

Distributed Anode System for installations in wet environments

Description

Galvanode DAS Marine is a distributed anode system designed to provide corrosion control or cathodic protection to concrete structures in marine environments. Galvanode DAS Marine anode units are alkali-activated which allows for enhanced protection that is not dependent on direct exposure to salt water. This allows the anode units to provide excellent protection to concrete elements exposed to a range of humidity conditions (submerged, splash zone, periodic spray and atmospheric).

Galvanode DAS Marine anodes can be used in salt water, fresh water and non-marine applications where the anodes may be exposed to wet conditions during installation.

Galvanode DAS Marine anode length, spacing, electrical components and installation procedures are customized to meet specific project requirements. Galvanode DAS Marine anode units are rectangular in cross section (35 x 77mm) and can be supplied in lengths of up to 2.0m. To provide global corrosion protection, evenly distribute Galvanode DAS Marine anode units over the entire structure or combine with bulk zinc anodes to protect submerged and unjacketed areas. The installed anode units are typically encased in reinforced concrete or used in conjunction with concrete or mortar filled stay-in-place forms.



Galvanode DAS Marine Anodes inside stay-in-place FRP Forms

Uses

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

Advantages

- **Type M** - Self activated marine anodes
- Alkali-activated - provides excellent protection in both wet and dry environments
- 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.
- 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.*



Galvanic anode system on bridge column prior to encasement in concrete jacket.

Galvanode[®] DAS Marine

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	✓

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 Marine anode units as manufactured by Vector Corrosion Technologies. The distributed galvanic anode units shall be, alkali-activated with a pH greater than 14 and contain 3kg zinc per lineal metre evenly distributed along the length of the unit. Zinc shall be in compliance with ASTM B418 Type II (Z13000) and ASTM B6 Special High Grade (Z13001) with iron content less than 15ppm. The zinc shall be formed around a steel core which is continuous along the length of the unit. The anode unit shall be encased in a low resistivity precast cementitious mortar and shall include FRP reinforcing to resist expansion. Anode units shall not contain added sulfates, nor constituents that are corrosive to reinforcing steel as per ACI 222R such as chlorides, bromides, or other halides.

Design Criteria

Galvanode DAS Marine distributed anode system can be used for corrosion prevention, corrosion control or cathodic protection applications. Anode unit design and spacing are varied to meet project objectives. The anode units are nominally 35 x 77mm in cross section with lengths up to 2.0 metres and contain 3kg per metre of high purity zinc. Galvanode DAS Marine anode unit spacing can vary from 300 mm - 750 mm on center depending upon project objectives, the structure configuration, severity of the service environment and expected service life of the anode components.

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.

Limitations

Galvanode DAS Marine distributed anode system is not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer. For optimum performance, the encasement material should be a low resistivity product such as Fosroc Renderoc LA55. Concrete with significant amounts of polymer or silica fume may have higher resistivity. For applications where direct wetting will not occur during installation, consider Galvanode DAS (non-marine) anode units.

Supply

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

Storage

Galvanode DAS Marine anodes have 12 months shelf life.

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.

