

SENTINEL-GL

SELF-GENERATING CATHODIC PROTECTION

DESCRIPTION

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 repair. 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
- Balconies

FEATURES/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
- Exclusive insulating barrier design will not “dump” current into attachment bar extending the coverage area and service life of the cathodic protection device
- Snugly fits against 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*.
- Galvanized tie wire will not rust and mounts tightly to rebar forming a secure connection

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

TECHNICAL INFORMATION

Typical Engineering Data - 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.

PACKAGING

SENTINEL-GL units are packaged 20 units per box.

SHELF LIFE

1 year in original, unopened package.

SPECIFICATIONS/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.
- ASTM B 418-01 (Previously ASTM B418-95a) and ASTM A 82 -02 (Previously ASTM A 82-97a).
- Listed under US Patents 6,217,742, 6,958,116, 7,160,443, and 7,488,410.



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INSTALLATION PREPARATION

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. Sufficient clearance should be provided between the anode and the substrate concrete (minimum of 3/4" (19 mm) or 1/4" (6 mm) larger than the top size aggregate in the repair material, whichever is greater).

Where anodes will be attached, clean exposed rebar to bright metal 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.

PLACEMENT OF ANODE

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" or 150 mm) while still providing sufficient clearance for the anode to be completely surrounded by the repair mix.

Anode spacing shall be as specified by the designer, but anode spacing should not exceed 30" (750mm) on center. Guidelines for anode placement spacing are presented below;

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

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

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

Complete the patch 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 materials such as EUCOCRETE, EUCOPATCH, CONCRETE-TOP SUPREME, VERTICOAT, EXPRESS REPAIR, TAMMS FORM & POUR, SPEED CRETE PM, SPEED CRETE RED LINE, TAMMS STRUCTURAL MORTAR, NS GROUT (fluid) and EUCOSHOT be used with SENTINEL-GL as a complete corrosion prevention system. For other acceptable product recommendations, contact your local area Euclid Chemical representative. **Caution:** 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. *Note: See installation procedures included in each box of the SENTINEL-GL.*

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.

PRECAUTIONS/LIMITATIONS

- SENTINEL-GL anodes should be installed and covered within 48 hours of removal from their original sealed packaging. Any anodes removed from their original packaging should be protected by temporarily sealing in plastic (e.g. Ziploc® bags).