

SECTION 03723
EMACO® S66-CR
FLOWABLE, SHRINKAGE-COMPENSATED STRUCTURAL REPAIR CONCRETE

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® S66-CR*. 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 rheoplastic, cement based shrinkage compensated pumpable, non-segregating, pea gravel aggregate structural repair mortar.
- B. This product is designed for repairing horizontal and formed vertical or overhead concrete structures not less than 1 in. (25 mm) in repair depth.

1.03 References

ASTM C 78-84	Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
ASTM C 109-90	Test Method for Compressive Strength of Hydraulic Cement Mortars - Modified.
ASTM C 469-87	Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression.
ASTM C 666-91	Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
ASTM C 878-87	Test Method for Restrained Expansion of Shrinkage Compensating Concrete.
ASTM C 882-87	Test Method for Bond Strength of Epoxy Resin Systems used with Concrete - Modified.
ASTM C 1012-89	Test Method for Length of Change of Hydraulic Cement Mortars Exposed to Sulfate Solution - Modified.
ASTM C 1202-91	Electrical Indication of Resistance to Chloride Ion Penetration.

1.04 System Performance Requirements

A. Provide sulfate and chloride resistant repair mortar which when cured produces the following properties:

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| 1. Compressive Strength (ASTM C 109): | Minimum, 1-day 2500 psi (17.2 MPa);
28-day 8000 psi (55.2 MPa). |
| 2. Flexural Strength (ASTM C 78): | Minimum, 28-day 770 psi (5.3 MPa). |
| 3. Slant Shear Bond Strength (ASTM C 882-modified): | Minimum, 7-day 2150 psi (14.8 MPa); |
| 4. Tensile Bond Strength (MB Method): | Minimum, 7-day 260 psi (1.8 MPa);
28-day 340 psi (2.3 MPa). |
| 5. Permeability (ASTM C 1202): | Maximum 940 Coulombs. |
| 6. Freeze-Thaw Resistance (ASTM C 666-300 cycles): | Minimum RDF 97%. |
| 7. Sulfate Resistance (ASTM C 1012):
difference | 8 months: 0.06% expansion, (maximum
between control bars in water and test bars). |
| 8. Restrained Expansion (ASTM C 878):
of | Minimum 0.01%, maximum 0.1%. Obtain 90%
maximum expansion within 24 hours. |
| 9. Modulus (ASTM C-469): | 3.1 million psi minimum, 4.8 million psi
maximum. |

1.05 Project Conditions

- A. Weather Conditions: Apply repair mortar only when ambient and surface temperatures are 50 °F (10 °C) and rising. Do not make the repair if the ambient temperature is expected to fall below 40 °F (5 °C) within 24 hours after placement. Do not apply repair mortar when ambient and surface temperatures are 100 °F (38 °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. Repair Mortar: "EMACO® S66-CR" by Master Builders, Inc., a blend of portland cement, specially graded aggregates, and set-control admixtures including shrinkage compensated additives.
- B. Water: Drinkable.
- C. Curing Compounds: "MASTERKURE® or, MASTERKURE® 100W or 200W", by Master Builders, Inc.
- D. "CONFILM®", evaporation reducer and finishing aid, 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 at least 1 in. (25 mm) of existing concrete facing and continue removal as required to expose sound aggregate. Substrate should have a minimum amplitude of 1/4 in. Limit the size of chipping hammers to 15 lbs to reduce micro fractures.
- C. Square cut or under cut perimeter of the area to be repaired to a minimum depth of 1 in. (25mm). Do not cut existing steel reinforcement.

3.01 Surface Preparation (continued)

- D. Where reinforcing steel with active corrosion is encountered, comply with the following:
1. Abrasive blast reinforcing steel to remove rust and contaminants.
 2. If 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 prior to patching.

3.02 Mixing

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

3.03 Application

- A. Place pourable sulfate and chloride resistant repair concrete by pumping or pouring with a minimum application thickness of 1 in. (25 mm).

3.04 Finishing

- A. Level surface of repair mortar using a float or screed.
- B. Apply final finish when mortar has begun to stiffen.

3.05 Curing

- A. Protect fresh concrete from premature evaporation. Cure finished repair mortar by one of the following methods:
1. Preferred Method: Keep area continuously moist with water as soon as mortar surface has hardened (thumb print hard), for a minimum of seven days.
 2. Acceptable Method: Apply two coats of curing compound, Master Builders "MASTERKURE®", or MASTERKURE® 100W or 200W". Apply the first coat immediately after completing finishing operations. Apply the second coat about 24 hours later.

Master Builders, Inc.

United States

23700 Chagrin Boulevard
Cleveland, Ohio 44122-5554
(800) MBT-9990
Fax (216) 831-6910

Canada

3637 Weston Road
Toronto, Ontario M9L 1W1
(800) 387-5862
Fax (416) 741-7925

Mexico

Blvd. M. Avila Camacho 80, 3er Piso
53390 Naucalpán, México
011-525-557-5544
Fax 011-525-395-7903