

ZINC LAYER ANODE

Zinc Layer Anode or ZLA is a laminate zinc anode. The presence of chlorinated salts inside the concrete can constitute a danger to the passivation layer (protective oxide layer) present on the carbon steel reinforcement of the concrete. Any variation in thickness of the concrete covering of the reinforcement, the quality of said covering and the concentration of chlorides around the reinforcement also create similar corrosive conditions. In such conditions local corrosion piles will form in areas called anodic. Other areas of the armour, in which the situation is relatively less corrosive and aggressive, remain passivated (by a protective layer of oxides). These areas are called cathodic.

The simultaneous presence of anode and cathode areas gives rise to electrochemical reactions (redox reactions), if the distance between an anode and a cathode is relatively small. In the anodic areas, these electrochemical reactions convert the steel of the armature into iron oxides (rust).

Those corrosion products (rust) that are formed can have a volume from 5 to 10 times that of the original steel armour. For this reason, the stresses created inside the concrete can also lead to cracking and shattering of the cement roof. The loss of steel and concrete could also weaken the structure and pose a safety hazard.

ZLA has therefore been designed to operate as an additional anode that replaces all the anodic areas of the reinforced concrete structure. It is applied to the surface of the concrete. The zinc layer is electrically connected to the steel armor. In doing so, the electric circuit closes, as the electric current passes through the layer of adhesive and concrete by ionic conductivity (the two materials belong to the so-called electrolytes).

Since zinc has a natural potential that is more electronegative than that of the steel armature, when applied it becomes the anode and forms a new corrosion pile of which the armature can only be the cathode. In this way, the corrosive process inside the concrete is transferred to the zinc layer, avoiding future detachment and cracking of the concrete itself.

DATASHEET 6.13

ZLA ANODE



BAC[®]

CORROSION CONTROL

BAC Corrosion Control Ltd
Stafford Park 11 • Telford • TF3 3AY
United Kingdom

T: +44 (0) 1952 290 321
E: sales@bacgroup.com
W: www.bacgroup.com

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ZLA consists of a pure zinc sheet (> 99.95%) with a thickness of 250 microns (but variable according to operational and durability needs) coupled to an ionic conductive adhesive electrolyte and protected by a polypropylene interlayer that preserves it, from any contamination (overall thickness: 1.2 mm). ZLA is applied directly to the concrete surface: an electrical connection is created between the zinc surface and the concrete reinforcement through a metal cable.

From the moment the electrical connection between the zinc sheet and the reinforcement in the concrete closes, a current flow is established and ZLA begins to self-wear.

The high conductivity of the ZLA foil ensures uniform distribution of the cathodic protection current and facilitates the achievement of current sharing requirements.

After cutting ZLA to the appropriate length, it can be applied to the concrete surface by hand pressure. The concrete surface must be structurally intact and free from dust or other residues. Remove the interlayer that protects the gel and at the same time press ZLA on the affected surface using, for this operation, a rubber hammer for the entire length of the sheet. Seal the free ends and proceed with the finishing.

ZLA is supplied in rolls of 250 mm in width and 25 m in length. After application, if required for aesthetic reasons, ZLA can be provided with a finishing coating of any color according to specific customer requests. The system check can be performed (if required) according to the UNI EN ISO 12696 standard

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