

TECHNICAL DATA SHEET

Zinc Layer Roll Anode

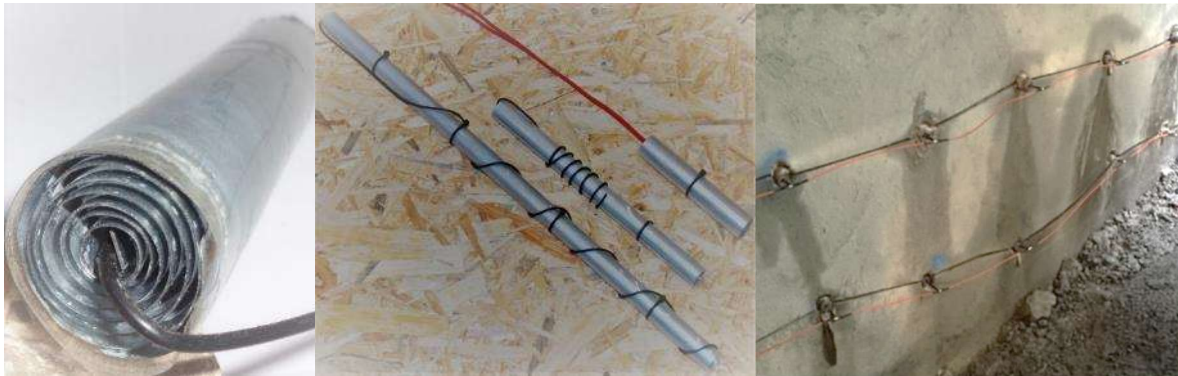
A self-contained, durability enhancement system, for atmospherically exposed reinforced concrete.

Provides active electrochemical corrosion control by providing:

- **cathodic protection**, capable of stopping, reinforcement corrosion, in old chloride contaminated and carbonated structures.
- **cathodic prevention**, capable of slowing down or preventing the initiation of reinforcement corrosion, for newly constructed structures.

Zinc Layer Roll Anode (ZLRA) consists of a high purity zinc foil, complete with an ion-conductive, auto moistening, humectant/activator layer. The zinc foil is rolled into a cylinder shape for installation as an embeddable discrete, galvanic anode and is designed to be installed into drilled holes within the concrete.

The anodes are installed with a purpose formulated, ion-conductive, auto moistening Zinc Activation Paste (ZAP) which surrounds the anode within the drilled hole and provides direct, electrochemical contact between the anode and the concrete surface. When connected to the embedded reinforcement, the zinc foil corrodes at the humectant/activator layer and provides **galvanic cathodic protection** to the surrounding embedded reinforcement.



ZLRA is capable, of stopping and preventing corrosion of reinforcement within chloride contaminated or carbonated structures, preventing the need for removal and replacement of sound, undamaged chloride contaminated or carbonated concrete.

Where installed with monitoring facilities, ZLRA can be monitored and evaluated against the cathodic protection criteria listed within BS EN ISO 12696.

ZLRA and the activation paste do not contain any chlorides or chemicals which are harmful to the structure, personnel or the environment.

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About

Zinc Layer Roll Anode (ZLRA) consists of a high purity zinc foil, complete with an ion-conductive, auto moistening, humectant/activator layer. The anode is provided with a centralised galvanised steel wire, which is electrically connected to the zinc foil.

The zinc foil/humectant/activator is wrapped around the centralised galvanised steel wire, to form a cylindrical discrete anode. The anodes are installed directly into drilled holes within the concrete structure, surrounded by the purpose formulated Zinc Activation Paste (ZAP) and the cable tails are connected either directly or via a monitoring facility to the embedded reinforcement.

When installed into the concrete of atmospherically exposed concrete and electrically connected to the embedded reinforcement, ZLRA provides active corrosion protection (**cathodic protection & cathodic prevention**) to the embedded reinforcement without the need for external AC or DC power.

ZLRA is a proven, effective method of corrosion control, which meet the requirements of BS EN 1504 Part 9 Principle 10 (cathodic protection by applying an electrochemical potential) and provides benefits in line with Principal 7 (preserving or restoring passivity).

Capable of stopping and preventing concentration cell corrosion (incipient anodes), the application of ZLRA can limit or prevent the need for removal and replacement of sound undamaged chloride contaminated or carbonated concrete.

Used locally to provide patch repair enhancement and prevent incipient anode formation for patch repairs in chloride contaminated concrete, or when incorporating old chloride contaminated structures into a new build.



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Uses

ZLRA is suitable for protecting atmospherically exposed reinforced concrete structures suffering from chloride or carbonation induced reinforcement corrosion and resulting concrete deterioration.

