Galvashield® SM-DAS

Technical Data Sheet

Surface mounted distributed anode corrosion protection system

Description

Galvashield SM-DAS is a surface mounted distributed anode system designed to provide corrosion control or cathodic protection to steel reinforced concrete structures.

Galvashield SM-DAS anode units are distributed across reinforced concrete and masonry structures to provide global corrosion protection or can be used to target specific sections with high corrosion risk such chloride contaminated concrete around joints and areas with high corrosion potential. Galvashield SM-DAS anodes contain alkali-activated mortar cast around a high purity zinc core. Once installed, the zinc anode corrodes preferentially to the surrounding steel reinforcement, thereby providing galvanic corrosion control to the embedded reinforcing steel. The quantity of zinc provided, the anode length, electrical components and installation procedures are customized to meet specific project requirements.

Uses

- Columns and beams
- Parking structures
- Concrete tanks
- Prestressed concrete
- Bridges, piers and wharfs
- Bridge deck soffits
- Power and industrial plant rehabilitation
- Service life extension in severe service conditions
- Shallow or thin concrete members
- Double T beams

Advantages

- Proven technology – utilizes Galvashield® technology which is supported by independent test program and over 20 years of real world performance data.
- Fast installation – the surface mounted anode tray has been designed for maximum installation efficiency.
- Long lasting – the designed 10 to 40 year anode life* reduces the need for future repairs.
- High capacity – can provide more zinc and more current output than other galvanic anode systems.
- Design flexibility – anode design and spacing can be customized to meet project performance requirements and service life objectives.
- Convenient replacement – surface mounted anodes can be easily removed and replaced when needed.
- Economical – save time and money by targeting only the remaining areas of high corrosive risk.
- Versatile – effective in chloride contaminated and carbonated concrete. Can be used for both conventionally reinforced and prestressed or post-tensioned concrete.
- Low maintenance – requires no external power source or system monitoring.
- Measurable – anode performance can be easily monitored.
- Mechanically bonded – anchors ensure bond to structure is maintained throughout the service life of the anode.
- Fire & heat resistance – rated 5VA under UL 94, the anode housing uses uPVC material which is combustible but also naturally flame retardant and will not cause, support or encourage the development of fire.
- Cathodic protection – can be designed to meet cathodic protection performance criteria.
- UV resistant – anode housing is made with uPVC which is the same material used in vinyl house siding. uPVC has excellent durability in outdoor environments, including high UV degradation resistance.

**As with all galvanic protection systems, service life is dependent upon a number of factors including reinforcing steel density, concrete conductivity, chloride ion concentration, temperature, humidity and anode spacing.*

How it works

When two dissimilar metals are coupled together in an electrolyte (concrete), the metal with the higher electronegative potential for corrosion (zinc) will corrode in preference to the more noble metal (reinforcing steel). Galvashield SM-DAS anodes are attached to sound concrete with an ionically conductive mortar then mechanically anchored to provide corrosion prevention or corrosion control to the embedded reinforcing steel.

Design Criteria

Galvashield SM-DAS anode design and spacing are varied to meet project objectives. Anode spacing ranges depending upon project objectives, the severity of the service environment and expected service life of the anode components.

Contact Fosroc for specific advice and design assistance.

	SM-DAS	SM-DAS-X
Zinc weight:	0.89 kg/m	2.45 kg/m
Anode dimension:	26mm x 150mm	160mm x 30mm
Anode length:	Recommended 100cm, can be customized to meet project requirements	

*Galvashield SM-DAS anode length is customised to meet project requirements.

Galvashield® SM-DAS

Installation Instructions

Surface preparation

Before starting the installation, ensure that the concrete surface is clean and even. Complete any necessary concrete repairs, and remove any dirt, loose barriers, or coatings. The surface must not have any relief changes of more than 3mm. Blow the surface clean of any dust and blast media with dry compressed air, and vacuum clean if required. Prior to the installation of the anode, the concrete must be wet with water to a point where surface saturated dry conditions are achieved.

