

## TECHNICAL DATA SHEET

### Zinc Layer Discrete 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 Discrete Anode (ZLDA) consists of a high purity zinc foil, complete with an ion-conductive, auto moistening, humectant/activator layer and centralised perforated galvanised steel strip, which is electrically connected to the zinc foil.

When connected to the reinforcement and encapsulated in the concrete, the zinc foil corrodes at the humectant/activator layer and provides **galvanic cathodic protection** to the surrounding embedded reinforcement.



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

For **existing structures**, the anodes are positioned below the existing reinforcement, following damaged concrete removal, the anodes are fixed directly to the exposed reinforcement, using the galvanised steel strip and are encased in the concrete repair material as part of the concrete repair process.

For **new structures**, the anodes are fixed directly to the exposed reinforcement using the galvanised steel strip and are then encased in the structural concrete as part of the construction process.

**ZLDA do not contain any chlorides or chemicals which are harmful to the structure, personnel or the environment.**

## Simple Sustainable Solutions for Durability Enhancement and Life Extension

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### About

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

The zinc foil/humectant/activator is wrapped around the centralised galvanised steel strip, to form an elongated discrete anode and surrounded by a porous cotton membrane, to enable direct ionic contact between the anode and the surrounding concrete.

The anodes are installed directly into concrete repairs on old structures or incorporated within the structural concrete for new build applications.

The centralised perforated galvanised steel strip is connected either directly or via a monitoring facility to the embedded reinforcement to provide electrical continuity between the anode and the reinforcement. The anodes are fully encapsulated within the repair or structural concrete which provides ionic contact between the anode surface and the embedded reinforcement.

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

ZLDA 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 ZLDA can limit or prevent the need for removal and replacement of sound undamaged chloride contaminated or carbonated concrete.

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

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### Uses

ZLDA 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.

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.

Depending on the anode quantity, size, spacing and prevailing exposure conditions, ZLDA 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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### Technical

ZLDA 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 over life.

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

The protection afforded by ZLDA 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

100mm long x 50mm thick 180g Zinc

300mm long x 50mm thick 540g 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 strip for reinforcement connection.

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

Item	Description	Unit	Value
<b>Zinc Layer Discrete Anode</b>			
<b>Zinc Foil</b>	Composition	% Zinc	99.95
<b>ZLDA100</b>	Length	mm	100
	Width	mm	50
	Thickness	mm	15
	Weight of zinc per anode	g	180
	Weight (gross) per anode	g	280
<b>ZLDA300</b>			
	Length	mm	300
	Width	mm	50
	Thickness	mm	15
	Weight of zinc per anode	g	540
	Weight (gross) per anode	g	840
Anodes supplied with standard 100mm x 16mm wide, perforated galvanized steel strip			
<b>Zinc Layer Discrete Anode</b>	Storage conditions	°C	<30
	Storage conditions	RH	<50
	Maximum storage time (in original packaging)	Months	12
<b>Standard Package</b>			
<b>ZLDA100 SP</b>	Box of 24 No		
<b>ZLDA300 SP</b>	Box of 12 No		

### Contact Us

www.acpmaterials.com  
info@acpmaterials.com  
Telephone : 01952 741566  
Mobile : 07483 162872

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