 mm deep saw cut, to permit an interconnecting wire run. At each end of the wiring chase, a hole 20 mm in diameter is to be drilled to the rebar to permit cathode connections to be made. The steel at the bottom of the cathode connection hole is to be brought to a clean and bright condition to ensure electrical continuity, which is again to be checked. NB: No more than 10 number of *Galvashield CC65* units are to be connected in a chain.
- 3.2.1 *Galvashield CC65* units are to be placed out along side the location holes and interconnecting wire run out. The interconnecting wire is to be fixed to each anode unit using the connectors supplied after the tail wire from the unit has been shortened to 20 mm in length. Using a high impedance multi meter on the ohm's setting, electrical continuity is to be checked between units using the anode exposed tail wire as the contact point. Where electrical continuity does not exist the anode units are to be rewired to restore such continuity. The ends of each wire run are to terminate in a compression fitting cathode connection. When fitted the cathode connection to the steel is to be checked for electrical continuity prior to being sealed off with *Construction Silicone* or similar.
- 3.2.2 Immediately prior to placement the *Galvashield CC65* anode units are to be soaked for a period not less than ten minutes, and no longer than 30 minutes in potable water. The pre-drilled anode holes are to be filled with water and left to soak prior to anode unit installation.

4.0 UNIT INSTALLATION

- 4.1 Ensure that the anode location holes are blown free from water or other deleterious material at the end of the soaking period.
- 4.2 Prepare the *Galvashield CC* Bedding Mortar by force mixing 0.8 – 0.9 litres of water with a 5 kg pack for a three-minute period. When mixed, the mortar is to be placed in such a manner as to two-thirds fill the prepared anode hole.
- 4.3 The *Galvashield CC65* units are to be pushed into the prepared hole to a point approximately 20 mm below the surface of the concrete. It is to be ensured that the bedding mortar is displaced by the activity and starts to fill the hole above the anode unit.

- 4.4 When the anode unit has been placed, the hole may be topped up with *Galvashield Bedding Mortar* and finished off with a trowel.
- 4.5 The wires connecting the anode units are to be pushed into the prepared chases with the chase then being filled with *Galvashield CC Bedding Mortar*. All exposed areas of mortar are to be cured with a brush application of *Nitobond AR*.

5.0 GALVASHIELD CC SPACING CALCULATION

- 5.1 The Galvashield CC65 anode units are to be fixed at spacings determined by the supervising engineer. Galvashield CC65 spacing is determined by calculating the ratio of steel surface area within 1 M² of concrete surface area.

The calculation gives rise to the following spacing table:

Steel Surface Area per M ² Concrete	Maximum Grid Dimensions - Triangular	Maximum Grid Dimensions - Square	Units per M ²
< 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 – 1.20	360 mm	335 mm	9

As rebar spacing and diameter can vary in any given area it is important that the correct calculation is made of the steel surface area. Such calculations have to be specific to the area of application and generalisations cannot be made. Where uncertainty exists as to the nature of the reinforcement in any given area investigative breakouts must be made.

SECTION C: APPROVAL AND VARIATIONS

This method statement is offered by Parchem as a 'standard proposal' for the application of *Galvashield CC65*. It remains the responsibility of the Engineer to determine the correct method for any given application.

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