Anode layout and reinforcing location

Determine the location for the anode installation and use a chalk line to mark the top line of the anodes. Along the length of the anode installation, use a rebar locating device to find reinforcing steel to make a connection within 100mm of each end of the anode. If you are linking multiple units together, consult the site engineer for steel connection requirements and maximum spacing.

Optional mounting track installation

The Galvashield Surface Mounted DAS can optionally be installed using our Mounting Track kit. Install the mounting track along the chalk line, placing it near the center of the desired anode location. Mark the points for the drilled holes for the concrete anchors using the holes on the mounting track. Drill a 6mm hole at each mark. Once the holes have been drilled, anchor the mounting track with supplied anchors. Avoid overtightening to prevent deformation of the mounting track.

If the Mounting Track was used, hang the anode onto the mounting track and position it to mark locations for drilling anchor holes. Remove the anode from the mounting track and drill the marked locations with a 6mm drill bit.

Anode anchor marking without track

Hold the anode in position, then mark locations for drilling anchor holes. Mark the remaining anchor holes located on the wiring track of the anode. Remove the anode and drill the marked locations with a 4mm drill bit.

Mortar anode

Use Galvashield Embedding Mortar to fill the area between the anode and the surface of the concrete. Mix the mortar as directed. If the concrete surface contains large voids or depressions, fill them with mortar to ensure no air gaps are left behind the anode. Use the custom V-notched trowel tool to spread the mortar completely along the entire length of the anode, leaving a ridged profile of the mortar to ensure proper bonding of the anode to the concrete.

Hang and anchor

Saturate concrete surface with water before applying anode. Ensure no standing water. Carefully line up the anode to the drilled anchor holes. The mounting track can be used to help with alignment. Press the anode firmly onto the concrete, allowing mortar to spread out under the anode and eliminating any voids or gaps. Fasten the anode to the concrete using supplied anchors.

Anode wiring connection

Make connections to steel as per engineer's instructions. Anode wires are connected to the steel connections at both ends of the anode using the wiring connecter provided. If the anode connection wire requires insulation stripping, remove insulation to the length specified by the connector. Lift levers fully and place wires into the connector, one wire per connection hole. Fold down the lever and firmly click into the locked position—test the connection by lightly tugging each wire. Encapsulate the entire connection inside of the gel-filled insulation box provided, closing firmly.

Install cover strips

Once the anode is firmly anchored, install wiring track cover strips. Strips can be installed by sliding them in from the end, and the curved lip should be toward the outer edge of the anode. Alternatively, it can be placed on the wiring track and tapped into place with a rubber hammer or mallet.

Install end caps

End caps are installed over the anode connections by either sliding over the ends or clicking over the top. The cap should cover the steel connection location and the anode-to-steel connection. The cap is then secured in place with two concrete anchors, taking care not to interfere with the anode or steel connections. The cap may be sealed to the concrete surface and the anode surface with caulking or epoxy.

Precautions

Galvashield SM-DAS anodes may be part of an overall structure rehabilitation program to extend the service of life of corroding columns and piles. Where structural damage exists, consult a structural engineer.

Galvashield SM-DAS anodes may be used in conjunction with Vector's extensive line of galvanic corrosion protection products to protect other portions of the structure. For more information on corrosion mitigation strategies and options, contact Fosroc.

Galvashield® SM-DAS

Supply

Vector Galvashield SM-DAS (MTO):	FC312158-UNIT
Vector Galvashield SM-DAS-X (MTO):	FC312159-UNIT
Galvashield Embedding Mortar (MTO):	FC312002-20KG

One 20kg bag is sufficient for 15 - 17 SM-DAS anodes

The Galvashield SM-DAS Distributed Anode System is custom packaged based on project requirements.

Galvashield SM-DAS anodes are supplied in boxes of 5 anodes

Storage

Store in dry conditions in the original unopened containers for up to one year from date of manufacture. Systems should be installed within one month of opening container. Take special precaution not to damage anode components during transportation or while handling. Avoid extremes of temperature and humidity.

Health & Safety

Contact with moisture can release alkalis which may be harmful to exposed skin. Anode components should be handled with suitable gloves and other personal protective equipment in accordance with standard procedures for handling cement and other alkaline materials. Additional safety information is included in the Safety Data Sheet.

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