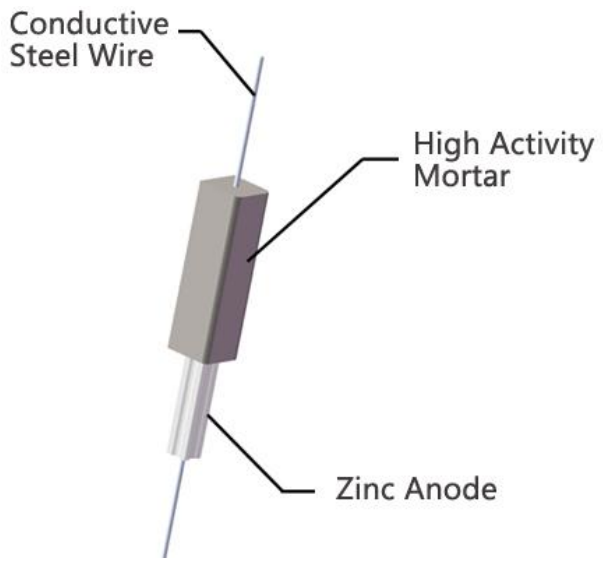
CONCRETE REBAR ZINC ANODE

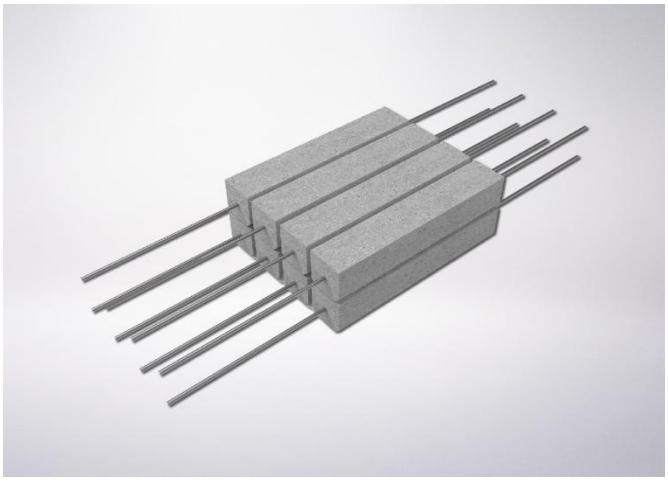


Description

Embedded sacrificial anode can be used not only to prevent corrosion of steel bars, but also to repair reinforced concrete that has already corroded. It is composed of super-grade zinc anode (Zn≥99.995%), prefabricated high-alkaline active mortar coating material, special pore agent and steel wire. During the manufacturing process, a special process is used to treat the surface activity of the zinc anode to maintain a high working area and uniform corrosion consumption. For use, just connect the steel wires at both ends of the embedded sacrificial anode to the steel bar. After pouring the concrete, the mortar will activate the zinc anode immediately, and continuously provide electrons to the steel bar to prevent it from corrosion.

Features

1. Negative open circuit potential, open circuit potential not less than -1100mV (Vs saturated calomel electrode)
2. High alkaline and activity mortar PH≥14
3. Low mortar resistivity <100Ω.m
4. Long service life, not less than 10 years
5. High anode activity, short induction period, stable potential and current output, and always in an active state during operation
6. Good safety and reliability. The corrosion products are evenly dispersed in the high-activity mortar, and will not cause expansion stress to the protected structure
7. Simple installation. Just wrap the steel wires at both ends of the anode on the protected steel bars



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Reference Documents

The reference documents listed below form an integral part of this Data Sheet. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effecttive date of this Data Sheet.

Reference	Title
ASTM B418 2001	Standard Specification for Cast and Wrought Galvanic Zinc Anodes
ASTM B843	Standard Specification for Magnesium Alloy Anodes for Cathodic Protection
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
NACE RP0196-2004	Galvanic Anode Cathodic Protection Of Internal Submerged Surfaces Of Steel Water Storage Tanks
NACE TM0190-2006	Impressed Current Laboratory Testing of Aluminum Alloy Anodes
NACE SP0100-2008	Cathodic Protection to Control External Corrosion of Concrete Pressure Pipelines and Mortar-Coated Steel Pipelines for Water or Waste Water Service
NACE SP0408-2008	Cathodic Protection of Reinforcing Steel in Buried or Submerged Concrete Structures
GBT 4950-2002	Sacrificial Anode of Zn-Al-Cd alloy
GBT 4951-2007	Chemical Analysis Methods for Sacrificial Anodes of Zn-Al-Cd alloy
GBT 1173-1995	Casting Aluminium Alloys
GBT 50393-2017	Technical Standard for Anti-corrosion Engineering of Steel Petroleum Storage Tanks
GBT 21246-2007	Measurement Method for Cathodic Protection Parameters of Buried Steel Pipelines
EN 16222-2012	Cathodic Protection of Ship Hulls
17-SAMSS-006	Galvanic Anodes for Cathodic Protection
AS 2239-2003	Galvanic (Sacrificial) Anodes for Cathodic Protection

Specifications

Current Output

Rebars, concrete and embedded anodes are selected for self-coupling test. The output current of anode was monitored during the curing period within 30 days after concrete pouring and after 6 months of continuous coupling operation. The results show that:

1. In the early stage of pouring, the output current of the embedded anode reached 5000 μA, and the rebar was rapidly polarized; then the output current gradually decreased, and finally stabilized (720 μA), and the rebar potential stabilized at about -420mV;
2. After 6 months of coupling, the output current of anode stabilized at 60-120μA (fluctuates in a small range due to the influence of temperature and humidity), and the rebar potential stabilized at about -400mV~-440mV.

