



THE EUCLID CHEMICAL COMPANY

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SENTINEL-GL

SELF-GENERATING CATHODIC PROTECTION

SENTINEL-GL anode is designed to mitigate the corrosion of reinforcing steel in concrete. Its principal function is to counteract the “anode ring effect” and significantly extend the service life of concrete patch repair (see explanation in **SENTINEL-GL** product information). It can also be used in other locations where new concrete is placed adjacent to existing chloride-contaminated or carbonated concrete, creating a potential for future corrosion. In either case, the **SENTINEL-GL** anode generates a small but effective cathodic current to the surrounding reinforcing steel, thus protecting the steel from corrosion.

PRIMARY APPLICATIONS

- Parking Decks
- Bridge Structures
- Pier & Dock Supports
- Retaining walls
- Condominiums
- Apartments

FEATURE/BENEFITS

- Offers the highest self-generating protective current output of any cathodic protection device on the market ensuring long service life and large coverage area
- Unique v-notch design minimizes chipping of concrete assuring easy, efficient placement, reduced labor requirements and lower installation costs,
- Galvanized tie wire will not rust and mount tightly to rebar forming a secure, repeatable connection
- Formulated with two corrosion inhibitors for additional corrosion protection
- Exclusive insulating barrier design will not “dump” current into attachment bar extending the coverage area and service life of the cathodic protection device.
- Special v-notch configuration snugly fits any size rebar, requires no special training and is easily installed with standard tools
- Engineered to provide long lasting service that maximizes the life cycle of the repair and delivers an excellent cost benefit advantage. **SENTINEL-GL** is designed to deliver beneficial protective current for 10 to 20 years*.

**Current required to completely prevent corrosion of steel in concrete will vary with conditions, as will effective service life.*

TECHNICAL INFORMATION

The following results were developed under laboratory conditions:

Current Output: **SENTINEL-GL** delivers a protective current equal to or greater than 0.4 milliamps after 90 days. Test performed in an environment that is maintained at room temperature and about 55% relative humidity, and conducted in a concrete test block containing not more than 0.3 ft². (0.028 m²) of reinforcing steel.

Current Insulator: **SENTINEL-GL** incorporates an insulating barrier designed to prevent excessive dumping of protective current into the attachment reinforcing bar.

SPECIFICATIONS AND COMPLIANCES

- Test values of the **SENTINEL-GL** in repair areas indicate complete cathodic protection of the steel rebar adjacent to the patch based upon standards set by NACE RPO290-90.
- In compliance with ASTM B418-95a and ASTM A82-97a

PACKAGING

The **SENTINEL-GL** are packaged in full boxes of 20 units per box.

INSTALLATION PREPARATION

1. The area to be repaired should be prepared in accordance with industry (ICRI) guidelines. All unsound concrete should be removed from around and behind the steel reinforcement inside the repair area in accordance with good concrete repair practice. Sufficient clearance should be provided between the anode and the substrate concrete (minimum of 3/4 in. [19 mm] or 1/4 in. [6 mm] larger than the top size aggregate in the repair material, whichever is greater).

2. The exposed rebar in the repair area shall be thoroughly cleaned to bright metal, only where anodes will be attached, to facilitate a good electrical connection. Electrical continuity of the rebar within the repair area should be confirmed with the use of a high-impedance multimeter. When placed on the mV scale, a reading of 1.0 mV or less on the voltmeter indicates good continuity between reinforcing bars. Electrical discontinuity can be resolved by wiring discontinuous bars to adjacent bars using steel tie wire. Bars should be cleaned to bright metal where tie wires are attached.

PLACEMENT OF ANODE

1. When using **SENTINEL-GL** anodes to extend the life of patch repair, the anodes should be placed as close as practical to the edge of the repair area (within 6 in. or 150 mm) while still providing sufficient clearance for the anode to be completely surrounded by the repair mix.

2. Anode spacing shall be as specified by the designer, but anode spacing should not exceed 30 inches (750mm) on center. Guidelines for anode placement spacing are presented in the following table:

Density of Reinforcing Steel ¹	Environment	
	Highly Corrosive ²	Slightly Corrosive ³
Heavy (>1.0 ft ² /ft ² concrete)	12 inches (300 mm)	18 inches (450 mm)
Moderate (0.5-1.0 ft ² /ft ² concrete)	18 inches (450 mm)	24 inches (600 mm)
Light (<0.5 ft ² /ft ² concrete)	24 inches (600 mm)	30 inches (750 mm)

Notes:

1. Actual surface area of reinforcing steel bars per square foot of concrete.
2. Characterized by a large amount of concrete damage. CF content > about 5 lbs/yd³.
3. Characterized by a small amount of concrete damage. CF content < about 5 lbs/yd³.

3. The **Sentinel-GL** anode is normally installed with its top face parallel to the concrete surface, but may be angled down in cases where the concrete cover is very shallow.

INSTALLATION PROCEDURE

1. See installation procedures included in each box of the **SENTINEL-GL**.

2. Complete the patch repair following good concrete repair procedures, taking care not to create any voids around the anode. Repair material must have a volumetric resistivity below 15,000 ohm/cm after 28 days when maintained at room temperature and 80% relative humidity. The Euclid Chemical Company recommends that its specially formulated line of patching mortar materials be used with **SENTINEL-GL** as a complete corrosion prevention system, products such as EUCOCRETE, CONCRETE-TOP SUPREME, VERTICOAT and EUCOSHOT (See product information or contact The Euclid Chemical Company for other acceptable materials). Repair materials with significant polymer modification and/or silica fume content may not be suitable for use with **Sentinel-GL**. Certain insulating products such as epoxy bonding agents should not be used.

PRECAUTIONS / LIMITATIONS

- **SENTINEL-GL** anodes should be installed and covered with patch material within 24 hours of removal from their original sealed packing. If not used and covered within 24 hours, anodes removed from their original packing should be protected by temporarily sealing in plastic (e.g. Ziploc® plastic bags).

- **Note:** Although not required, the use of insulating rebar coatings (such as epoxy coatings) in the repair area will increase the effectiveness and service life of **SENTINEL-GL** anodes by directing protective current to reinforcing steel outside the patch. If such coatings are used, coating of rebar should be done after installation of the anodes, and care must be taken not to apply any coating to the anode itself. In this case, electrical continuity between the anode wires and the rebars must be checked thoroughly.

Shelf Life: Anodes should be stored in their original sealed packaging and should be installed within one (1) year. Extremes of temperature should be avoided during storage



Sentinel-GL - 10.04

WARRANTY: The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for six (6) months from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.