Used in conjunction with concrete repairs, it provides **structure life extension** and **deterioration control** of existing damaged structures. Used locally to provide patch repair enhancement and prevent incipient anode formation for concrete patch repairs, in chloride contaminated concrete, or when incorporating old chloride contaminated structures into a new build.

For severely deteriorated structures requiring extensive concrete repairs, it can be used globally across the structure to provide structure life extension and durability control.

For new structures, it can be used to provide **durability enhancement** or deterioration prevention, when installed in the early life of a structure, to prevent the onset of corrosion related deterioration, at high risk areas, like construction joints, construction defect areas or areas of low cover.

ZLRA can be used in conjunction with the surface applied, Zinc Layer Anode (ZLA) to provide enhanced protection in restricted access areas, which prevent direct access of the concrete surfaces, such as bearing shelves, joints or other areas requiring protection remote from the concrete surface.

It is suitable for use on **high risk elements** like pre-stressed and post tensioned structures, as it will not exceed the potential limits listed within BS EN ISO 12696, and requires no further potential limitation or control during operation.

Can be installed as a replaceable protection system by embedding the anodes into the structure using a high-performance non-setting zinc activation paste, which enables future anode removal and replacement without additional drilling.

Can also be fitted as a permanent protection system by embedding the anodes into the structure using a suitable low resistance, high-performance cementitious grout.

Depending on the anode quantity, size, spacing and prevailing exposure conditions, ZLRA can:

- prevent early patch repair failure of chloride contaminated concrete for periods of greater than 10 years.
- enhance the natural protection and prevent the onset of reinforcement corrosion of new structures, subject to chloride contamination, for periods in excess of 20 years, compared with unprotected exposure conditions

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ZLRA can be installed as a stand-alone system connected directly to the reinforcement or provided with embedded monitoring facilities to meet the monitoring requirements listed within BS EN ISO 12696 - Cathodic Protection of Steel in Concrete.

The large surface area of the anode, provides a low anode to cathode resistance, ensuring the highest protection current delivery under the natural zinc to steel driving voltage.

The humectant/activator layer enables high dissolution and mobility of the zinc corrosion product, preventing loss of performance, typically found with cementitious encased, embedded galvanic anodes.

The use of the Zinc Activation Paste (ZAP) further enhances the anode performance and enables anode removal and replacement without additional drilling.

Once installed, ZLRA provides multi-staged protection which effectively stops and prevents concrete deterioration resulting from reinforcement corrosion.

The protection afforded by ZLRA includes:

- Stopping corrosion of the reinforcement by delivering cathodic protection
- Promotes passive film healing at corrosion sites on the embedded reinforcement by producing hydroxide
- Maintains passive film stability by delivering cathodic prevention to non-corroding or re-passivated reinforcement
- Consumes water and oxygen within the concrete through electrochemical reactions

The system is easy to install, requires no additional AC or DC power for operation and is relatively maintenance free.

The anodes are supplied in the following standard sizes:

- 125mm long x 22mm diameter 60g Zinc
- 250mm long x 22mm diameter 120g Zinc

Specific zinc weights and sizes can be fabricated to suit specific applications, life and performance requirements.

Anodes are provided with a standard galvanised steel wire tail to enable connection or interconnection to form strings. Alternative anode tails are available on request.

The Zinc Activation Paste (ZAP) is delivered separately in 600ml sausages which can be applied with standard manual or battery powered sealant guns.

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The design (selection of anode size and anode spacing) of the ZLRA should be undertaken by qualified and certified CP specialists. The installation of the ZLRA should be undertaken by qualified and experienced contractors supervised by the designer.

Item	Description	Unit	Value
Zinc Layer Roll Anode			
Zinc Foil	Composition	% Zinc	99.95
ZLRA125	Length	mm	125 +/- 2
	Weight of zinc per anode	g	60
ZLRA250	Length	mm	250+/- 4
	Weight of zinc per anode	g	120
	Diameter	mm	22 +/- 5
Anodes supplied with standard tail 300mm long, 0.25mm ² galvanized wire, pvc coated			
Zinc Activation Paste (ZAP)	Sausage	ml	600
	Sausage weight	Kg	1.00
	Packing	Aluminium foil with plastic liner	
Zinc Layer Roll Anode & Zinc Activation Paste	Storage conditions	°C	<30
	Storage conditions	RH	<50
	Maximum storage time (in original packaging)	Months	12
Standard Package			
ZLRA125 SP	20 No ZLRA 125 + 2 No 600ml ZAP		
ZLRA250 SP	20 No ZLRA 250 + 4 No 600ml ZAP		

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