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| **From** | ARDEX Australia (AAu-NSW) |
| **Issue date** | Monday, 31st July 2017 |
| **Subject** | ARDEX BRX 60 LO - Sacrificial Zinc Anodes for Cathodic Prevention |

**SCOPE**

The [ARDEX BRX 60 LO](http://www.ardexaustralia.com/products/repair-mortars/ardex-brx-60-lo) Low Output Anodes are for use within concrete where repairs due to reinforcement corrosion are required. The anodes provide cathodic prevention to incipient anodes (halo effect) or corrosion control to limit corrosion rates of corroding bars embedded in original concrete. It is the recommended system for use in conjunction with the [ARDEX BR Repair Mortar Range](http://www.ardexaustralia.com/products/repair-mortars), specifically [ARDEX BR 340](http://www.ardexaustralia.com/products/repair-mortars/ardex-br-340) and [ARDEX BR 460 Flow](http://www.ardexaustralia.com/products/repair-mortars/ardex-br-460-flow) for ultimate corrosion prevention. The core of the ARDEX BRX 60 LO Anode is a 60gm sheet of zinc coated with a patented activation paste. The paste is based on keeping the zinc active in the pH range just below neutral. The zinc-paste reaction produces non-expansive reaction products that do not block the cells effectiveness. The zinc sheet is rolled and flattened to a multilayer strip sandwiching a galvanized steel strip used to connect the anode to the steel. The zinc strip is cast in a high performance grout that provides resistive current control. The ARDEX BRX 60 LO Anode is 125 x 50 x 25mm and is fully compatible with ARDEX BR Repair Mortars.

**SUBSTRATE**

Concrete

**TYPICAL APPLICATIONS**

ARDEX 60 LO can be applied to:

• Columns, beams and slabs

• Balconies

• Precast and in-situ cast façades

• Pipes

• Foundations

• Wharf beams & soffits

• Car parks

• Retaining walls

• Tunnel linings

**PREPARATION**

Prepare the concrete surface Prior to installing the anodes, the concrete should be prepared in the following manner (refer to respective, compatible ARDEX Repair Mortar Technical Datasheet):

1. Remove all deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials from surface. Ensure that the repair area is not less than 5cm in depth.

2. In case the depth of the repair area is less than 5cm and cannot be enlarged for proper anode installation, please contact ARDEX Technical Services.

3. Preparation work should be done by high pressure water blast scabbler, or other appropriate mechanical means to obtain an exposed aggregate surface with a minimum surface profile of 2mm for proper mortar adhesion.

4. Reinforcing Steel: Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be high pressure washed with clean water after mechanical cleaning.

**APPLICATION**

When an anode is connected to a reinforcing grid, it throws current to all the steel around it that it is electrically connected to, not just the bars that need protection. All this steel drawing current will deplete the anode and reduce its life. In order to conserve the anodes, exposed steel should be coated with [ARDEX BR 10 SP Zinc-rich](http://www.ardexaustralia.com/products/repair-mortars/ardex-br-10-zp) Primer. This insulates the steel so that current will not flow to it, and the anode will only protect the reinforcement that has not been coated. This affects mainly steel outside of the patch but may also be at holes in the coating. Steel outside of the patch might be in two different states. It may have been protected from corrosion by the more active reinforcement in the patch areas. This un-corroded steel is treated as corrosion prevention. Only a small polarisation is required to achieve protection. If, however, this steel has started to corrode, but has not caused damage (determined by breakout at a few locations), then anode design should be based on corrosion control. The table below shows the application rate required for corrosion control and cathodic prevention depending on the amount of steel to be protected.

**Install the ARDEX BRX 60 LO Anode**

When the area is prepared and clean, find appropriated locations close to the bars with an anode distribution described in the table. Anodes should be located close to the edges of the repair for incipient anodes and midway between bars to be protected for corrosion control. Place and fasten the anodes securely on the steel bars so electrical contact will not be lost during the repair mortar application or concrete casting. Build the patch repair in such a way that the anode surface is fully in contact with the patch repair material. Be aware of enough spacing between the anode and the existing concrete. In that way the repair mortar or concrete can easily force its way around the anode and create good adhesion with the paste for sound electrolytic continuity between the anode and the concrete structure.

**TECHNICAL DATA**

Corrosion of reinforcement is an oxidizing process involving the reaction:

**Fe Fe2+ + 2e**

A neutral iron atom loses 2 electrons and becomes a positively charged ion – this is the basis of steel corrosion. When zinc is connected to the reinforcement and both are in contact with the concrete (the elecrolyte) electrons flow from the zinc to the reinforcement:

**Zn Zn2+ + 2e**

This eliminates the steel’s tendency to loose electrons and transfers the corrosion process from the steel to the zinc. However, in this case, the zinc corrosion products are non-expansive so do not cause spalling.

Please refer to ARDEX BRX 60 LO Datasheet for additional information

Disclaimer: The recommendation selected is based upon questions answered on the ARDEX Australia website. This recommendation is designed as a general application for your described situation and should not be considered site specific documentation for general distribution. Always consult the latest relevant ARDEX Technical Bulletins and information on the product packaging and/or product data sheets (available on the ARDEX Website). It is the responsibility of the user to ensure that this document is current and most up to date. Australian and other relevant standards should be followed during installation. If you have any further questions or would like further clarification please contact the ARDEX Technical Services Hotline on 1800 224 070 (9am to 5pm Monday to Friday).