



MIGRATING CORROSION INHIBITORS
FROM GREY TO GREEN

MCI®-2039 High Performance Horizontal Repair Mortar

DESCRIPTION

MCI®-2039 is a single-component, fast-setting, high-strength, cement-based repair mortar that is enhanced with Migrating Corrosion Inhibitors (MCI®). It is ideal when high early strength gain is required to speed up work and reduce downtimes. As part of Cortec's HPRS® (High Performance Repair System), MCI®-2039 offers excellent corrosion protection to reinforcing metals in the patch area and its vicinity. This increases the quality and extends the service life of the repair and surrounding structure.

PACKAGING & STORAGE

Available in 50 lb (22.7 kg) bags.

To ensure best product performance, store in the original, unopened container, away from moisture, under cool, dry conditions and out of direct sunlight at 40-90 °F (4-32 °C).

Shelf life: 1 year (from date of manufacture)



HOW IT WORKS

MCI®-2039 is made for horizontal repairs. Migrating Corrosion Inhibitors in the repair mortar are designed to penetrate the substrate and even out corrosion potentials between patched areas and nearby concrete. Once applied and hardened, MCI®-2039 provides a high level of adhesion and durability, as well as resistance to water and carbonation attack.

WHERE TO USE

Ideal for horizontal concrete repairs of concrete structures including but not limited to:

- Bridge decks, parking decks, and ramps
- Highway repairs and overlays
- Slabs below grade, on grade, or above grade
- Loading docks
- Airport runways
- Industrial and commercial structures

ADVANTAGES

- Offers a time-proven corrosion inhibiting technology that extends the life of reinforced concrete structures
- High early strength allows for fast repairs and quick return of traffic
- One component for ease of use
- Suitable for interior or exterior applications
- Wide temperature range: from 20 to 100 °F (-6 to 38 °C)
- Can be extended up to 60% by weight for repairs greater than 2" (51 mm) deep
- Minimizes the ring-anode/halo effect in surrounding concrete
- Does not contain chlorides, magnesium phosphates, or calcium nitrite

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TECHNICAL DATA

| | | |
|------------------------|---------------------------|---|
| Set Time | ASTM C191 | 18 min initial/28 min final |
| Compressive Strength | ASTM C109 [75 °F (24 °C)] | 1 hr: 2,000 psi 3 hrs: 3,500 psi 24 hrs: 5,200 psi 7 days: 6,500 psi 28 days: 8,000 psi |
| Length Change | ASTM C928-R2 | 28 day (wet): +0.04% 29 day (dry): -0.11% |
| Bond Strength | ASTM C882 | 24 hrs: 2,000 psi 7 days: 2,750 psi |
| Freeze Thaw Resistance | ASTM C666b | 300 cycles >99% |
| Scaling Resistance | ASTM C672 (25 F/T cycles) | Scaled material: 0 lb/ft ² (0 g/m ²) |
| Yield Rate | | 0.42 ft ³ (0.013 m ³) |
| Max Lift | | 2" (5.08 cm) |

Note: Independent test results obtained under controlled laboratory conditions at 73 °F (22.7 °C) and 50% relative humidity.

COVERAGE

50 lb (22.7 kg) bag yields approximately 0.42 ft³ (0.012 m³).

50 lb (22.7 kg) extended with 30 lb (13.6 kg) of 3/8" (10 mm) pea gravel yields approximately 0.65 ft³ (0.02 m³).

PROJECT MOCKUPS

When Cortec® products are used as part of a system with other manufacturers' products, the contractor and/or design professional shall test, document, and confirm performance requirements and compatibility of all the system components according to relevant and accepted industry standards prior to the application.

SURFACE PREPARATION

Remove all loose deteriorated concrete, dirt, and bond-inhibiting materials from surface. Prepare the substrate mechanically to an aggregate surface profile of ± 1/8" (3 mm) (minimum CSP-6). If substrate is contaminated with oils or greases, use Cortec® MCI®-2060 or MCI®-2061 for cleaning. CorrVerter® MCI® Rust Primer can be used as a primer for corroded steel (refer to steel preparation in CorrVerter's data sheet).

MIXING

Mix as close to the area being repaired as possible.

1. 50 lbs (22.7 kg) of MCI®-2039 requires 3.5 qts (3.3 L) of mix water. Add potable water into a mixing container and add repair material while mixing. Hot or cold water can be used to accelerate or retard set times; refer to directions for hot and cold weather placement.
2. Mixing MCI®-2039 can be done in a mortar mixer or by using a paddle attached to a heavy duty 1/2" (1.27 cm) drill (650 rpm). Mix only the amount of material that can be handled and placed in 30 minutes.
3. Mix for 2-3 minutes until lump-free consistency is achieved. Do not retemper or overwater.

APPLICATION

- To improve adhesion and bonding, brush the surface with a slurry version of the mortar using a stiff bristled brush.
- Use trowel and normal rendering tools to place immediately after mixing. Firmly work MCI®-2039 into the sides and bottom of the concrete to eliminate air pockets and ensure bond. Ideally, work from one side of the cavity to the other, and then screed toward the adjoining concrete.
- For repairs deeper than 2" (5 cm): Extend MCI®-2039, 60% by weight, using clean 3/8" (10 mm) dry pea gravel. Mix MCI®-2039 as instructed. During the last minute of mixing (after 2 minutes) add the pea gravel, blend for 1 additional minute, and place.
- Ideal application conditions are when air, material, and substrate temperatures are between 40 and 80 °F (4 and 27 °C) within 24 hours of application and when rain is not expected within 12 hours.
- Hot weather placement (80 to 100 °F [27 to 38 °C]): Keep the product cool. Pre-soak and then remove standing water from the repair area, resulting in a saturated surface dry (SSD) substrate. Use ice water while mixing MCI®-2039 to extend working time. Protect the repair from rapid dry-out with wet burlap or a water-based curing compound. Refer to ACI 305 Standard on Hot Weather Concreting.
- Cold weather placement [20 to 40 °F (-7 to 4 °C)]: Do not use antifreeze or accelerators; keep MCI®-2039 warm. Warm up the surrounding concrete. Mix the warmed repair material with warm mixing water. Use a construction insulating blanket after placement for at least 2-3 hours and keep material from freezing. Refer to ACI 306 Standard on Cold Weather Concreting.

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CLEANING

Use clean potable water to clean all tools immediately after use. Dried material must be mechanically removed. Use a wastewater hardener for cementitious waste disposal.

CONSIDERATIONS

- Keep powder in its original wrapping and ensure that it is always well sealed
- Do not use opened bags of powder that are caking or have lumps present
- Mix an amount that can be placed within 30 minutes
- Not for applications less than 1/2" (13 mm) thick
- Do not over-add water for mixing
- Do not add or modify with other cements or additives
- Protect from premature drying
- Follow local building codes and applicable ASTM standards when installing
- Use consistent mixing time and water amounts for all batches

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