

SECTION 03727
EMACO® R320

ONE COMPONENT, POLYMER-MODIFIED VERTICAL/OVERHEAD PATCHING MORTAR

NOTE TO SPECIFIERS

The purpose of this suggested specification is to assist the specifier while developing a specification for the use of Master Builders *EMACO® R320*. 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 vertical and overhead concrete structures at a minimum repair depth of 1/4 in. (6 mm) and up to 1-1/2 in. (38 mm).

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 496-90 Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.
- 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 Resist Chloride Ion Penetration.
- ASTM C 469-87 Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression.
- 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.

1.04 System Performance Requirements

- A. Provide a one component, polymer-modified, chloride-resistant repair mortar which when cured produces the following properties:
1. Compressive Strength (ASTM C 109): Minimum, 1-day 1800 psi (12.4 MPa);
7-day 5000 psi (34.5 MPa); 28-day 7000 psi (48.3 MPa).
 2. Flexural Strength (ASTM C 348): Minimum, 1-day 650 psi (4.5 MPa);
7-day 950 psi (6.6 MPa); 28-day 1380 psi (9.5 MPa).
 3. Splitting Tensile Strength (ASTM C 496): Minimum, 1-day 350 psi (2.4 MPa);
7-day 450 psi (3.1 MPa); 28-day 700 psi (4.8 MPa).
 4. Slant/Shear Bond Strength: Minimum, 1-day 820 psi (5.7 MPa);
(ASTM C 1042/C882-modified) 7-day 1880 psi (12.9 MPa);
28-day 2350 psi (16.2 MPa).
 5. Permeability (ASTM C 1202): Maximum 1000 Coulombs
 6. Modulus of Elasticity (ASTM C 469-87): Max. 2.2 psi x10⁶ (15.2 GPa).
 7. Drying Shrinkage (ASTM C 596 Modified): Maximum 0.1% at 28 days.
 8. Freeze Thaw Resistance: Min. RDF 95%.
(ASTM C 666, Procedure A 300 cycles)

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 or cold weather installation.)

PART 2 - PRODUCTS

2.01 Materials

- A. One Component Polymer-Modified Chloride-Resistant Surface Renovation Mortar: "EMACO[®]R320" by Master Builders, Inc. a blend of portland cement, polymer additives, 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.
- 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. (19 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. For hand troweling apply a bond scrub coat to the prepared substrate before application of EMACO R320. Do not apply more of this bond coat than can be covered with EMACO R320 before the bond coat dries. Do not retemper this bond coat.
- B. Place polymer-modified, chloride-resistant, one component surface renovation mortar by hand troweling or spray application at 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 desiccating conditions, spray apply undiluted "CONFILM®" evaporation retarder 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® 200W". Apply the first coat immediately after completing finishing operations. Apply the second coat 24 hours later.

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