

MasterEmaco® S 466CI

Flowable structural-repair concrete with
integral corrosion inhibitor

FORMERLY EMACO® S66 CI

PACKAGING

55 lb (25 kg) polyethylene-lined bags
3,300 lb (1,500 kg) bulk bags

YIELD

0.43 ft³ (0.012 m³) per 55 lb bag (25 kg)

STORAGE

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

SHELF LIFE

55 LB BAGS: 12 months
when properly stored
3,300 LB BAGS: 3 months
when properly stored

VOC CONTENT

0 g/L less water and exempt solvents

DESCRIPTION

MasterEmaco S 466CI is a flowable, shrinkage-compensated repair concrete. It is designed for large volume repairs, including structural elements in applications from 1" (50 mm) to full depth. It has a unique formulation that provides excellent bond, resistance to sulfates and chlorides, high electrical resistivity, low permeability, high-compressive strengths, and protection from corrosion.

PRODUCT HIGHLIGHTS

- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Only requires the addition of potable water
- High compressive strength
- Excellent freeze/thaw resistance for durability in cold, wet environments
- Abrasion resistant for repairs requiring protection from vehicular traffic
- Flowability makes it ideal for placement by pumping or pouring into congested locations
- Shrinkage compensated, minimizing cracking from drying shrinkage reducing stress at the bond line

APPLICATIONS

- Interior and exterior
- Large volume structural repairs
- Repair or replacement of concrete elements

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" (25 mm).
3. Refer to current ICRI Guideline no. 310.2R for surface prep requirements 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 S 466CI is a rheoplastic cement-based silica-fume-modified flowable repair concrete.

Typical Properties

PROPERTY	VALUE
Unit weight , lb/ft ³ (kg/m ³)	142 (2,275)
Working time , min	90
Set times , hours (ASTM C 266)	
Initial set	4
Final set	6

Test Data

PROPERTY	RESULTS			TEST METHODS
	1 Day Psi (MPa)	7 Day Psi (MPa)	28 Day Psi (MPa)	
Splitting tensile strength	300 (2.1)	550 (3.8)	700 (4.8)	ASTM C 496
Flexural strength	– –	– –	770 (5.3)	ASTM C 348
Compressive strength	2,500 (17.2)	6,000 (41.4)	8,000 (55.2)	ASTM C 109
Direct tensile bond strength	– –	260 (1.8)	340 (2.3)	ACI 503R, Appendix A
Direct shear bond strength	350 (2.4)	500 (3.4)	600 (4.1)	Michigan DOT
Slant shear bond strength	– –	2,150 (14.8)	3,300 (22.8)	ASTM C 882, modified ¹
Drying shrinkage , %, at 28 days	0.06			ASTM C 157, modified ²
Modulus of elasticity , psi (GPa), at 28 days	5.90 x 10 ⁶ (40.7)			ASTM C 469
Rapid chloride permeability , coulombs, at 28 days	650			ASTM C 1202 / AASHTO T 277
Freeze/thaw resistance , % RDM, at 300 cycles	97.0			ASTM C 666, Procedure A
Scaling resistance , 50 cycles	2; slight to moderate			ASTM C 672
Sulfate resistance , %, length change at 6 months	+0.006			ASTM C 1012

¹No epoxy-bonding agent used

²CRI Guideline No. 03733, 3 by 3 by 10" (75 by 75 by 250 mm) prism, air cured

Results were obtained when material was mixed with 0.6 gallons (2.3 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 0.40–0.60 gallons (1.5–2.3 L) of potable water for each 55 lb (25 kg) bag of MasterEmaco S 466Cl. Mix mechanically using a slow-speed drill (400–600 rpm) and a Jiffy paddle or mix in an appropriately sized mortar mixer.
3. Pour approximately 90% of the mix water into the mixing container, and then charge the mixer with the MasterEmaco S 466Cl. Add the remaining mix water as required to obtain desired consistency. Add enough water to the mixing container to obtain a slump of 4–6" (102–152 mm), approximately 0.6 gallons (2.3 L) per bag. Maximum recommended slump is 7" (175 mm).
4. Mix until a homogeneous consistency is achieved, approximately 3–5 minutes. Do not mix longer than 5 minutes.
5. For applications greater than 8" (203 mm), add up to 25 lbs (11.3 kg) of $\frac{1}{2}$ – $\frac{3}{4}$ " rounded, high-density, washed, SSD coarse aggregate for each 55 lbs (25 kg) of MasterEmaco S 466Cl.
6. Aggregate must comply with the requirements of ASTM C 33.

APPLICATION

FORMED APPLICATIONS

1. Build forms in accordance with ACI 347R. Keep the unrestrained surface area of the repair to a minimum.
2. Saturate the prepared concrete substrate by filling the prepared formwork with clean water 24 hours before placement.
3. Immediately before the placement of MasterEmaco S 466Cl, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.
4. In jobsite circumstances where the formwork cannot be filled with water to achieve an SSD surface, the prepared concrete substrates must be thoroughly hosed down with clean water to achieve an equal level of saturation. Apply the repair material with sufficient pressure to ensure intimate contact with the substrate.
5. A long open-time bonding agent such as MasterEmaco P 124 may be used in place of a saturated substrate. In such a case, place the MasterEmaco S 466Cl before the bonding agent becomes tack free.
6. Immediately after mixing, pump or pour the MasterEmaco S 466Cl into the formed area.
7. The recommended application range of MasterEmaco S 466Cl is from 45 to 85 °F (7 to 29 °C). Follow ACI 305 and 306 for hot or cold weather guidelines.

HORIZONTAL APPLICATIONS

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 MasterEmaco S 466Cl 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 of MasterEmaco S 466Cl is from 45 to 85 °F (7 to 29 °C). Follow ACI 305 and 306 for hot or cold weather.
5. A maximum of 90 minutes should be allowed to mix, place, and finish MasterEmaco S 466Cl at 70 °F (21 °C).

CURING

1. Leave the formwork in place until the compressive strength reaches 2,500 psi (17.2 MPa) or a strength specified by the engineer.
2. Cure with an approved 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

- Do not mix partial bags.
- Do not add plasticizers, accelerators, retarders, or other additives.
- Vibrating is recommended for larger placements.
- 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.

**For medical emergencies only,
call ChemTrec® 1(800)424-9300.**

LIMITED WARRANTY NOTICE

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is the replacement of product or refund of the purchase price, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.