

EMACO® S66 CI

Flowable, shrinkage-compensated structural repair concrete with integral corrosion inhibitor

DESCRIPTION:

EMACO® S66 CI rheoplastic, pourable repair concrete features a unique formulation that provides excellent bond, resistance to sulfates and chlorides, high electrical resistivity, low permeability, high compressive strengths, and the addition of a corrosion inhibitor.

Application Thickness

Minimum application thickness is 1 in. (25 mm)

RECOMMENDED FOR:

- Horizontal and formed vertical and overhead repair of concrete
- Bridges, parking garages and tunnels
- Piers, navigation locks, dams sea walls and other marine structures
- Balconies

FEATURES/BENEFITS:

- Corrosion resistant - contains an integral corrosion inhibitor
- One component - easy mixing and handling
- Low permeability - resists moisture and chloride intrusion
- Durable - freeze-thaw and sulfate resistant
- Abrasion resistant - excellent protection from vehicular traffic
- Workability - high slump and good pumpability for formed applications

PACKAGING/ESTIMATING:

EMACO S66 CI repair concrete is packaged in 55 lb (25 kg), moisture-resistant bags which yield approximately 0.43 ft³ (0.012 m³) of mortar. This will cover approximately 5.2 ft² (0.48 m²) at a 1 in. (25 mm) depth before waste. The product is also available in 3,300 lb (1,500 kg) bulk bags.

PERFORMANCE DATA:

Results were obtained when material was mixed with 0.6 gal (2.3 L) of water per bag and cured at 70 °F (21 °C). Reasonable variations can be expected depending upon application methods, test methods and curing conditions.

PLASTIC PROPERTIES:

Unit Weight	142 lb/ft ³ (2,275 kg/m ³)	
Working Time	1:30 minutes	
Set Times (h:min) (ASTM C 266)	Initial Set 4:00	Final Set 6:00

HARDENED PROPERTIES:

	1 Day psi (MPa)	7 Day psi (MPa)	28 Day psi (MPa)
Direct Tensile Bond Strength (ACI 503R, Appendix A)		260 (1.8)	340 (2.3)
Direct Shear Bond Strength (Michigan DOT)	350 (2.4)	500 (3.4)	600 (4.1)
Slant Shear Bond Strength (ASTM C 882, Modified ¹)		2150 (14.8)	3300 (22.8)
Drying Shrinkage at 28 Days (ASTM C 157, Modified ²)	0.06%		
Modulus of Elasticity at 28 Days (ASTM C 469)	5.90 x 10 ⁶ psi (40.7 GPa)		
Rapid Chloride Permeability at 28 Days (ASTM C 1202/AASHTO T 277)	650 coulombs		
Freeze-Thaw Resistance at 300 Cycles (ASTM C 666, Procedure A)	97.0% RDM		
Scaling Resistance, 50 Cycles (ASTM C 672)	2, slight to moderate		
Sulfate Resistance Length Change @ 6 Months (ASTM C 1012)	0.006%		
	1 Day psi (MPa)	7 Day psi (MPa)	28 Day psi (MPa)
Splitting Tensile Strength (ASTM C 496)	300 (2.1)	550 (3.8)	700 (4.8)
Flexural Strength (ASTM C 348)	770 (5.3)		
Compressive Strength (ASTM C 109)	2500 (17.2)	6000 (41.4)	8000 (55.2)

¹ No epoxy-bonding agent used

² ICRI Guideline #03733, 3 in. x 3 in. x 10 in.
(75 mm x 75 mm x 250 mm) prism, air cured.

SURFACE PREPARATION:

Concrete

Perform surface preparation in compliance with ICRI Technical Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion". Remove all unsound or delaminated concrete providing a minimum of 1/4 in. (6 mm) substrate profile and 3/4 in. (20 mm) clearance behind corroded reinforcing steel. The perimeter of the area to be patched should be sawcut to a minimum depth of 1 in. (25 mm) to prevent featheredges. After concrete removal and prior to placement, mechanically abrade the concrete surface to remove all bond-inhibiting materials from the concrete substrate and to provide additional mechanical bond. Unless a bonding agent is to be used, presoak the prepared concrete surface to provide a saturated, surface dry (SSD) condition.

Corroded Reinforcing Steel

Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 03730 "Guide to Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion". For additional protection from future corrosion, coat the prepared reinforcing steel with EMACO P22 or EMACO P24 rebar coatings.

MIXING:

Add 0.40 to 0.60 gallons (1.5 to 2.3 liters) of potable water per 55 lb (25 kg) bag of EMACO S66 CI repair concrete. Mechanically mix using a mortar mixer of an appropriate size. Pour approximately 90% of the mix water into the mixing container then charge the mixer with the bagged material. Add the remaining mix water as required to obtain desired consistency. Maximum recommended slump is 7 in. (175 mm). Mix for 3 to 5 minutes until a homogeneous consistency is achieved.

APPLICATION:

Formed Applications

Immediately prior to placement, drain presoaking water from the form leaving a saturated substrate with no excess water remaining. For vertical and overhead applications, air relief vents should be placed at the highest point in the repair area to prevent voids from entrapped air. Apply with sufficient

pressure to ensure intimate contact with the substrate surface. A long open-time bonding agent such as CONCRESLIVE® LIQUID LPL bonding adhesive may be used in lieu of a saturated substrate. In this case, place the EMACO S66 CI repair concrete before the bonding agent becomes tack-free. Remove forms when sufficient strength has developed. For further information, consult ACI 347R "Guide to Formwork for Concrete".

Horizontal Applications

Scrub a bond coat of EMACO S66 CI repair concrete into the prepared saturated surface with a stiff bristle broom or brush. A long open-time bonding agent such as CONCRESLIVE LIQUID LPL bonding adhesive may be used in lieu of a bond coat. EMACO S66 CI repair concrete must be placed before the bond coat or bonding agent dries. Level as needed to match the original concrete elevation. Where rapid drying conditions exist (such as hot, dry or windy conditions) use CONFILM® evaporation reducer. Finish the final surface as required.

CURING:

Curing should continue after form removal. Proper curing is extremely important and should be conducted in accordance with ACI 308 "Standard Practice for Curing Concrete". Apply a curing compound which complies with the moisture retention requirements of ASTM C 309 such as MASTERKURE® 100W or 200W curing compounds; or moist cure for a minimum of 7 days (including time in the form).

LIMITATIONS:

Minimum application thickness is 1 in. (25 mm). Do not mix partial bags. Minimum ambient and surface temperatures should be 45 °F (7 °C) and rising at the time of application.

STORAGE AND SHELF LIFE:

Unopened bags have a shelf life of 18 months when stored under cover in dry conditions between 45 and 90 °F (7 and 32 °C).

RELATED BULLETINS:

Material Safety Data Sheet — EMACO S66 CI
Installation Bulletin #112669 — EMACO S66 CI
Specification Bulletin #112630 — EMACO S66 CI

For additional information, contact your local Master Builders representative.

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