



Galvashield® DAS

Distributed Anode Corrosion Protection System
(formerly Galvanode® DAS)

DESCRIPTION

Galvashield® DAS is a distributed anode system designed to provide corrosion control or cathodic protection to concrete decks, columns, beams and walls. The system is quickly and easily installed to provide corrosion protection for a variety of applications such as installation in new concrete, embedded in concrete overlays, encapsulated inside reinforced concrete jackets or used in conjunction with stay-in-place forms for column protection. Galvashield® DAS anode units are distributed over concrete and masonry structures to provide global corrosion protection and can also be used at new/old concrete interfaces for targeted repairs and bridge widening.

Galvashield® DAS Type C (Cast) anodes contain alkali-activated mortar cast around a high purity zinc core. Galvashield® DAS Type F (Foil) anodes are alkali-activated zinc with an exterior zinc foil wrap to provide a high burst of initial current. The quantity of zinc provided, the anode shape, electrical components and installation procedures are customized to meet specific project requirements. Individual Galvashield® DAS anode units are typically square, rectangular, or circular in cross section and can be supplied in lengths of up to 6.5 ft (2.0 m). For applications where anodes will be installed in submerged or tidal conditions i.e. piles, use Galvashield® DAS Marine anodes.



Galvashield® DAS Type F distributed anode system on bridge deck prior to placement of reinforced concrete overlay.

APPLICATIONS

- Bridges, piers and wharves
- Power and industrial plant rehabilitation
- Concrete jacketing/section enlargement
- Galvanic jackets for columns
- Galvanic jackets for walls
- Joint repairs and widening
- Service life extension in severe service conditions
- Conventionally reinforced, prestressed and post-tensioned concrete
- New construction

** 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.*

| Level of Protection | Description | Galvashield® DAS |
|----------------------|---|------------------|
| Corrosion Prevention | Preventing new corrosion activity from initiating | • |
| Corrosion Control | Significantly reduces active corrosion | • |
| Cathodic Protection | Stopping active corrosion by applying on-going electrical current | • |

FEATURES AND BENEFITS

- **Type C** - mortar cast anodes are resistant to moisture exposure prior to concrete placement.
- **Type F** - foil wrapped anodes offer a high burst of initial current and are semi-flexible.
- **Proven technology** - supported by independent test program.
- **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.
- **Cathodic Protection** - can be designed to meet cathodic protection performance criteria.
- **Versatile** - can be used for both conventionally reinforced and pre-stressed or post-tensioned concrete.
- **User friendly** - installation is quick and easy, requiring no specialized equipment.
- **Low maintenance** - requires no external power source or system monitoring.
- **Measurable** - system performance can be easily monitored if required.
- **Embedded system** - provides more uniform performance, eliminates risk of vandalism.
- **Long lasting** - 10 to 40 year service life* reduces the need for future repairs.





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Galvashield® DAS Type C distributed anode system on corroded abutment prior to encasement with new concrete.

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 applications, the Galvashield® DAS zinc anode unit corrodes in favor of the reinforcing steel and produces an electrical current that mitigates corrosion activity.

DESIGN CRITERIA

Galvashield® DAS distributed galvanic anode system can be used for corrosion prevention, corrosion control or cathodic protection applications. Anode type, size and spacing are varied to meet project objectives. Anode spacing can vary from 6 in. (150 mm) to 30 in. (750 mm) on center depending upon project objectives, the severity of the service environment and expected service life of the anode components. For assistance with system design, please contact Vector Corrosion Technologies.

SPECIFICATION CLAUSE

Galvanic protection shall be provided using Galvashield® DAS anode units as manufactured by Vector Corrosion

| Foil Wrapped and Cast Mortar Anodes: Weights and Lengths | | |
|--|--|----------------|
| Zinc Weights | 25 = 0.25 lb/ft | 37 = 0.37 kg/m |
| | 60 = 0.6 lb/ft | 89 = 0.89 kg/m |
| | 120 = 1.2 lb/ft | 180 = 1.8 kg/m |
| Lengths | 36 to 78 in | 100 to 200 cm |
| Ordering Example F= Foil Wrapped | F180 - 120cm [Type F (foil) anode, 1.8 kg zinc per meter, 120 cm long] | |
| Anode Ordering Example C= Cast Mortar | C60 - 78in [Type C (cast) anode, 0.6 lb zinc per foot, 78 inches long] | |

* Galvashield® DAS anode unit size and lengths are customized to meet project requirements. Typical anode weights are listed above.

Technologies. The distributed galvanic anode units shall be alkali-activated with a pH greater than 14 and shall not contain intentionally added constituents that are corrosive to reinforcing steel as per ACI 222R such as chlorides, bromides, or other halides. The zinc shall be in compliance with ASTM B418 Type II (Z13000) and ASTM B6 Special High Grade (Z13001) with iron content less than 15 ppm and shall be evenly distributed around a steel core which is continuous along the length of the unit. Unless otherwise specified, the anode unit shall be supplied with a pair of integral heated-treated, uncoated steel tie wires with loop ties to make connections to the reinforcing steel. (For Type F anodes include the following: The anode unit shall have a thin foil exterior and include FRP reinforcing to resist expansion).

INSTALLATION INSTRUCTIONS

Galvashield® DAS distributed anode systems are used for a wide range of applications. Specific application procedures can be developed on a project-by-project basis. For additional information, please contact Vector Corrosion Technologies.

PRECAUTIONS

Galvashield® DAS distributed anode system is not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer. Keep Galvashield® DAS Type F (Foil) anodes dry prior to installation. For applications where wetting may occur prior to concrete placement, use Galvashield® DAS Type C (Cast) anodes. For submerged applications such as tidal zone protection, use Galvashield® DAS Marine anode units. For optimum performance, encasement concrete resistivity should be less than 50,000 ohm-cm.

STORAGE

Store in dry conditions in the original unopened containers for up to one year from date of manufacture. System 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.



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HEALTH AND 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.

RELATED DOCUMENTS

A range of related documents are available including installation instructions, guideline specifications, project histories, applications, and SDS. For more information, contact Vector Corrosion Technologies.

ABOUT VECTOR

Vector Corrosion Technologies takes pride in offering technically advanced, cost effective corrosion protection solutions to extend the service life and improve the durability of concrete and masonry structures around the world. Vector has earned numerous project awards and patents for product innovation and is committed to a safe, healthy and sustainable environment.

For additional information on concrete preservation and sustainability, visit **WeSaveStructures.Info**. For additional information or technical support, please contact any Vector office or our extensive network of international distributors.

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