MIGRATING CORROSION INHIBITORS
FROM GREY TO GREEN

03 38 00	Post-Tensioned Concrete
03 41 36	Precast Structural Post-Tensioned Concrete

MCI®-309, Patented, US Patent #9,435,037

DESCRIPTION

MCI®-309 is a powder-based Migrating Corrosion Inhibitor™ for protection of ferrous and aluminum metals located in recessed areas, interior cavities, and structural voids.

MCI®-309 provides an extremely efficient dry method of protecting metals within an enclosed space. Upon application, it vaporizes and forms a molecular layer of corrosion inhibitors on the metal surface. If this layer is ever compromised (for example, by moisture or by opening the enclosed space), it will be automatically replenished by new vapor being continuously released from the powder carrier.

PACKAGING & STORAGE

Available in 5 pound (2.3 kg), 50 pound (23 kg), and 100 pound (45 kg) lined drums.

To ensure best product performance, store in original packaging, indoors, and out of direct sunlight at 40-100 °F (4-38 °C).

Shelf life: 2 years

HOW IT WORKS

MCI®-309 is a powder-based, organic corrosion inhibitor. The corrosion inhibiting molecules in MCI®-309 vaporize into the air, travel through it, and adsorb onto metal surfaces to form a protective layer for corrosion protection. MCI®-309 is considered ambiodic (mixed), meaning it protects both anodic and cathodic corrosion sites of the metal. MCI®-309 vapor is capable of reaching all exposed metal surfaces, including recessed sections, interior cavities, and voids, thus providing autonomous corrosion protection of metals in any hard-to-reach space within a structure.

WHERE TO USE

- Prestressed tendons
- Segmental concrete bridge tendons
- Post-tensioned box-girder bridges
- Tubular structures, pipes, and vessels
- Parts, components, and completed assemblies during shipping and storage

ADVANTAGES

- Does not affect physical properties of concrete and grout (set time, strengths, etc.)
- Does not increase risk of hydrogen embrittlement for high tensile strength steel
- Does not contain silicates, phosphates, nitrites, or heavy metals
- Provides up to 24 months of continuous protection
- Protects inaccessible and recessed surfaces by the deposition of vapor-phase inhibitors onto metals
- Requires little or no surface preparation
- Protected surfaces do not have to be cleaned prior to concrete or grout placement
- Prevents further corrosion of pre-coated and painted metal surfaces
- Easy to apply by dusting, fogging, or sprinkling
- Easy to remove by air gun or water

MCI®-309, Patented, US Patent #9,435,037

PHYSICAL PROPERTIES

Appearance	White to off-white powder
pH	6.5-8.0 (1% aqueous)
Density	38-39 lb/ft³ (609-625 kg/L)

DOSAGE

0.5 oz/ft³ (500 g/m³)

APPLICATION

Apply powder by dusting, fogging, or sprinkling. After application simply cover, close, or seal the interior cavity or void.

Fogging is easily achieved with a low-pressure air hose and sandblast cup. Large, conventional sandblasting systems can also be used.

MCI®-309 can be removed by using a low-pressure air gun or water rinse.

LONG-TERM CORROSION TESTING

Testing performed by American Engineering and Testing, Inc. confirmed that MCI®-309 does not affect strand pull-out strength compared to a control.

