

## **Description of the Anode**

Galvashield XP anodes consist of a galvanic zinc core surrounded by an active cementitious matrix. The palm-sized Galvashield XP anode unit is incorporated into patch repairs by connecting it to the reinforcing steel with its tie wires. Once installed, the zinc core corrodes preferentially to the surrounding rebar, thereby protecting the rebar from corrosion. Galvashield XP anodes are installed to provide localized corrosion protection for any embedded steel component in concrete buildings and structures. The anodes reduce further corrosion and reduce the effect of “ring anode” corrosion commonly associated with concrete patch repairs in reinforced concrete. “Ring anode” corrosion is caused by significant differences in corrosion potential measurements between areas which have been patch repaired and remaining portions of the concrete structure. Galvashield XP anodes can be used to minimize further corrosion in chloride contaminated and carbonated concrete. By reducing the “ring anode” effect, it extends the service life of the repaired concrete and reduces the need for constant repatching.

## **Why is Galvashield XP innovative?**

It is the first method developed to specifically address the underlying problem which results in “ring anode” corrosion (premature failure of concrete patch repairs). Previous methods or approaches have relied on the application of barrier type coatings or inhibitive compounds which can never be pin hole free and effective in the long term as can be seen by their field performance. In addition, Galvashield XP anodes’ performance/output is measurable and can be documented which is unlike previous systems.

Galvashield XP anodes incorporate the use of an active cementitious matrix which keeps the zinc anode from passivating (shutting down) over time. This development allows the anode to be placed within the concrete where it is able to be much more effective. Previous applications of galvanic protection have been limited to submarine, below grade and surface mounted applications. Now galvanic corrosion protection can easily be applied to any type of concrete structure regardless of its surrounding environment or the details of its construction.

Galvashield XP has changed concrete patch repair from being a temporary, short-term fix to a repair method which provides a much longer service life. It has also eliminated the need for expensive and less effective rebar coatings, corrosion inhibitors, and repair materials with specialized components and replaced them with low-cost easy to install anodes which are more effective. Anodes are designed to provide effective protection for 10 to 20 years under normal conditions.

## **History and Development**

Initial research into the development of the an embedded galvanic corrosion protection system began in 1994 at Aston University in the UK. Based on the results of this research, Fosroc International Limited, UK and Vector Construction Group, Manitoba, Canada have been involved in the development of a commercial product to implement the results of this research in the field. Prototypes were first installed in numerous test slabs and monitored under various environmental conditions to confirm their effectiveness. Installation in field trial projects began in 1997-1998 with full scale commercial production and sale in 1999. Due to the locations of the companies involved, anode sales and installations have been concentrated in the UK and Northern Europe, US, and Canada. Interest in the anode has been received from Japan, Australia, Middle East, Brazil, Venezuela, and Central America.

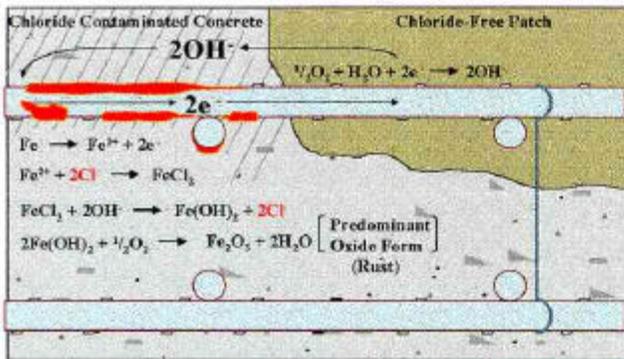
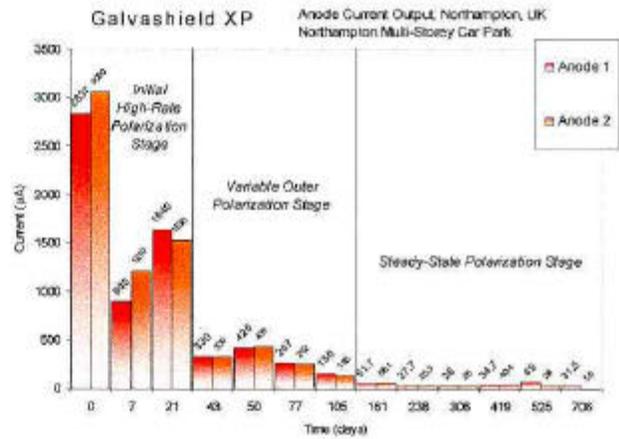
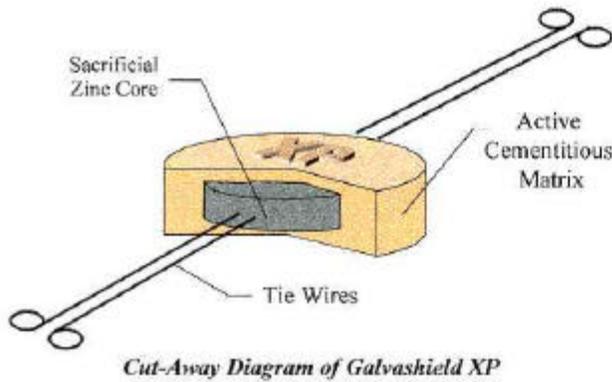
Based on current interest, projects completed to date, and third party testing, which is available, the use of the corrosion mitigation anodes should become standard in concrete patch repairs. This development will reduce both the initial and long term cost of patch repairs and extend the service life of structures.

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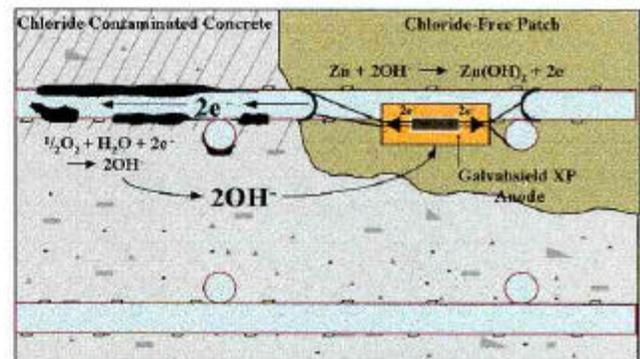
# Galvashield XP

Corrosion Mitigation Anode

Embedded galvanic anode to reduce corrosion of reinforcing steel in concrete

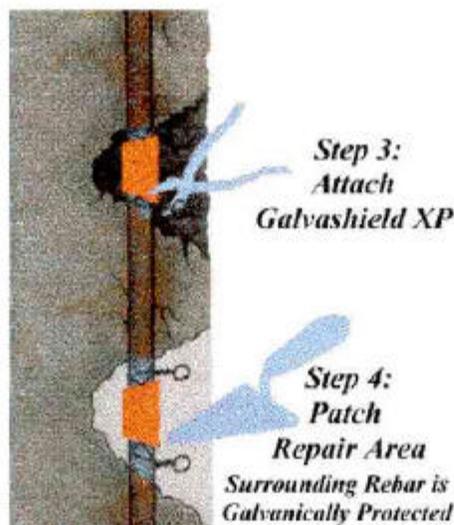


Potential Difference Between Patch and Chloride Contaminated Concrete Results in Accelerated Corrosion



Galvashield XP Anode Galvanically Protects Surrounding Rebar

## Installation Procedure



Galvashield XP Anodes Installed Prior to Patch Repair Completion

