

## Distributed anode for Corrosion Control and Cathodic Protection

### Description

Galvanode 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. Galvanode 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.

Galvanode DAS Type C (Cast) anodes contain alkali-activated mortar cast around a high purity zinc core. Galvanode 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 Galvanode® DAS anode units are typically square, rectangular, or circular in cross section and can be supplied in lengths of up to 2.0m. For applications where anodes will be installed in submerged or tidal conditions i.e. piles, use Galvanode DAS Marine anodes..

### Uses

- Bridge and marine structures
- Power and industrial plant rehabilitation
- Concrete jacketing/section enlargement
- Galvanic jackets for columns and piles
- Galvanic deck overlays
- Service life extension in severe service conditions
- Conventionally reinforced and prestressed/ post tensioned concrete



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

### Advantages

- 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 prestressed 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.

*\*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	Galvanode DAS
Corrosion Prevention	Preventing new corrosion activity from initiating	✓
Corrosion Control	Significantly reducing on-going corrosion	✓
Cathodic Protection	Stopping active corrosion by applying on-going electrical current	✓



*Galvanode DAS Type F distributed anode system on bridge deck prior to placement of reinforced concrete overlay*

# Galvanode® DAS

## How does it work?

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 Galvanode DAS zinc anode component corrodes in favor of the reinforcing steel and produces an electrical current that mitigates corrosion activity.

## Specification Clause

Galvanic protection shall be provided using Galvanode® DAS anode units as manufactured by Vector Corrosion 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).

## Design Criteria

Galvanode DAS distributed anode system can be used for corrosion prevention, corrosion control or cathodic protection applications. Anode design and spacing are varied to meet project objectives. Anode spacing generally ranges between 150mm and 750mm on center depending upon project objectives, the severity of the service environment and expected service life of the anode components.

## Foil Wrapped and Cast Mortar Anodes: weights and lengths

Typical Anode unit sizes*	
Zinc weight:	0.37 kg/m
	0.89 kg/m
	1.80 kg/m
Anode length:	1.0 to 2.0m

\*Galvanode DAS anode unit size and length are customised to meet project requirements. Typical anode weights are listed above.

### Important notice

A Safety Data Sheet (SDS) is available from the Fosroc website. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

### Product disclaimer

This Technical Data Sheet (TDS) summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this TDS carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.

## Installation Instructions

Galvanode DAS distributed anode system is used for a wide range of applications. Specific application procedures are developed on a project-by-project basis.

## Precautions

Galvanode DAS distributed anode system is not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer. Keep Galvanode DAS Type F (Foil) anodes dry prior to installation. For applications where wetting may occur prior to concrete placement, use Galvanode DAS Type C (Cast) anodes. For submerged applications such as tidal zone protection, use Galvanode DAS Marine anode units.

For optimum performance, encasement concrete, grout or repair mortar should be a low resistivity product such as Fosroc Renderoc LA55. Concrete with significant amounts of polymer or silica fume may have higher resistivity.

## Supply

The Galvanode DAS Distributed Anode System is custom packaged based on project requirements.

## 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.

