



MIGRATING CORROSION INHIBITORS
FROM GREY TO GREEN

NEWSLETTER

Al Jalila Pediatric Care Hospital

Structures in Dubai and in the Gulf region in general are exposed to a shallow water table with high levels of salinity; coupled with high temperatures and humidity levels the embedded steel reinforcement of concrete is threatened with corrosion. In this region's harsh environment, steel reinforcement can corrode rapidly, threatening structural strength and necessitating costly repair. To counter this risk, durability-enhancing measures need to be used to ensure the desired lifespan of buildings. The designer for the Al Jalila Hospital project, a development of the Dubai Health Authority, had special requirements for the durability of the concrete and the overall service life of this structure. A good engineering practice of "designing for durability" goes a long way in preservation and saving operating costs. For this construction they chose Cortec's MCI®-2005 to incorporate into the mix to enhance the durability of the concrete.

MCI®-2005 is a water-based, organic, corrosion inhibiting admixture that protects metallic reinforcement in concrete structures from corrosion induced by carbonation, chloride, and atmospheric attack. Cortec's Patented MCI® technology utilizing bio-based renewable resources, is environmentally friendly, safe, and certified to meet NSF/ANSI Standard 61 for use in potable water structures/components. MCI®-2005 protects with a time-proven migratory corrosion inhibitor function. It contains a contact inhibitor that seeks out and forms a corrosion inhibiting protective layer on metals.

This hospital was also designed to adhere to the highest international standards of quality and safety. Several innovative concepts were used in the design and construction aspects including the materials being used and sustainability initiatives. The eco-friendly design and development model of the hospital has already won international honors, including the Future Projects - Health Award at the World Architecture Festival in Barcelona, 2009; and Hospital Build Award 2011 for Best Sustainable Hospital Project.

The Al Jalila Hospital is the first hospital in the region to provide super-specialty and multi-spectrum pediatric care, catering to children from newborn up to 16 years of age. It will have 200 beds and will also include a pediatric trauma center, heart center, transplant unit, surgical departments, outpatient clinics, dialysis unit, and oncology care. The project is the initiative of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE, and Ruler of Dubai, as a gift to the children of the UAE and the region.

Cortec's MCI®-2005, used in this project is certified by Underwriters Laboratories for NSF Standard 61 approval for use in potable water tanks, is USDA Certified Biobased (67%) by BioPreferredSM - which earns LEED credits to users, and meets requirements for ASTM C1582.



MCI®-2005 is USDA Certified Biobased (67%)



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Case Histories

Brandeis Water Tower Preservation

This 70 year old water tower developed corrosion cracking, spalling and water leaks necessitating repair. All delaminated, unstable concrete was removed, exposed reinforcing steel was cleaned, and new concrete patches were placed. The entire structure was then treated with two coats of MCI®-2020 with a total dosage rate of 3.68 square meters per liter (150 square feet/ gallon). Following MCI®-2020 application, bi-component PU paint was applied.

MCI®-2020 was chosen over the competitor product (Ferrogard 903) due to its superior corrosion protection, better coverage rate with fewer required coats, and ANSI-certification.



Concrete Floor Preservation

An industrial manufacturing facility in Kirkland, Washington wanted to apply a specialty epoxy floor coating. Their floor had become highly contaminated with a variety of oils over the years and the contractor was having difficulty getting it clean enough to apply the coating system.

The contractor used MCI®-2061 to remove a substantial penetration of the oil contamination. They followed with a shotblast and applied the coating. To conclude, the coating has been successfully installed over 18 months and both the contractor and owner are happy with the results.



New Product

MCI®-2012 IntegRepel

MCI®-2012 IntegRepel is an integral waterproofing and corrosion inhibiting admixture designed to prevent or retard corrosion of steel reinforcement in new concrete structures. It is a water-based organic admixture. MCI®-2012 IntegRepel uses a two-pronged approach to protect embedded steel. It reduces the intrusion of corrosive species into the concrete and provides a self-replenishing protective layer on embedded reinforcement with Cortec's patented, time-proven migratory corrosion inhibitor (MCI®). MCI®-2012 IntegRepel differentiates itself from other waterproofing admixtures by directly protecting the reinforcing steel, the entity that plays the most important role in determining the longevity of a concrete structure.

MCI®-2012 IntegRepel is particularly suited as a corrosion preventative for concrete construction exposed to corrosive environments (carbonation, chlorides, and atmospheric attack). This product is formulated to reduce porosity of the concrete and make the concrete waterproof. It also incorporates corrosion inhibitors that protect the steel rebar itself. These two mechanisms work to synergistically enhance the protection. MCI®-2012 IntegRepel admixture is added to concrete prior to placement, thus inherently increasing the durability of the concrete/mortar. This economically effective liquid is recommended for all reinforced concrete including precast, prestressed, and post-tensioned structures.

ADVANTAGES

- Reduces absorption 55-57% per BS 1881-122
- Protects against ingress of water, chlorides, and other aggressive contaminants
- Forms a self-replenishing monomolecular corrosion-inhibiting layer on the steel, inhibiting the electrochemical corrosion process between metal and chloride, oxygen, and moisture in concrete.
- Not a vapor barrier
- Reduces efflorescence
- Effectively delays onset of corrosion in new structures
- Effectively reduces corrosion rates on metals
- Non-toxic, contains no nitrites, phosphates, or chromates
- Extends the service life of structures
- Doesn't require special mixing procedure for its effectiveness
- A non-restrictive material during transportation
- Doesn't change concrete set time
- Conforms to ASTM C1582 Table 1 regarding concrete strength



Upcoming Events



American Concrete Institute

Always advancing

*Don't miss the opportunity to visit the Cortec booth,
October 26-30, 2014 in Washington, DC for
American Concrete Institute!*



*Don't miss the opportunity to visit the Cortec booth,
November 12-14, 2014 in Kansas City, Missouri for
International Concrete Repair Institute!*

REMINDER

MCI® Webinar Schedule: For Signed MCI® Distributors and Reps


As per discussion a while back about our MCI® Webinar Schedule, we have moved the standard day/time to the first Friday of every month, at 9 a.m. central time. Topics to be decided upon, however, we are looking for more input from Reps and Distributors as to what you want to see in these meetings. Please watch your email for a survey on future webinar topics.

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