Galvanode® ASZ+

Humectant-activated Zinc Metalizing for Corrosion Protection of Concrete Structures

Galvanode® ASZ+ installation

DESCRIPTION

Galvanode® ASZ+ humectant-activated metalized zinc provides galvanic corrosion protection to reinforced concrete structures that are subject to corrosive conditions. Galvanode® ASZ+ produces a higher current density than traditional zinc metalizing, making it suitable for providing corrosion protection to structures exposed to both marine and non-marine environments. With the Galvanode® ASZ+ process, a thin coating of metallic zinc is sprayed onto the surface of the concrete and electrically connected to the embedded reinforcing steel. After installation of the metalized zinc coating, Galvanode® Humectant activator solution is applied to the surface of the zinc to achieve a higher level of current output and protection over time.

APPLICATIONS

- Bridge piers
- Marine structures
- Parking garages
- Industrial plants
- Power plants
- Conventionally reinforced concrete
- Prestressed/post-tensioned concrete
- Galvanic or Impressed Current Cathodic Protection (ICCP)

** 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® ASZ+
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

- **Excellent protection** - protective current delivered by humectant activation is enhanced by up to 7 times over untreated zinc (depending upon environmental conditions) thus delivering a high level of initial polarization to control active corrosion. If a higher level of current is required in the future, the humectant activator may be reapplied.
- **Activated zinc** - humectant activator attracts moisture to the surface to maintain conductivity. Makes the system particularly suitable for structures in non-marine environments.
- **Enhanced bond strength** - independent studies have shown that humectant-activated arc spray zinc has a higher long-term bond strength thus resulting in a longer anticipated anode life.
- **Reduced circuit resistance** - provides more uniform protection and anode consumption over time.
- **Successful history** - metalized zinc anodes operating in both galvanic and impressed current mode have an excellent track record of performance.
- **Economical** - no power supply or system wiring is required when installed and operated galvanically thus reducing installation and maintenance costs.
- **Low maintenance** - requires no external power source or system monitoring.
- **Long service life** - 10 to 20 year service life* reduces the need for future repairs.

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SPECIFICATION CLAUSE

The galvanic cathodic protection system shall be Galvanode® ASZ+ humectant-activated metalized zinc anode system from Vector Corrosion Technologies. The zinc wire shall have a minimum of 99.99% purity with impurities not to exceed limits established in ASTM B833-01A-2001, Specification for Zinc Wire. The metalized zinc shall be activated using Vector Galvanode® Humectant activator solution from Vector Corrosion Technologies at application rates approved by the manufacturer.

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 corrosion protection applications for concrete, the zinc coating in Galvanode® ASZ+ will corrode in favor of the embedded reinforcing steel, thus controlling active corrosion sites and/or preventing the initiation of new corrosion in contaminated concrete structures.

DESIGN CRITERIA

Galvanode® ASZ+ is generally installed at a thickness of 10 to 20 mils (250 to 500 um) depending upon the expected service conditions and the design service life. For additional information, please contact Vector Corrosion Technologies.

INSTALLATION INSTRUCTIONS

Complete concrete repairs (if required) prior to the installation of the Galvanode® ASZ+ system. Shotcrete or concrete patch repair materials shall have a resistivity of less than 50,000 ohm-cm. After concrete repairs are sufficiently cured, clean the surface of the concrete with light abrasive blasting in locations to receive the zinc coating as specified by the engineer. To provide maximum system performance, avoid aggressive surface preparation techniques in order to maximize the amount of cement paste in contact with the zinc coating. Blow the surface clean of any dust and blast media with dry compressed air and vacuum clean if required prior to application of the zinc coating.

One rebar connection should be established for every 500 ft2 (50 m2) of concrete surface area with a minimum of two connections per individual structural element to be protected. Zinc coating that is applied directly onto areas with suitably prepared exposed rebar will constitute a single rebar connection. Each rebar connection shall consist of a galvanized steel threaded stud welded or drilled and tapped into the embedded reinforcing steel. The threaded stud shall protrude from the surface of the concrete. Rebar continuity should be verified by DC resistance or millivolt drop methods. Discontinuous steel should be made continuous by approved means.

Apply the metalized zinc to the surface of dry concrete. Arc sprayed zinc is the preferred application method although flame spraying is acceptable. The zinc spray shall not be applied to shotcrete or concrete patch repairs that are less than 28 days old or are otherwise not fully cured and surface dry. The applicator shall spray the zinc coating in multiple passes with a cross pattern until the specified thickness is achieved (generally 10 to 20 mils (250 to 500 um).

After the specified thickness of sprayed zinc has been applied to the concrete surface, a flattened expanded zinc mesh plate approximately 4 in. x 4 in. (100 x 100mm) shall be bolted to the surface over the threaded rebar connections using galvanized steel nuts and galvanized washers. After the plate is tightened in place, an additional thickness of zinc (same thickness as the first layer) shall be sprayed over the connection and the zinc mesh plate and shall extend a minimum of 6 in. (150 mm) beyond the edge of the plate in all directions.

After the zinc spraying is completed and accepted in each area, the Galvanode® Humectant solution is applied to the surface of the zinc coating. Each coat shall be applied and allowed to dry prior to the application of subsequent coats. Coats shall continue to be applied until the total quantity of Galvanode® Humectant activator is 0.26 gal/100 ft2 (0.1 liter/m2). Application may be by brush, roller or spray. After the humectant solution dries, surface coatings can be applied to reduce the self-corrosion of the zinc surface.

PACKAGING

Galvanode® Humectant Solution	5.0 gallon (18.9 liters) pail 67.0 lb. (30.0 kg) per pail
	30.0 gallon (113.6 liters) drum 402.0 lb. (182.3 kg) per drum

PRECAUTIONS

Galvanode® ASZ+ is not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer.

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STORAGE

Store in dry conditions in the original unopened containers. Avoid extremes of temperature and humidity. Humectant activator should be installed within one year.

HEALTH AND SAFETY

Follow OSHA guidelines as required. Protect applicator during abrasive blasting and metalizing processes with full air-fed respirators. Prior to handling the humectant activator, refer to Safety Data Sheet (SDS). Use rubber gloves, safety glasses or goggles, and a NIOSH/MSHA respirator approved for inorganic dusts and mists.

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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VECTOR CORROSION TECHNOLOGIES