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2800 Second St.
Cuyahoga Falls
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Maintenance of
Concrete

Technical Data Guide

MasterEmaco® T 310CI

One-component flowable repair mortar with
integral corrosion inhibitor

FORMERLY EMACO® R310 CI

PACKAGING

55 lb (25 kg) polyethylene-lined bags

YIELD

0.45 ft³ (0.013 m³) per 55 lb bag (25 kg)

0.63 ft³ (0.018 m³) per 55 lb bag (25 kg) when extended with 25 lbs (11 kg) of 3/8" pea gravel

STORAGE

Store in unopened containers in a cool, clean, dry area

SHELF LIFE

9 months when properly stored

VOC CONTENT

0 g/L less water and exempt solvents

DESCRIPTION

MasterEmaco T 310CI repair mortar is a polymer-modified cement-based mortar with an integral corrosion inhibitor. It is used for patching or resurfacing distressed horizontal concrete surfaces.

PRODUCT HIGHLIGHTS

- Polymer modification improves adhesion and provides increased freeze/thaw stability
- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Only requires the addition of potable water
- Early strength gain so it can ready for pedestrian traffic in 4 hours, vehicular traffic in 1 day
- Shrinkage compensated so it reduces shrinkage cracking; reduces stress at bond lines
- Polymer modified for improved bond to surrounding concrete

APPLICATIONS

- Interior and exterior
- Horizontal surfaces

SUBSTRATES

- Concrete

HOW TO APPLY

SURFACE PREPARATION CONCRETE

1. Substrate must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of 1/4" (6 mm).
3. The surface to be repaired must be clean, free of laitance and saturated surface-dry (SSD) following ICRI Guideline no. 310.2 to permit proper bond.

REINFORCING STEEL

1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R.
2. For additional protection from future corrosion, coat the prepared reinforcing steel with MasterProtect P 8100 AP.

Technical Data

Composition

MasterEmaco T 310CI is a blend of cement, graded aggregates, dry polymer, and set-control additives with an integral corrosion inhibitor.

Typical Properties

| PROPERTY | VALUE |
|--|-------------|
| Unit weight , lb/ft ³ (kg/m ³) | 135 (2,160) |
| Working time , min | 30 |
| Set times , hr:min (ASTM C 266) | |
| Initial set | 1:30 |
| Final set | 2:00 |

Test Data

| PROPERTY | RESULTS | | | |
|---|----------------------------------|--------------------------------|---------------------------------|----------------------------------|
| | 6 Hours psi (MPa) | 1 Day psi (MPa) | 7 Days psi (MPa) | 28 Days psi (MPa) |
| Compressive Strength (ASTM C 109) | 350 (2.4) | 2,500 (17.2) | 5,500 (37.9) | 7,500 (51.7) |
| Direct tensile bond strength (ACI 503R, Appendix A) | — | 150 (1.0) | 175 (1.2) | 200 (1.4) |
| Direct shear bond strength (Michigan DOT) | — | 150 (1.0) | 250 (1.7) | 300 (2.1) |
| Slant shear bond strength (ASTM C 882, Modified ¹) | — | 980 (6.8) | 1,750 (12.1) | 2,100 (15.2) |
| Splitting tensile strength (ASTM C 496) | — | 375 (2.6) | 450 (3.1) | 600 (4.1) |
| Flexural strength (ASTM C 348) | — | 800 (5.5) | 1,000 (6.9) | 1,500 (10.3) |
| Drying shrinkage , %, at 28 days (ASTM C 157, Modified ²) | | | | 0.09 |
| Modulus of elasticity , at 28 days (ASTM C 469), psi (GPa) | | | | 2.9 x 10 ⁶ (20.0) |
| Rapid chloride permeability , coulombs, at 28 days (ASTM C 1202 / AASHTO T 277) | | | | 850 |

| PROPERTY | RESULTS | TEST METHODS |
|---|--------------|-------------------------|
| Freeze/thaw resistance , % RDM, at 300 cycles | 92.0 | ASTM C 666, Procedure A |
| Salt scaling resistance , 50 cycles | None | ASTM C 672 |
| Abrasion resistance , depth of wear, in (mm) | | ASTM C 779A |
| 30 min | 0.008 (0.21) | |
| 60 min | 0.033 (0.84) | |

¹No epoxy-bonding agent used; air cured according to ASTM C 1042.

²ICRI Guideline No. 03733, 1 by 1 by 10" (25 by 25 by 250 mm) prism, air cured

Results were obtained when material was mixed with 0.8 gallons (3.0 L) of water per bag and cured at 70° F (21° C). Expect reasonable variations, depending upon application methods, test methods, and curing conditions.

MIXING

1. Precondition material to 70° F \pm 5° (21° C \pm 3°) before mixing.
2. Add 0.75–0.90 gallons (2.8–3.4 L) of potable water per 55 lb (25 kg) bag of MasterEmaco T 310CI.
3. Use a slow-speed drill (400–600 rpm) with a Jiffy-type paddle or an appropriately sized mortar mixer. Pour approximately 90% of the mix water into the mixing container, then slowly charge the mixer with the bagged material.
4. For applications greater than 1" (25 mm) in thickness, add up to 25 lbs (11 kg) of SSD $\frac{3}{8}$ " (10 mm) pea gravel per 55 lb (25 kg) bag of MasterEmaco T 310CI. Add the remaining mix water as required to obtain desired consistency. Mix for a total of 3–5 minutes to achieve a homogeneous consistency. Do not mix longer than 5 minutes.

APPLICATION

1. After removing all standing water, thoroughly scrub a thin layer of bond coat into the saturated surface with a stiff-bristled broom or brush. Do not dilute the bond coat with water. Do not apply more of this bond coat than can be covered with mortar before the bond coat dries. Do not retemper the bond coat.
2. Immediately place the repair mortar from one side of the prepared area to the other. Work the material firmly into the bottom and sides of the patch to ensure good bond. Level the material and screed it to the elevation of the existing concrete. Apply the appropriate finish.
3. Finish the completed repair, as required, taking care not to overwork the surface.
4. The recommended application range the material is from 40 to 85° F (4 to 29° C). Follow ACI 305 and 306 for hot or cold weather.
5. Approximately 30 minutes should be allowed to mix, place, and finish the material at 70° F (21° C).

CURING

Cure with an approved water based curing compound compliant with ASTM C 309 or preferably ASTM C 1315. If the repair area will receive a coating, wet curing is recommended.

CLEAN UP

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

FOR BEST PERFORMANCE

- Featheredging may result in reduced durability and performance.
- Do not mix partial bags.
- Do not add plasticizers, accelerators, retarders, or other additives.
- Do not bridge moving cracks or joints.
- Do not overwork material
- Do not add plasticizers, accelerators, retarders, or other additives.
- Bonding agents are recommended for large areas as well as permanently damp areas.
- Protect from freezing for 24 hours after application.
- Protect repairs from direct sunlight, wind, and other conditions that could cause rapid drying of material.
- Do not use in applications where product will be in a continuous wet or immersed condition.
- Do not use in sulfate-exposed environments.
- Do not use solvent-based curing compounds.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit www.master-builders-solutions.BASF.us to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

HEALTH, SAFETY AND ENVIRONMENTAL

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting www.master-builders-solutions.basf.us, e-mailing your request to basfbcst@basf.com or calling 1(800)433-9517. Use only as directed.

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