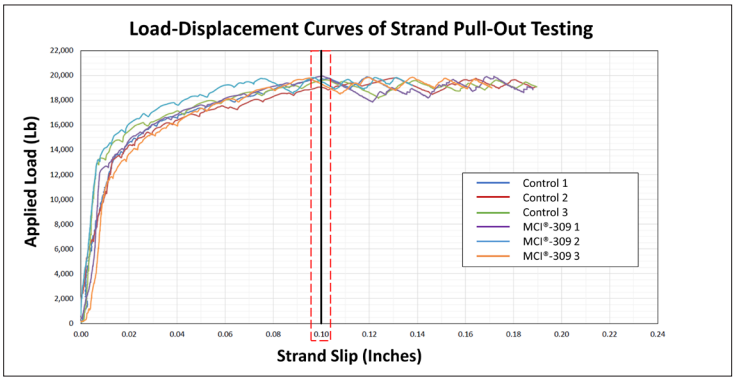

Figure 1: Load-Displacement Curves, AET Project No: 29-20452

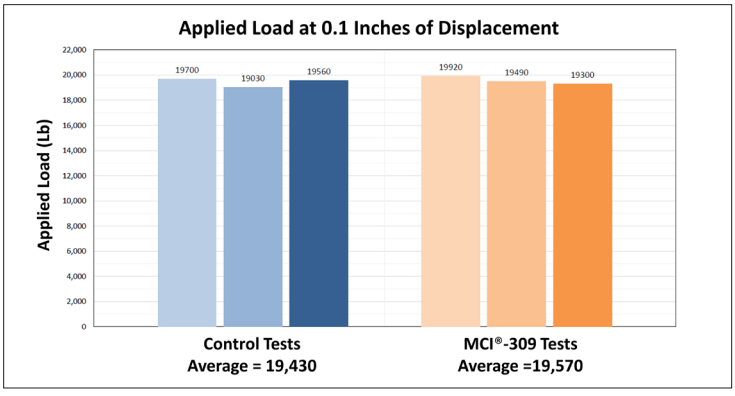

Figure 2: Applied Load, AET Project No: 29-20452

Sections of prestressing strand were inserted into 1" (2.54 cm) PVC pipes with caps on both ends. Mass of strands was determined after cleaning with acetone and before placement into the PVC pipe. A solution of saltwater was placed in the bottom half of the PVC pipe and kept in laboratory conditions. Treated specimens had the MCI®-309 added directly to the saltwater solution at 2% by weight. A 1/16" (1.6 mm) hole was drilled into each of the PVC pipes to simulate a small air leak in the duct. Strands were left for approximately one year, and then removed and their conditions documented. They were cleaned and weighed for mass loss.

The addition of MCI®-309 to the saltwater significantly reduced the amount of corrosion that occurred on strands. See Figure 4 for percent mass loss on samples exposed to saltwater. Figure 5 shows the middle section of the control sample after cleaning at test conclusion, and Figure 6 shows the MCI®-309 treated sample after cleaning at test conclusion.

Figure 3: Corrosion Test Setup, Pennsylvania State University Grouting Laboratory Report

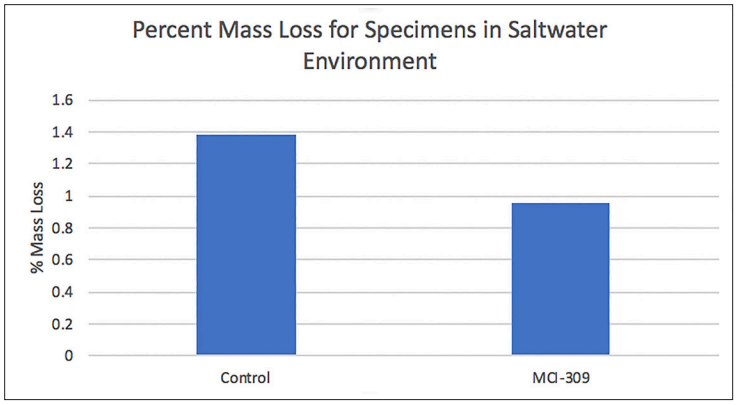

Figure 4: Percent Mass Loss for Specimens in Saltwater Environment

MCI®-309, Patented, US Patent #9,435,037

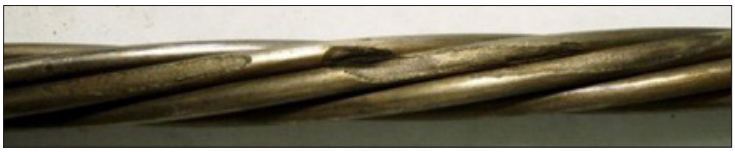

Figure 5: Control from Saltwater After Cleaning (Middle)

Figure 6: MCI®-309 Treated Specimen from Saltwater After Cleaning (Middle)

4119 White Bear Parkway, St. Paul, MN 55110 USA
Phone (651) 429-1100, Fax (651) 429-1122
Toll Free (800) 4-CORTEC
productinfo@cortecvci.com
https://www.cortecvci.com
https://www.cortecmci.com

CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

Revised: 08/16/23. Supersedes: 04/22/20.