

Master Builders Technologies
Restoration Products
SPECIFICATION BULLETIN 7S56



Section 03727
EMACO® R310

ONE COMPONENT, POLYMER-MODIFIED PATCHING MORTAR

NOTES TO SPECIFIERS

The purpose of this suggested specification is to assist the specifier while developing a specification for the use of Master Builders *EMACO® R310*. This specification has been prepared to be part of a complete project specification. It has not been prepared to be a “stand alone” item. This document is not intended to be copied directly into project specifications.

PART 1 - GENERAL

1.01 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.02 Summary

- A. This Section specifies a one component, polymer modified, cement based, chloride-resistant, flowable surface renovation mortar.
- B. This product is designed for repairing horizontal and formed vertical concrete structures at a minimum repair depth of 1/4 in. (6 mm) and up to 1 in. without aggregate extension.

1.03 References

ASTM C 109-91	Test Method for Compressive Strength of Hydraulic Cement Mortars -Modified.
ASTM C 348-92	Test Method for Flexural Strength of Hydraulic Cement Mortars.
ASTM C 469-87	Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression.
ASTM C 496-90	Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.
ASTM C 596-89	Test Method for Drying Shrinkage of Mortar Containing Portland Cement.
ASTM C 666-90	Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
ASTM C 779-89a	Test Method of Abrasion Resistance of Horizontal Concrete Surfaces.
ASTM C 1042-91	Test Method for Bond Strength of Latex Systems used with Concrete.
ASTM C 1202-91	Test Method for Electrical Indication of Concrete's Ability to Resistance to Chloride Ion Penetration.

1.04 System Performance Requirements

- A. Provide polymer modified chloride-resistant repair mortar which when cured produces the following properties:
1. Compressive Strength (ASTM C 109): Minimum, 4-hour 350 psi (2.4 MPa);
1-day 2500 psi (17.2 MPa);
7-day 5500 psi (37.9 MPa);
28-day 7500 psi (51.7 MPa).

1.04 System Performance Requirements, continued

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| 2. Flexural Strength (ASTM C 348): | Minimum, 1-day 800 psi (5.5 MPa);
7-day 1000 psi (6.9 MPa);
28-day 1500 psi (10.3 MPa). |
| 3. Split Tensile Strength (ASTM C 496): | Minimum, 1-day 350 psi (2.4 MPa);
7-day 450 psi (3.1 MPa);
28-day 800 psi (4.1 MPa). |
| 4. Slant Shear Bond Strength (ASTM C 1042-modified): | Minimum, 1-day 980 psi (6.8 MPa);
7-day 1750 psi (12.1 MPa);
28-day 2550 psi (17.6 MPa). |
| 5. Permeability (ASTM C 1202): | Maximum 365 Coulombs |
| 6. Modulus of Elasticity (ASTM C 469-87): | Maximum 2.2 psi x10 ⁶ (15.1 MPa). |
| 7. Drying shrinkage (ASTM C 596): | Maximum 0.1% at 28 days. |
| 8. Freeze Thaw Resistance (ASTM C 666 300 cycles): | Minimum RDF 93%. |
| 9. Abrasion Resistance (ASTM C-779a 28 day air cured sample): | Maximum Wear, 30 min. 0.009 in.
(0.023 cm); 60 min. 0.020 in. (0.051 cm). |

1.05 Project Conditions

- A. Weather Conditions: Apply repair mortar only when ambient and surface temperatures are 45 °F (7 °C) and rising. Do not make the repair if the ambient temperature is expected to fall below 45 °F (7 °C) within 24 hours after placement. Do not apply repair mortar when ambient and surface temperatures are 90 °F (32 °C) and above.
- B. Follow manufacturer's recommendations regarding additional installation information (hot weather-drying conditions, or cold weather installation.)

PART 2 - PRODUCTS

2.01 Materials

- A. One Component Polymer Modified Chloride-Resistant Surface Renovation Mortar: "EMACO® R310" by Master Builders, Inc. a blend of portland cement, redispersible polymer additive, specially graded aggregates and set-control admixtures.
- B. Water: Drinkable.
- C. Curing Compounds: "MASTERKURE® 200W" by Master Builders, Inc.
- D. Evaporation Reducer and Finishing Aid: "CONFILM®" by Master Builders, Inc.

PART 3 - EXECUTION

3.01 Surface Preparation

- A. Mechanically remove unsound concrete to the limits indicated on the drawings.

3.01 Surface Preparation, continued

- B. Remove a minimum of 1/4 in. (6 mm) of existing concrete facing and continue removal as required to expose sound aggregate. Substrate should have a minimum amplitude of 1/8 in. (3 mm). Limit the size of chipping hammers to 15 lb to reduce micro fractures.
- C. Square cut or under cut perimeter of the area to be repaired to a minimum depth of 1/4 in. (6 mm). Do not cut existing steel reinforcement.
- D. Where reinforcing steel with active corrosion is encountered, comply with the following:
 - 1. Abrasive blast reinforcing steel to remove rust and contaminants.
 - 2. When one-half of the diameter of the reinforcing steel is exposed, chip out behind the reinforcing to a 3/4 in. (15 mm) minimum depth.
 - 3. Splice new reinforcing steel to existing steel where corrosion has depleted the cross-section area by 25%, as directed by the Architect/Engineer.
- E. Thoroughly clean the roughened surface and exposed reinforcement of rust, dirt, loose chips, and dust using high pressure water. Maintain substrate in a saturated, surface-dry condition.
- F. Coat exposed reinforcing steel with EMACO® P22 rebar protection coating prior to patching.

3.02 Mixing

- A. Comply with mortar manufacturer's recommendations for water quantity and mixing procedures.

3.03 Application

- A. Place flowable polymer modified, chloride-resistant, one component surface renovation mortar by pouring with a minimum application thickness of 1/4 in. (6 mm).

3.04 Finishing

- A. Level surface of repair mortar using a float or screed.
- B. Under desicating conditions, spray apply undiluted "CONFILM®" evaporation reducer lightly just after placing.
- C. Apply final finish when mortar has begun to stiffen.

3.05 Curing

- A. Protect fresh mortar from premature evaporation. Cure finished repair mortar by one of the following methods:
 - 1. Method: Keep area continuously moist with water as soon as mortar surface has hardened (thumb print hard), for a minimum of two days.
 - 2. Method: Apply two coats of curing compound, Master Builders "MASTERKURE® 200". Apply the first coat immediately after completing finishing operations. Apply the second coat 24 hours later.

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