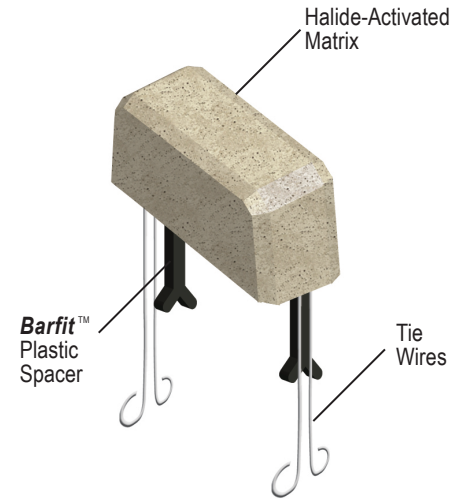


Galvanode® VP Product Line

Halide-Activated Embedded Galvanic Anode Units

DESCRIPTION

The Galvanode® VP 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 halide-activated (Type H) to keep the zinc active over the life of the anode. Once installed, the zinc anode core corrodes preferentially to the surrounding rebar, thereby mitigating corrosion in adjacent reinforcing steel.



Cut-away of Vector Galvanode® VP

APPLICATIONS

- Mitigates incipient anode formation (halo effect) in patch repair
- Bridge widening and other structure modifications
- Slab replacements, expansion joint repairs and other interfaces between new and existing concrete
- 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	Galvanode® VP 60	Galvanode® VP 100
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

- **Economical** - low cost solution for corrosion mitigation of chloride contaminated and carbonated structures. Provides protection where it is needed the most, at the interface of the repair and the remaining contaminated concrete.
- **Type H anode** - halide-activated to maintain activity of zinc.
- **Performance** - patented in 2000, Galvanode® VP is the original humectant-activated embedded galvanic anode. Typical current output of 0.5 to 1.0 mA after 120 days depending on steel density and environmental conditions.
- **User friendly** - quick and easy installation, Galvanode® VP anode units incorporate extra long tie wires or the plastic BarFit™ spacer design to assist with secure anode placement and to ensure the anode is kept a minimum distance from the reinforcing steel.
- **Dependable steel connection** - utilizes steel tie wires to provide anode-to-steel connection which does not deteriorate over time. Does not use galvanized wires that may be subject to dissimilar metal corrosion over time.

- **Corrosion inhibitors** - Galvanode® VP Products contain two different materials that inhibit corrosion of reinforcing steel.
- **Low maintenance** - requires no external power source or system monitoring.
- **Long lasting** - 10 to 20 year service life* reduces the need for future repairs.

SPECIFICATION CLAUSE

Embedded galvanic anodes shall be pre-manufactured with nominal [add zinc mass] of zinc in compliance with ASTM B418 Type II cast around a pair of steel tie wires and encased in a halide-activated alkaline cementitious shell. Anode units shall be supplied with integral unsliced wires with loop ties for tying to the reinforcing steel. The anode units shall also contain plastic spacers to keep the anode a minimum of 1 ½ in (38 mm) away from the reinforcing steel.





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HOW IT WORKS

When two dissimilar metals are coupled together in an electrolyte (in this case concrete), the metal with the higher potential for corrosion (zinc) will corrode in preference to the more noble metal (reinforcing steel). Galvanode® VP-type anodes are embedded in concrete repairs to provide corrosion prevention to the reinforcing steel in the adjacent area.

Unit Type	Anode Class	Unit Size diameter x length	Zinc Mass (g)
Galvanode® VP 60	Type HP	35 mm x 80 mm x 40 mm (1.4 in x 3.1 in x 1.6 in)	60
Galvanode® VP 100	Type HP	35 mm x 110 mm x 40 mm (1.4 in x 4.3 in x 1.6 in)	100

Anode Class

First Letter Activation Method (H-halide salt)
Second Letter Application (P-corrosion prevention)

DESIGN CRITERIA

Anode Spacing for Low to Moderate Corrosion Risk (Chloride Content <0.8% or Carbonated Concrete)			Anode Spacing* for High Corrosion Risk (Chloride Content 0.8% to 1.5%)		
Steel Density Ratio	mm	in.	Steel Density Ratio	mm	in.
< 0.3	750	30	< 0.3	600	24
0.31 - 0.6	600	24	0.31 - 0.6	500	20
0.61 - 0.9	500	20	0.61 - 0.9	400	16
0.91 - 1.2	450	18	0.91 - 1.2	350	14
1.21 - 1.5	400	16	1.21 - 1.5	250	10
1.51 - 1.8	350	14	1.51 - 1.8	200	8
			1.81 - 2.1	175	7

For Extremely High Corrosion Risk Applications (>1.5% Chloride), or for VP 100 anode spacing, Contact Vector for Assistance.

*Steel Density Ratio = surface area of steel/surface area of concrete. Maximum anode spacing is based on typical conditions. Anode spacing should be reduced as appropriate for severe environments or to extend the expected service life of the anode.

REPAIR MATERIALS

For optimum performance, use repair materials with resistivity less than 15,000 ohm-cm. If higher resistivity repair material is to be used or if the resistivity of the repair material is unknown, pack Galvashield Embedding Mortar between the anode unit and

the substrate to provide a conductive path to the substrate. Prior to the repair, pre-soak the concrete substrate and the anode units to achieve a saturated surface dry condition, then complete the repair. Do not soak the anode units for greater than 20 minutes.

INSTALLATION INSTRUCTIONS

Concrete shall be removed from around and behind all corroding rebar in accordance with good concrete repair practice such as ICRI Guideline R310.1R. Exposed reinforcing steel should be cleaned to remove all residual rust and concrete residue.

The anode units and repair material should be installed immediately following preparation and cleaning of the steel reinforcement. The location and spacing of the units shall be as specified by the designer (refer to design criteria). The units can be placed around the perimeter of the repair or on a grid pattern to protect a second mat of steel if required. Securely fasten the anode units to the side of the exposed rebar as close as practical to the surrounding concrete while maintaining at least 1½ in. (38mm) clearance from nearest reinforcing steel and ensuring that enough space remains to fully encapsulate the unit in the repair. The minimum cover of the units should be ¾ in. (20 mm).

Anode-to-steel continuity and steel-to-steel continuity within the patch should be verified with an appropriate meter; discontinuous steel should be tied to continuous bars using steel tie wire and re-tested. A value between 0 and 1 ohm should be achieved.



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PRECAUTIONS

Galvanode® VP units are halide-activated and contain substances that are corrosive to reinforcing steel and will remain in the structure over time. The anode units should be installed a sufficient distance away from reinforcing steel to minimize corrosion risk after the anodes are consumed or if the anodes become electrically disconnected from the reinforcing steel. Galvanode® VP anode units are intended to provide localized corrosion mitigation and do not address or repair structural damage. Where structural damage exists, consult a structural engineer. To provide protection of a broader area, utilize Galvashield CC anode units on a grid pattern or consult Vector for further product recommendations. As with all cement-based materials, contact with moisture can release alkalis which may be harmful to exposed skin. Galvashield anode units 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.

PACKAGING

Galvanode® VP 60 anodes	20 units per box	15.5 lb.(7.0kg)
Galvanode® VP 100 anodes	20 units per box	16.8 lb.(7.6kg)

STORAGE

Store in dry conditions in the original unopened box. Avoid extremes of temperature and humidity. Units should be installed within 2 years.

HEALTH AND SAFETY

As with all cement-based materials, contact with moisture can release alkalis which may be harmful to exposed skin. Galvanode® anode units and Galvashield Embedding Mortar 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.

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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