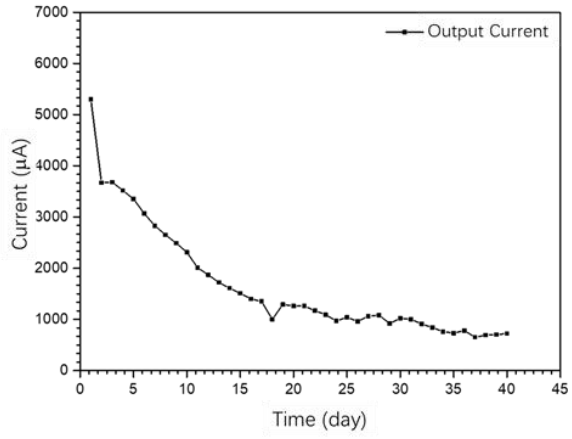


Figure 1. Curing period

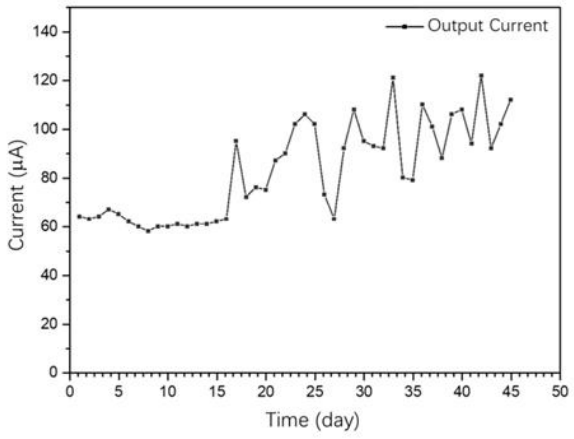
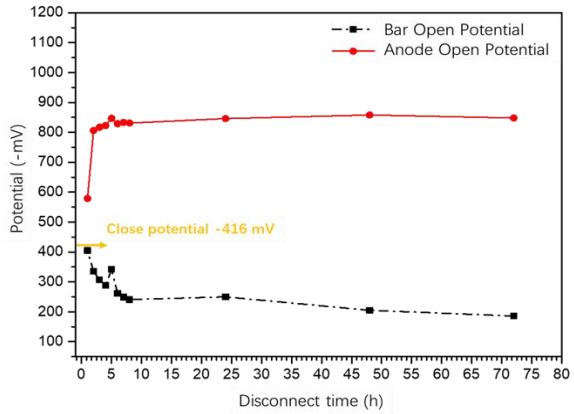


Figure 2. After 6 months of coupling

Protective Potential

According to the requirements of the NACE SP0290, the corrosion attenuation potential of rebars should be greater than 200 mV. Based on this, the open potentials of rebars and anodes were continuously measured for multiple periods, and the results met the standard requirements; after recoupling, the close potentials of rebars recovered to -440mV.

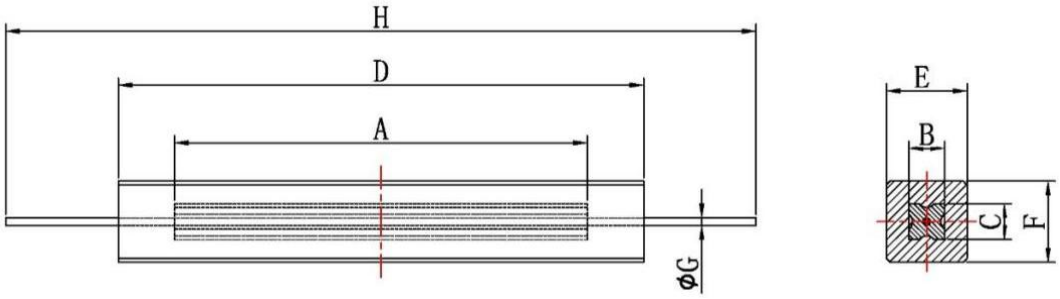


Dimension and Weight

For the protection of new concrete structures and the rehabilitation of existing concrete structures, TopCorr offers conventional size embedded sacrificial anodes as well as customised products.

