

NCC's Concrete Repair Site –

www.ConcreteRepairSite.co.uk

VII). Corrosion Inhibitors for Concrete Repairs

Corrosion Inhibitors are not a completely new technology. Many different corrosion inhibitors have been used in heating systems and around automotive and electronic components during storage and / or service for more than 540 years. However corrosion inhibitors were only developed for widespread commercial use protecting the embedded steel bars in reinforced concrete during the last 20-30 years.

Inorganic corrosion Inhibitors based on sodium nitrate and organic corrosion inhibitors based on amino alcohols are both now widely used in new reinforced concrete structures to provide additional 'integral' protection, usually against chloride ingress for severely exposed structures.

The organic amino alcohol types have also now proven to be very effective for post-construction treatment and as an integral part of a complete concrete repair and protection system. These materials are also known as 'Migratory Corrosion Inhibitors', because when they are applied to the concrete surface, they penetrate into and through the concrete by both vapour (gaseous) diffusion and liquid diffusion, to form an additional protective monomolecular layer around the embedded steel reinforcement.

The electrochemically active layer on the steel surface prevents the formation of both anodic and cathodic areas, which as a result, significantly extends the time to the onset of corrosion, and it also significantly reduces the rate of any corrosion that is eventually able to take place.

This is why these corrosion inhibitors can form such a valuable part of an overall concrete repair and protection system; because they can effectively extend the service life of reinforced concrete structures. **Importantly for many building and civil engineering structure owners, migrating corrosion inhibitors can also considerably reduce the amount of expensive and disruptive concrete breakout required – a distinct advantage on many concrete repair projects.**

NCC Concrete Repair Site specialists have been involved in the use of corrosion inhibitors for the concrete repair market since their introduction to the UK in the early 1990's (with the Sika FerroGard 903 system from Sika). Like hydrophobic impregnations, the performance of corrosion inhibitors is dependent on their correct application and the penetration of the correct quantity of the product to the level of the steel reinforcement. There are special tests that have been developed to monitor and confirm all of these aspects on your project, we can also advise and assist you with these tests, both pre-contract and on site.

European Standards EN1504 Part 9 (Cathodic Control) Method 9.1 Limiting Oxygen Content (at the Cathode) by Saturation or Surface Coating; Principle

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11 (Control of Anodic Areas) Method 11.3 Applying Inhibitors to the Concrete
– All can apply as appropriate to the individual project's requirements.

If you think, or would like to know if a Migratory Corrosion Inhibitor could be suitable for inclusion in a cost effective repair and protection solution, or to increase the durability of the concrete repair and protection works, and therefore the service life of your project, please call any of our offices and one of our technical experts will be pleased to assist you.

Corrosion inhibitor products are definitely best to be selected and applied by experience and qualified specialists; as there is normally a requirement for detailed electrochemical understanding of the processes on-going in the structure and future monitoring for the onset and / or the rate of steel reinforcement may be required. Therefore we do not include them in our Online Shop.