ISO 14001 CERTIFIED

ISO 9001 CERTIFIED
QUALITY SYSTEM REGISTERED

HPRS™

HIGH PERFORMANCE REPAIR SYSTEMS

REPAIR, REHABILITATION AND RESTORATION SYSTEMS FOR

REINFORCED CONCRETE AND MASONRY BASED ON PATENTED MCI®

MIGRATING CORROSION INHIBITORS TECHNOLOGY

QUALITY EXCELLENCE®

CORTEC CORPORATION

Environmentally Safe VpCI™/MCI® Technologies

HPRS™

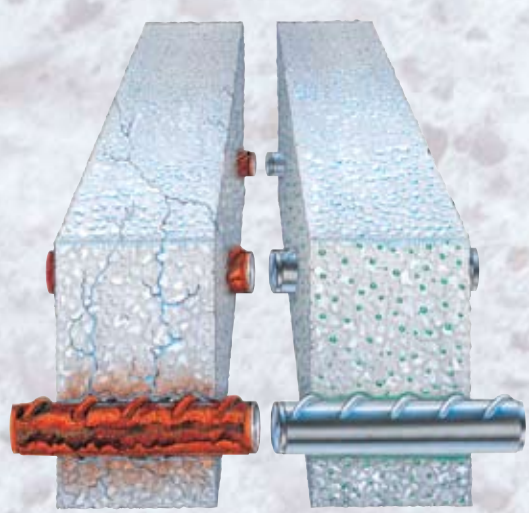
high performance repair systems with extra high concentrations of MCI®

Complete multifunctional and compatible protection systems with very high durability for the repair of spalled reinforced concrete structures and surfaces. The HPRS™ system maximizes the concentration of MCI® (Migrating Corrosion Inhibitor™) molecules on embedded steel bars.

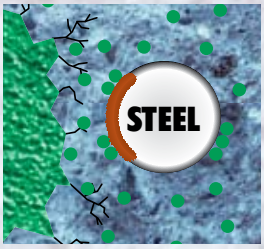
The MCI® Concept

THE CONCEPT BEHIND THE MIGRATION OF MCI® (MIGRATING CORROSION INHIBITORS™) THROUGH CONCRETE IS SIMPLE:

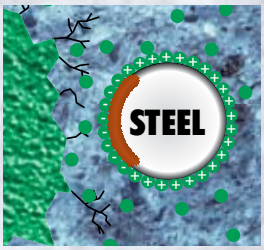
The migration process of MCI® molecules is based on their ability to diffuse in both vapor or liquid form. They migrate into even the smallest pores and cavities, seeking out either positively or negatively charged metal surfaces (cathodic/anodic). The creation of a protective mono-molecular layer on metals embedded in concrete is based on the physical adsorption mechanism, which means that MCI® can inhibit further corrosion of heavily corroded or scaled internal bars.



REMOVE SPALLED CONCRETE – The first step in the rehabilitation process is the removal of spalled concrete from the deteriorating structure.



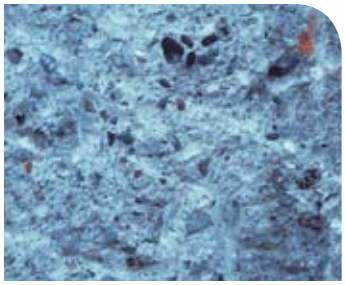
CORTEC MCI® MIGRATES THROUGH CONCRETE TO PROTECT STEEL – The inhibitor will migrate a considerable distance through the concrete to deposit itself on the internal bars.



CORTEC MCI® PROTECTS THE STEEL FROM FURTHER CORROSION – The inhibitor attaches to the steel reinforcement forming a thin, protective coating of MCI® molecules. This prevents a chemical reaction between the steel and the oxygen and/or chlorides in the structure and stops further corrosion.

