TECHNICAL DATASHEET

DuoGuard Strip™

A hybrid anode system which acts to stop and control corrosion of reinforcing steel in concrete.

Uses

DuoGuard Strip is used to provide corrosion protection to sound but contaminated reinforced concrete elements to minimise maintenance and extend the life of structures.

Advantages

- Compact sizes
- Installed in the cover zone where there is congested steel
- No long term power supply needed
- Can be Re-Energised for extra protection
- Large charge capacity > 375 to 750 kC
- High impressed current density >1000 mA/m2*
- Long life with minimal long-term costs
- Rapidly halts steel corrosion to eliminate further concrete spalling
- Suitable for carbonated and chloride contaminated structures
- Activation Paste
- Measurable performance
- Connected is series to create protection zones
- Up to 50 year service life*

Description

DuoGuard Strip™ is a dual technology hybrid anode™ utilising a sacrificial metal in both an impressed current and galvanic anode role. Initially an impressed current is driven from the DuoGuard Strip anode to the steel using a temporary power supply and corroding sites on the steel are moved to the surface of the installed anode. This occurs because the treatment generates inhibitive hydroxide ions at the steel and aggressive chloride ions are drawn from the concrete to the installed anode. At the end of the brief impressed current treatment the DuoGuard Strip anode is connected to the steel to act as a sacrificial anode in a long term preventative role.

Standards Compliance

BS EN ISO 12696:2016 cathodic protection of steel in concrete.

Application

Design of the DuoGuard Strip system shall be undertaken by a competent designer. Application shall follow the guidelines of BS EN ISO 12696:2016 and DD CEN/TS 14038-2:2011 and shall be in accordance with the Installation Guidelines, summarised as follows:

The anode units are typically installed into slots cut within the host concrete to a width of 12mm and a depth of 30mm. Clean and then wet the slots for a minimum of 15 minutes and remove excess water. The anodes are embedded using a proprietary mortar, DuoCrete P, at a density of 4-9 units/m^2 concrete surface depending on local conditions and steel density.

The individual DuoGuard Strip units are connected electrically to a feeder wire, via a built in crimp connector on the anode. The feeder wire runs to the temporary power supply for the impressed current phase of the treatment (typically 1 -2 weeks) during which time the anodes distribute ~50-500kC/sqm steel surface.

After the impressed current phase, the feeder wire is removed from the temporary power supply and connected to the reinforcing steel within an enclosure. The DuoGuard Strip units are now operating in galvanic mode, maintaining the steel in a passive state.

The system can be monitored and also re-energised if required, perhaps due to changes in the environment which have caused higher steel corrosion risks within the lifetime of the system.

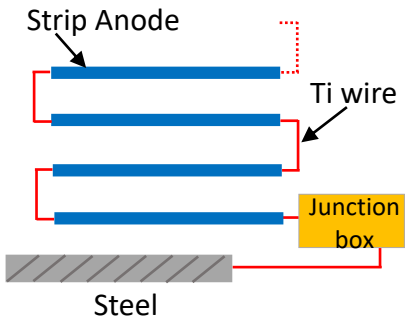
Properties

Product	Thickness	Width	Length	Zinc Weight
DuoGuard Strip 20/250/4	5.5mm	20mm	250mm	140g
DuoGuard Strip 20/500/4	5.5mm	20mm	500mm	280g

Technical Data

The DuoGuard Strip anode offers the significant advantage of running at relatively low driving voltages in impressed current mode versus the commonly used MMO anode.

DuoGuard Strip anodes are installed in zones with multiple anodes connected in series with interconnecting XLPE coated titanium wire and fed to a junction box. A steel connection is also terminated in the junction box to facilitate the 1st and 2nd phase operation of the system. A temporary DC power source provides the high power to halt corrosion during the 1st phase. The power source is removed for the 2nd phase where the anodes are connected directly to the steel for a maintenance free galvanic phase. The 1st powered phase can be used again in the future to re-energise if required. A typical layout is shown below.



Limitations

In order that suitable current flow and lifetime be achieved from the DuoGuard Strip anode, certain practical considerations should be taken into account. The patch repair material cover for the DuoGuard Strip unit must be a minimum depth of 10mm . When installed in a patch repair, the resistivity of the repair material should be in the range 50-200% of the parent concrete.

Any discontinuous steel should be either electrically bonded to, or electrically isolated from, the system negative. Any cracks or delamination in the concrete which affect ionic current flow will affect performance of the DuoGuard Strip unit and should be pre-treated. During installation, electrical shorts between the DuoGuard Strip anode and other metal components must be avoided.

*Service life and current density will depend on local site conditions including chloride contamination, concrete properties, humidity and temperature.

Packaging

25 units per box with silica gel.

Storage

Store dry

Packaging should only be opened when the product is required.

The packaging tub should be closed at all times when not in use. Do not remove silica gel.

Do not allow contact with oxidizing materials.

Ancillary Materials

DuoCrete P Mortar

MN15 Manganese dioxide reference electrodes

XLPE coated titanium wire

Monitoring equipment

Precautions - Health and Safety

Health and safety protective clothing, gloves and eye protection must be worn at all times.

Specification Clause

The discrete anode shall be a sacrificial alloy anode with an integral titanium electrical connection which retains the option to operate in both impressed current and sacrificial anode modes. The anode shall be embedded within a 30mm deep slot and 10mm wide in the concrete using a factory pre-mixed proprietary backfill mortar of pH<12.8 which remains pliable for a minimum of 48 hours. The anode shall have the ability to be repowered at any time in the future for further impressed current corrosion protection if required.

Technical and Sales Support

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