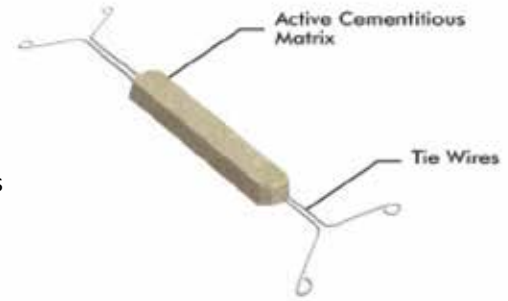


Galvashield® XPI

Embedded Galvanic Anode Units

DESCRIPTION

The Galvashield® XPI embedded galvanic anode units utilize an innovative zinc anode core design surrounded by an enhanced formulated cement-based mortar to provide corrosion mitigation to reinforced concrete structures. The anode units are alkali-activated (Type A) with an internal pH of 14 or greater to keep the zinc active over the life of the anode while being non-corrosive to reinforcing steel. Once installed, the zinc anode corrodes preferentially to the adjacent reinforcing steel, thereby providing galvanic corrosion prevention or corrosion control.



Galvashield® XPI Anode

APPLICATIONS

- Mitigates incipient anode
- Bridge widening
- Joints between new and existing concrete
- Slab replacement
- Expansion joint repair
- Prestressed concrete
- Post-tensioning anchors
- Repair of epoxy-coated rebar

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

Level of Protection	Description	Galvashield® XPI
Corrosion Prevention	Mitigates initiation of new corrosion activity	•
Corrosion Control	Reduces on-going corrosion activity	
Cathodic Protection	Reduce or eliminate on-going corrosion activity	

FEATURES AND BENEFITS

- **Proven technology** - supported by independent test program.
- **Focused protection** - provides localized corrosion protection where it is needed the most, at the interface of the repair and the remaining contaminated concrete.
- **Economical** - low cost method of providing galvanic corrosion prevention to extend the service life of concrete patch repairs.
- **Versatile** - effective in chloride-contaminated and carbonated concrete. Can be used for both conventionally reinforced and prestressed or post-tensioned concrete.
- **User friendly** - installation is quick and easy, requiring no special equipment or training.
- **Low maintenance** - requires no external power source or system monitoring.
- **Measurable** - anode performance can be easily monitored if required.
- **Long lasting** - 10 to 20 year service life* reduces the need for future repairs.

SPECIFICATION CLAUSE

Embedded galvanic anode units shall be Galvashield® XPI as manufactured by Vector Corrosion Technologies. Galvashield® XPI is a pre-manufactured anode utilizing of zinc in compliance with ASTM B418-95a Type I cast around integral steel tie wires for tying to the reinforcing steel and encased in an activated cementitious mortar with pH of 14 or greater. The cementitious mortar around the zinc anode shall contain no chlorides or other corrosion constituents detrimental to the reinforcing steel as per ACI 222R.

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 repair applications, the zinc anode core of the Galvashield® XPI unit will corrode in favor of the reinforcing steel, thus preventing the initiation of new corrosion activity in the adjacent reinforcing steel.





Galvashield® XPI

DESIGN CRITERIA

Steel Density Ratio (steel surface area/ concrete surface area)	Maximum Spacing* between XPI Units in in. (mm)
< 0.6	24 in. (610 mm)
0.61 - 0.9	20 in. (500 mm)
0.91 - 1.2	17 in. (430 mm)

Anode Name	Anode Type	Nominal Dimensions	Zinc Mass (g)
XPI	1A-P	24 x 28 x 100 mm (1 x 1.13 x 4 in.)	60

INSTALLATION INSTRUCTIONS

Prior to installation, the "Installation Instructions" bulletin should be thoroughly examined for details on the placement and use of Galvashield® XPI units. Concrete shall be removed from around and behind all corroding rebar in accordance with good concrete repair practice (ICRI Guideline No. 03730). Securely fasten the unit to clean reinforcing steel using a suitable wire twisting tool to eliminate free movement, and to ensure a good electrical connection. Steel continuity within the patch should be verified with an appropriate meter. If discontinuous steel is present, re-establish continuity with steel tie wires. Following the unit installation, electrical connection between the unit tie wires and the clean reinforcing bar should be confirmed with an appropriate meter.

