

# MIGRATORY CORROSION INHIBITOR (MCI®) PRODUCTS FOR CONCRETE



## MCI®-2311, Repair Mortar

### DESCRIPTION

MCI®-2311 with Migrating Corrosion Inhibitor (MCI) is a single-component cement-based mortar for structurally repairing or overlaying deteriorated concrete. Developed with STO Corporation it is designed for use on horizontal surfaces for repairs from 1/2 to 4 inches (12 to 102 mm) or extend it with aggregate for deeper applications. Its formula provides increased strength gain and improved performance for repair applications.

MCI®-2311 provides the necessary concentration of MCI® (Migratory Corrosion Inhibitor) molecules on embedded steel bars. They create a protective monomolecular layer on metals embedded in concrete and inhibit further corrosion of bars.

### HOW IT'S USED

MCI®-2311 with Migrating Corrosion Inhibitor is a one-component mortar that is ready to use; just add clean water. Once mixed by drill paddle or standard mortar mixer, its medium slump floats and consolidates easily. Use MCI®-2311 for repairs from 1/2 to 4 inches (12 to 102 mm) or extend it with aggregate for deeper applications.

### SURFACE PREPARATION

**Patching:** Remove loose and deteriorated concrete by mechanical chipping or sand-blasting to obtain a fractured aggregate surface. Detail the edge of the patch to a 90° angle to eliminate feather edging. Make sure surfaces are sound, clean and free of all bond-inhibiting material including oil, dust, dirt, laitance and standing water.

**Overlay:** Remove loose and deteriorated concrete with a scabber or by shot-blasting to obtain a fractured aggregate surface. Detail the edge of the overlay to a 90° angle to eliminate feather edging. Make sure surfaces are sound, clean and free of all bond-inhibiting material including oil, dust, dirt, laitance and standing water.

### MIXING

Use MCI®-2311 at a preconditioned temperature of 70±5° F (21 ± 3° C).

**Using Drill and Paddle:** Mixing must be achieved mechanically using a slow-speed 3.4-inch (9 mm) drill and mixing paddle. Pour 5-6 pints (2.37-2.83 L) of water into a clean 5-gallon (19 L) mixing bucket.

Mix while slowly adding the powder, one-third at a time. If more water is needed, up to one-half pint (.24 L) may be added. Mix up to 3 minutes, to a uniform, lump-free consistency. Avoid overmixing which could entrap air.

**Mortar Mixer:** Predampen thoroughly the inside of a clean mortar mixer, then remove any excess water. Pour 5.0-6.0 pints (2.37-2.83 L) of water per bag into the mortar mixer and slowly add all of the powder. If more water is needed, up to one-half pint (.24 L) per bag may be added.

Mix up to 4 minutes, to a uniform, lump-free consistency. Avoid overmixing which could entrap air. Once mixed the working time is 20-40 minutes depending upon material, ambient and surface conditions.

### FEATURES AND BENEFITS

Features	Benefits
Low shrinkage	Stable bond line; resists perimeter cracking
Thermally compatible with concrete	Prevents delamination caused by temperature changes
High abrasion resistance	Stands up to abusive traffic
One-component	Ready-to-use; pumpable; easily mixed with water on job-site; no chemical jugs to dispose
Early recoat	Coatings may be applied 72 hours after application
Contains Migrating Corrosion Inhibitor (MCI)	Seeks out and forms a corrosion inhibiting protective layer on metals; Migrates to adjacent areas to protect metals around the repair area; Reduces the halo or ring effect surrounding the repair area

### APPLICATION

#### Patching

Dampen the area to be repaired so that the pores of the concrete are filled with water. Remove any ponding or glistening water on the surface (saturated surface dry/SSD). Work a scrub coat of the mixed material into the substrate to ensure intimate contact and establish bond. Apply MCI®-2311 while the scrub coat is still wet. Consolidate it and trowel to desired finish.

**NOTE:** For application depths greater than 4 inches (102 mm), extend MCI®-2311 by adding 27 pounds (12 kg) of clean, uniformly graded 3.8-inch (9 mm) aggregate dampened to SSD condition. Consolidate it and trowel to the desired finish. Applications made during temperatures below 50° F (10° C) and above



80° F (27° C) should follow appropriate application guidelines.

**Overlay**

Follow application instructions for PATCHING.

**Curing**

Direct sun or wind may cause unwanted rapid surface drying. Curing may be accomplished by continuous water fogging for 48 hours or cover with damp burlap or burlene curing blankets. Do not use solvent-based curing compounds or allow water to puddle. If a coating or sealer will be applied, use water fogging or blanket curing methods and prep finished surface per manufacturer's recommendations.

**Clean Up**

Clean tools and equipment with water immediately after use. Cured materials can only be removed mechanically.

**LIMITATIONS**

- Apply only when the surface and ambient temperatures are 45-50° F (7-10° C) and rising. See Cold Weather Application guidelines, as per ACI for applications in temperatures less than 50° F (10° C). Applications made during temperatures greater than 85° F (29° C) should follow Hot Weather Application guidelines, as per ACI.
- Cold or damp conditions retard hydration and require additional time before coating or opening to traffic.
- The minimum required thickness is 1.2 inch (12 mm).
- Do not feather edge.

**FOR INDUSTRIAL USE ONLY**

**KEEP OUT OF REACH OF CHILDREN**

**KEEP CONTAINER TIGHTLY CLOSED**

**NOT FOR INTERNAL CONSUMPTION**

**CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION**

- Do not add more water than specified.
- Do not add additional powder from other units.
- Do not overmix.

**TECHNICAL DATA**

Report	Test Method	Test Age	Test Results (Neat Mortar)	Test Results (Extended Mortar)
Compressive Strength (psi/Mpa)	ASTM C-109	1 day	3,500/24.15	
		7 days	5,500/37.95	
		28 days	7,000/48.30	
Compressive Strength (psi/Mpa)	ASTM C-39	1 day		3,200/22.08
		7 days		4,800/33.12
		28 days		6,000/41.40
Flexural Strength (psi/Mpa)	ASTM C-293	1 day	NT	NT
		7 days	1,100/ 7.59	700/4.83
		28 days	1,150/ 7.94	750/5.18
Splitting Tensile Strength (psi/Mpa)	ASTM C-496	7 days		425/2.93
		28 days		600/4.14
Modulus of Elasticity (psi/Mpa)	ASTM C-469	28 days	3.7 million/25530	3.9 million/26910
Length Change	ASTM C-157	28 days	<0.065%	<0.030%
Direct Tensile Bond (psi/Mpa)	ASTM D-4541	28 days	260/1.79	210/1.45

\*Typical values for material cured at 73°F (23°C) and 50% R.H.

**YIELD**

.40 ft<sup>3</sup> per 50 lb bag (0.0125 m<sup>3</sup> per 23 kg bag)

**PACKAGING AND STORAGE**

Store in a dry area, between 50° F (10° C) and 85° F (29° C). Protect from direct sunlight and extreme heat. MCI-2311 is available 50 lb bag (23 kg bag) Shelf life of the product is 12 months in original, unopened container.

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