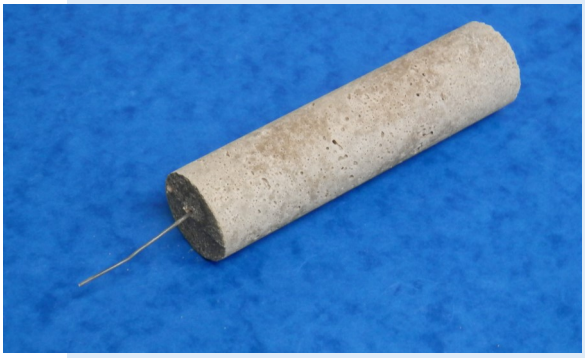
DuoGuard™ Ultra

Technical Datasheet

Description

DuoGuard™ Ultra is a type of the DuoGuard Hybrid Anode system designed to be used for application into the cover zone in areas of high congestion of steel, where there is insufficient space to drill the 30mm holes required to install the standard DuoGuard anode. DuoGuard Ultra anodes are also



Features

- Simple,single unit with straight forward installation
- No long term power supply needed
- A variety of sizes to suit the structure
- Large charge capacity >125 to 900 Kc*
- High impressed current density >1000 mA/m2*
- Long life, up to 60 years *

Advantages

- Rapidly halts steel corrosion to eliminate further concrete spalling
- Short on-site treatment minimises structure downtime during application
- Minimal long term costs
- Performance can be monitored
- Accidental electrical shorts easily broken
- Cost-effective corrosion control solution

Product Data

Dimensions and Packaging

DuoGuard 175 Ultra 55mm x 32mm diam
DuoGuard 350 Ultra 95mm x 32mm diam
DuoGuard 500 Ultra 125mm x 32mm diam
DuoGuard 750 Ultra 180mm x 32mm diam
DuoGuard 1000 Ultra 235mm x 32mm diam

Storage: Store dry. Do not allow contact with oxidizing materials.

Application

Application shall be in accordance with the 'Installation Guidelines' and is summarised as follows:

DuoGuard anodes are installed following guidelines in EN12696:2012 and CEN/TS 14038-1:2004 (E).

The anode units are typically applied at a density of 4-9 units/m² concrete surface, at a spacing of 350-500 mm between anodes.

DuoGuard Ultra is typically installed into the cover zone of the repair and are pre-soaked in water prior to concrete repair. The unit is attached to the rebar using 2 plastic cable ties. The individual DuoGuard Ultra unit is connected electrically to a feeder wire which runs to the temporary power supply for the impressed current phase of the treatment during which time the DuoGuard anodes distribute ~50-500 kc/sqm steel surface. After 1-2 weeks the feeder wire is removed from the temporary power supply and connected to the reinforcing steel. It is now operating In galvanic mode, maintaining the steel in a passive state.

Ancillary Material

The following ancillary materials are also available from CPT Ltd;

- PatchGuard and PatchGuard Plus
- Manganese dioxide reference electrode
- Monitoring equipment

Cert No. 10159

ISO 9001

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How it works

The Duoguard ™ Ultra hybrid anode is a dual technology anode based on the use of a sacrificial anode. An impressed current is driven from the DuoGuard Ultra anode to the steel using a temporary power supply. In the process 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 anode is connected to the steel to act as a sacrificial anode in a long term preventative role.

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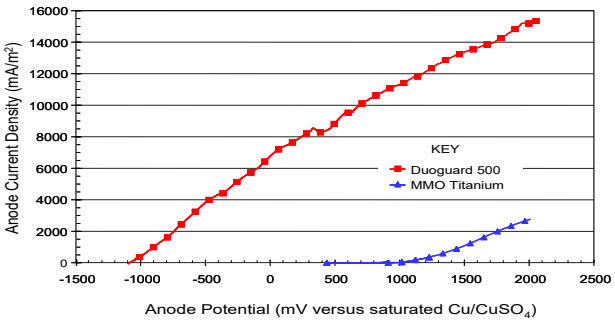
The DuoGuard anode offers the significant advantage of running at relatively low driving voltages in impressed current mode versus the commonly used MMO anode. A typical polarisation curve for a DuoGuard™ 500 anode is shown below and demonstrates the high current densities possible at low drive voltages. The lifetime of the unit can be estimated from knowledge of the anode composition and total current requirement.



Health and Safety

Protective clothing must be worn. Wear gloves and eye protection at all times.

Specification Clause

The discrete anode shall be DuoGuard, a sacrificial alloy anode with an integral titanium electrical connection which can operate in both impressed current distribution and sacrificial anode modes.

Limitations

In order that suitable current flow and lifetime be achieved from the DuoGuard Ultra anodes, certain practical considerations should be taken into account.

The patch repair material cover for the DuoGuard unit must be a minimum depth of 20mm. 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 delaminations in the concrete which affect ionic current flow will affect performance of the DuoGuard Ultra units and should thus be Pre-treated.

During installation, electrical shorts between the DuoGuard Ultra anodes and other metal components must be avoided.

The time to achieve passivity will be dependent on site conditions. Depolarisation of treated steel will be slower in moist conditions.

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