Unleash the migrating corrosion inhibitor power of MCI® water repellents

A common best practice to make new or existing concrete structures last longer is to apply a concrete sealer periodically. This is especially true for concrete that is exposed to freeze-thaw cycles. With an in-house technology, Cortec is able to slow down corrosion on concrete structures, using its MCI water repellents.

Under extreme and harsh conditions, water may penetrate into concrete pores, freeze, expand, and cause concrete cracking. These cracks make it easier for corrosives to enter and attack embedded rebar, starting a whole new cycle of expansion, cracking, and concrete deterioration.

A silane sealer is commonly used to slow down this process; however, an even more powerful option – with no extra labour required – is to apply a Cortec® MCI® concrete sealer enhanced with Migrating Corrosion Inhibitors.

When applied, MCI water repellents create a hydrophobic layer at the concrete surface to prevent intrusion of chlorides and carbonation, and to protect concrete from the ingress of wind-driven rain. At the same time, MCI molecules penetrate through the concrete pore structure to form a corrosion inhibiting molecular layer on the surface of embedded metal reinforcement.

The dual protection is easy to achieve, simply by applying one product. Cortec offers several versions of MCI water repellents from which contractors can select, based on varying needs for each specific project.

Two-in-One: Water repellent/ corrosion inhibitor

This water repellent provided a convenient solution in the repair of university residential halls that were experiencing corrosion. Normally, the contractor would have applied a standard 40% silane water repellent on the building walls after repairs were made; however, with MCI-2019 – a 40% silane concrete sealer containing time-proven Migrating Corrosion Inhibitors – the workers were able to reduce moisture ingress and mitigate rebar corrosion rates. A non-etching feature was another important reason for choosing MCI-2019 – to avoid damaging newly installed windows on the three residential towers.

MCI-2018 is a 100% silane sealer containing Migrating Corrosion Inhibitors for projects in need of even stronger water repellence. MCI-2018 has ANSI/NSF Standard 61 certification and is an excellent choice for dual sealing and corrosion protection of large concrete potable water structures.

MCI-2018 and MCI-2019 have been tested according to US Bureau of Reclamation M-82 (M0820000.714) Standard Protocol to Evaluate the Performance of Corrosion Mitigation Technologies in Concrete Repairs. The test demonstrated that both were able to mitigate pre-existing corrosion in reinforced concrete, independent of chloride levels. This quality makes MCI-2018 and MCI-2019 ideal for performing concrete repairs.

Stain resistant formula

Parking garages, commercial buildings, and industrial floors exposed to high levels of oils and grease often require stain resistance in addition to water repellence and corrosion protection. An excellent option for these cases is MCI POWR 100. The silane water repellent contains MCI as well as an oleophobic additive that resists staining caused by motor oils, food, and other oily substances. It does not affect the colour, gloss, or visual aesthetics of concrete. Treated surfaces remain fully breathable and maintain their natural moisture vapour transmission. MCI water repellents are powerful options for enhanced concrete protection without the need for additional labour than what is required to apply a standard concrete sealer. ❑

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Biobased, biodegradable rust preventive for outdoor protection

United States government agencies and their contractors have to meet special biobased requirements when purchasing products from 139 categories identified by the U.S. Department of Agriculture (USDA). One of these is corrosion preventatives, which must have 53% minimum biobased content to be a qualified product under the mandatory federal purchasing initiative of the USDA BioPreferred® Program.

Cortec® is committed to using sustainable materials where possible, and meets government requirements in the form of EcoLine® 3690, a USDA Certified Biobased Product that can be used to replace solvent and mineral-oil based RPs.

EcoLine 3690 is a ready to use canola-oil-based temporary coating designed for corrosion protection in severe marine and high humidity conditions. It contains 72% USDA certified biobased content and leaves behind an oily protective film that does not dry. It is an excellent solution for contractors who manufacture parts or equipment, and need to prevent rust in interim periods of storage or shipment. It is also good for any manufacturer who wants to go to the next level of sustainability while reducing VOCs and minimising worker exposure to mineral-oil or solvent-based RPs.

EcoLine 3690 can be easily removed with an alkaline cleaner and can help users avoid hazardous waste disposal costs associated with traditional rust preventatives. One tubing manufacturer who adopted EcoLine 3690 for protection of newly manufactured tube ends was pleased with the corrosion protection results and safety benefits of EcoLine 3690. The temporary coating replaced a solvent-based rust preventative and impressed the manufacturer with its performance after a multi-month trial on tube bundles in outdoor storage.

For best results, it is recommended that EcoLine 3690 be applied to clean metal surfaces by spray, roll, brush, or dip at a recommended WFT (wet film thickness) of 1.0-3.0 mils (25-75 µm). It can also be applied over painted surfaces. It has no VOCs and is temperature stable up to 82 °C.

It protects multiple metal types including:

- Carbon steel
- Silver
- Cast iron
- Stainless steel
- Copper
- Magnesium
- Aluminium

Cortec assists manufacturers who want to go to the next level of sustainability.

Cortec's topcoat continues to rival big-name urethanes on the market

Cortec's VOC compliant VpCI®-384 is an excellent coating for industrial applications and severe outdoor conditions. Although this coating does not rely on traditional sacrificial metals to inhibit corrosion, it offers protection that competes with most paints and zinc-rich primers.

Confident in the quality of VpCI-384, Markus Bieber, vice president: integrated solutions at Cortec® Corporation says, "We could put 384 up against any of the big-name urethanes that are commercially available."

VpCI-384 is a two-component urethane topcoat that offers excellent adhesion to moisture cure urethane primers such as VpCI-396. It also performs well over most other primers on the market, including Cortec's VpCI-395 water-based epoxy coating and water-based CorrVerter® Rust Converting Primer. The latter makes an excellent surface prep alternative to sandblasting when applying VpCI-384 to pre-rusted surfaces. Workers can clean away loose rust, apply CorrVerter to passivate and protect the surface, and use VpCI-384 as a heavy-duty topcoat.

In addition to inhibiting corrosion, VpCI-384 leaves an attractive appearance on metal surfaces and can be matched to a wide range of RAL custom colours. As an aliphatic urethane, VpCI-384 is an excellent choice for exterior coating and offers good UV protection. VpCI- 384 uses NANO VpCI inhibitors with a low environmental impact to protect against micro-corrosion. Unlike traditional sacrificial metal corrosion inhibitors that leave gaps because of their large particle size, NANO VpCI Technology protects micro-cavities by forming a microscopic corrosion inhibiting layer along the contours of the metal substrate for fuller inhibitor coverage. With VOCs at 3.5 lbs/gal (419 g/L), VpCI-384 is also considered VOC compliant in many areas.

Metals in severe industrial and outdoor environments need heavy-duty protection that will withstand harsh conditions. VpCI-384 is a top-quality coating for these applications. Paired with a good primer, it will make an excellent coatings system for protecting metal assets in severe environments. ❑

Workers can clean away loose rust, apply CorrVerter® to passivate and protect the surface, and use VpCI®-384 as a heavy-duty topcoat.