Sequence of HPRS™ Application:

step **1**



PREPARATION OF THE BASE
Carefully scarify and remove all spalled, loose and deteriorated concrete. If the reinforcement is exposed, remove rust from the rebars by high pressure water-jet, sandblasting, wire brush or by using Cortec® VpCI-423 or VpCI-426 rust removers.

sequence

step 2

PRODUCT - MCI®-2023
MCI-2023 is a protective, passivating, anti-corrosion, bi-component grout containing MCI® molecules. Brush on MCI-2023 to achieve a 0.04 to 0.08 inch (1-2 mm) thickness on any exposed rebar or metal as soon as possible after removal of loose rust. Two coats are recommended at 0.04 inch (1 mm) per coat.

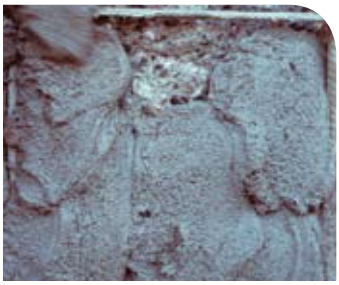
step 3

PRODUCT - MCI® -2020
MCI-2020 is a topical migrating corrosion inhibitor system formulated to migrate through the concrete, seeking out and attaching itself to the surface of reinforcing steel. Apply MCI-2020 by low pressure spray or brush onto the prepared surface until it soaks into the concrete. Immediately after the application of MCI-2020 complete Steps 4 and 5.

step 4

PRODUCT - MCI®-2039
MCI-2039, a fiber-reinforced bi-component (liquid/plasticized cement) has superior adhesive capabilities. Apply a base coat of MCI-2039 with a stiff brush at a thickness of 10 mm (0.4 inch). MCI-2039 has a coverage of 14 m^2 per mm (6 ft^2 per inch). This thin coat of MCI-2039 acts as a "bridge" for enveloping all friable parts and MCI-2020. It also creates a substrate with superior adhesion capabilities. MCI-2039 should be applied immediately after Step 3.

step 5a



PRODUCT - MCI® -2039
MCI-2039 is also a rheoplastic, anti-shrink, thixotropic mortar with superior adhesive properties. It has a high resistance coefficient to carbon dioxide and chlorides/ sulfates penetration, high mechanical strength, and a low elastic modulus. Build up the area of repair by spraying or troweling MCI-2039 into the repair area. MCI-2039 can be applied in thicknesses between 0.4 inch (10 mm) to a maximum of 2.4 inches (61 mm) per coat. Multiple applications can produce thicknesses of 8-12 inches (203-305 mm). Because MCI-2039 is thixotropic and has adhesion properties, several layers can be applied in a short period of time, even to vertical surfaces.

step 5b

PRODUCT - MCI® -2038
MCI-2038 has the same properties as MCI-2039 but with smaller aggregates, making it an excellent finish repair mortar. Use MCI-2038 in areas requiring minimum thickness or where a smooth troweled surface is required. Apply MCI-2038 in thicknesses of .04 inch (1 mm) to 2 inches (50 mm) as above. MCI-2038 does not require wet curing or a curing compound. It will not shrink, has excellent adhesion properties, good mechanical strengths and a very low elastic modulus.

step 6

PRODUCT - MCI® ARCHITECTURAL COATING

MCI® Architectural Coating is a final coating which is acrylic-based in a water carrier. Available in a transparent or colored finish, it provides resistance to the penetration of carbon dioxide while having good water vapor transmission qualities. It also provides good resistance to ultraviolet action and to all climatic conditions, including industrial pollution and marine environments. MCI® Architectural Coating contains, and is compatible with, MCI® molecules. Apply at a rate of 159 ft^2/gal (3.9 m^2/l).

other color options:

Simple, Economical and Effective HPRS™ System:

1) Preparation of spalled concrete 2) MCI-2023 cementitious coating for rebar 3) MCI-2020 4) MCI-2039 repair mortar (fluid mixture applied by brush) 5a) MCI-2039 repair mortar (mixture of normal consistency for application by trowel or spray) 5b) MCI-2038 finishing mortar (if needed for smoothing surfaces and/or for small thicknesses) 6) VpCI-386 (final esthetics and protection).

On-Site Applications

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