The location and spacing of the units shall be as specified by the designer (for more information refer to Design Criteria). Units are typically tied on the side or beneath the exposed rebar as close as practical to the surrounding concrete making sure that enough space is left to fully encapsulate the unit in the repair. Minimum cover over the units must be 3/4 in. (20 mm). Units can be placed on a grid pattern throughout the repair to protect a second mat of steel if required. With the units in position, complete the repair using a suitable repair material with resistivity less than 50,000 ohm-cm. If higher resistance repair materials are to be used, pack Galvashield Embedding Mortar between the unit and the substrate to provide a conductive path to the substrate, then complete repair.

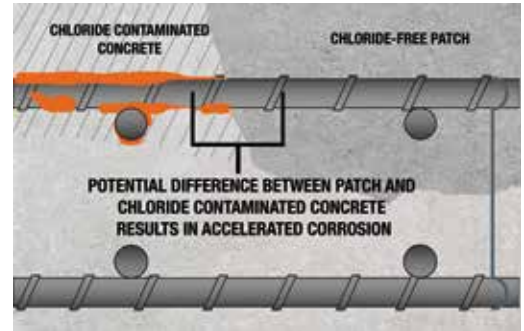
PACKAGING

Galvashield® XPI units	50 units/box	18 lb. (8.2 kg) per box
Galvashield® Embedding Mortar		44 lb. (20 kg) bag

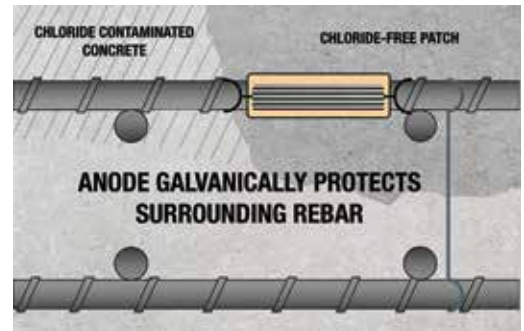
*Maximum spacing is based on typical conditions. Spacing should be reduced as appropriate for severe environments or to extend the expected service life of the anode.

STORAGE

Store in dry conditions in the original unopened box. Avoid extremes of temperature and humidity. Units should be installed within two years.



"Ring Anode" Corrosion (without Galvashield® XPI)



Galvashield® XPI prevents "Ring Anode" Corrosion

PRECAUTIONS

Galvashield® XPI units are not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer.

Galvashield® XPI units are designed to provide localized galvanic corrosion prevention. To provide galvanic corrosion control over a broader area, Galvashield® XPI units can be used in conjunction with Galvashield® CC units placed in a grid pattern in the remaining sound but contaminated concrete. For more information on corrosion mitigation strategies, contact Vector Corrosion Technologies.



Galvashield® XPI

HEALTH AND SAFETY

As with all cement-based materials, contact with moisture can release alkalis which may be harmful to exposed skin. Galvashield® XPI should be handled with suitable gloves and other personal protective equipment in accordance with standard procedures for handling cementitious materials. Additional safety information is included in the Safety Data Sheet.

RELATED DOCUMENTS

A range of related Galvashield® XPI documents are available including independent product evaluations, installation instructions, guideline specifications, project histories, applications, pricing and MSDS. 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.

Vector products are provided with a standard limited warranty against defects for a period of 12 months from the date of sale. To obtain a complete copy of Vector's limited warranty, contact Vector or visit www.vector-corrosion.com/warranty.pdf. Contact Vector for information on extended warranties.

User shall determine the suitability of the products for the intended use and assumes all risks and liability in connection therewith.

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