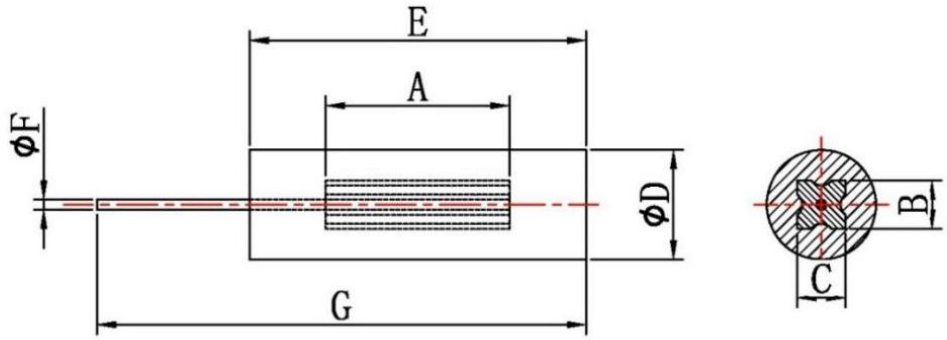
- **Embedded anodes for the protection of new concrete structures**

Model	Zin core size/mm	Anode size/mm	Core size/mm		Zinc core weight/g	Anode weight/g
	A×B×C	D×E×F	G	H		
TC-RP-N-01	40×15×10	60×25×20	2	460	38	107
TC-RP-N-02	60×15×10	80×25×20	2	480	58	144
TC-RP-N-03	90×15×10	110×25×20	2	510	87	200
TC-RP-N-04	40×25×20	60×35×30	2	540	138	253



- **Embedded anodes for the rehabilitation of existing concrete structures**

Model	Zin core size/mm	Anode size/mm	Core size/mm		Zinc core weight/g	Anode weight/g
	A×B×C	D×E	F	G		
TC-RP-R-01	10×25×25	45×20	2	220	43	125
TC-RP-R-02	25×25×25	45×35	2	235	109	248
TC-RP-R-03	30×30×30	50×40	2	240	189	383
TC-RP-R-04	40×30×30	50×50	2	250	253	494



Arrangement Spacing

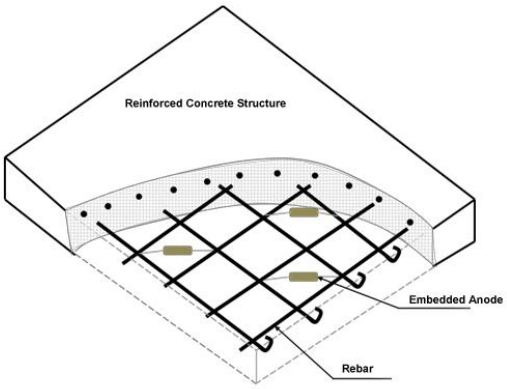
The arrangement spacing of embedded anodes is affected by factors such as rebar area, corrosive environment, temperature, etc. For specific spacing, please consult TOPCORR. The following table shows the recommended maximum distribution spacing of anodes.

Highly corrosive environment		Moderate and low corrosive environments	
Bar Area/Concrete Area	Max Anode Spacing (mm)	Bar Area/Concrete Area	Max Anode Spacing (mm)
< 0.2	700	< 0.2	750
0.21-0.46	680	0.21-0.46	700
0.47-0.70	610	0.47-0.70	650
0.71-0.93	560	0.71-0.93	600
0.94-1.15	500	0.94-1.15	550
1.16-1.36	480	1.16-1.36	500
1.37-1.56	450	1.37-1.56	480
1.57-1.75	450	1.57-1.75	480
1.75-1.93	430	1.75-1.93	450
1.94-2.1	430	1.94-2.1	430

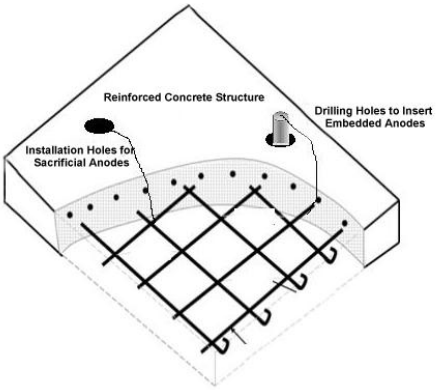
Installation Diagram

1. Before using the product, wet the external mortar of the anode with clean water to help activate the product quickly;
2. The anode should be handled with care during use;
3. The electrical continuity of the overall reinforcement should be guaranteed;
4. The exposed steel wire and steel bar of the product should be firmly connected to maintain good electrical connectivity.

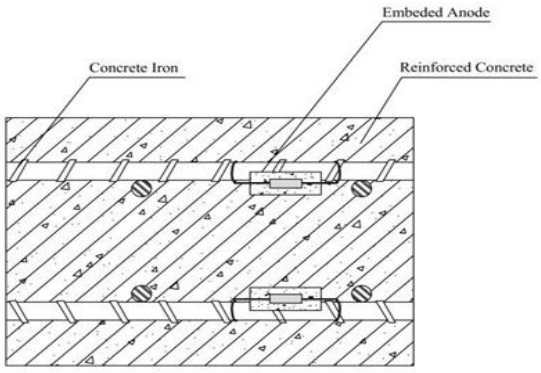
Installation Diagram



New constuctions



Repairing of old constructions



Installation Diagram

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