

MasterEmaco[®] S 440

Low dust, pourable and pumpable pre-extended self-consolidating repair mortar

FORMERLY LA40 REPAIR MORTAR

PACKAGING

55 lb (25 kg) polyethylene-lined bags

YIELD

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

STORAGE

Store in unopened containers in cool, clean, dry conditions

SHELF LIFE

1 year when properly stored

VOC CONTENT

0 g/L less water and exempt solvents

DESCRIPTION

MasterEmaco S 440 is a low dust one-component, shrinkage-compensated, self-consolidating repair mortar. It is designed for large volume repairs, including structural elements in applications from 1.5" (38 mm) to full depth.

PRODUCT HIGHLIGHTS

- Dual expansion system compensates for shrinkage in plastic and hardened states
- Low-dusting for added worker comfort and safety
- High early strength allows early form removal
- Low permeability protects against carbon dioxide and chloride intrusion
- Excellent freeze/thaw resistance for durability in cold, wet environments
- Flowability makes it ideal for placement by pumping or pouring into congested locations
- Self-consolidation minimizes honeycombing without vibration

APPLICATIONS

- Interior and exterior
- Large volume structural repairs
- Repair or replacement of concrete elements
- Formed horizontal, vertical and overhead repairs

SUBSTRATES

- Concrete

HOW TO APPLY

SURFACE PREPARATION CONCRETE

1. Concrete 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 ½" (13 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.

MIXING

1. Ensure that MasterEmaco S 440 is thoroughly mixed; a forced-action mixer is essential. Mixing in a suitably sized container using an appropriate paddle with a slow-speed (400–500 rpm) heavy-duty drill is acceptable. Do not use free-fall mixers.
2. Measure 2.7 quarts (2.6 L) of potable water and pour 2 quarts into the mixer. With the machine in operation, add 1 full 55 lb (25 kg) bag of MasterEmaco S 440 and mix for 1 minute before adding the rest of the water. Always add powder into the water. The quantities mixed may be scaled up as required.

Technical Data

Composition

MasterEmaco S 440 is a proprietary blend of cement, graded aggregate, shrinkage-compensating agents, and additives.

Test Data

PROPERTY	RESULTS	TEST METHOD
Fresh wet density , lb/ft ³ (kg/m ³)	142 (2,275)	ASTM C 138
Slump Flow* , in (cm)	25 (63.5)	ASTM C1611
Visual Stability Index	0 (Highly Stable - No Bleeding)	
J-Ring Slump Flow* , in (cm)	24.5 (62.5)	ASTM C1621
Passing Ability , in (cm)	0.5 (1) No visible blocking	
Compressive strength , psi (MPa); 2" (51 mm) cubes		ASTM C 109
1 day	2,500 (17.2)	
7 days	5,000 (34.5)	
28 days	6,000 (41.4)	
Compressive strength , psi (MPa); 3 by 6" (76 by 152 mm) cylinders, at 28 days	5,000 (34.5)	ASTM C 39
Flexural strength , psi (MPa), at 28 days	1,150 (7.9)	ASTM C 348
Slant shear bond strength , psi (MPa), at 28 days	3,000 (20.7)	ASTM C 882, (modified ¹)
Splitting tensile strength , psi (MPa), at 28 days	500 (3.4)	ASTM C 496
Drying shrinkage , μ strain, at 28 days	350	ASTM C 157, (unmodified)
Drying shrinkage , μ strain, at 21 days	611	ASTM C 157, (modified)
Freeze/thaw resistance , % RDM ²	100	ASTM C 666
Coefficient of thermal expansion , in/in/° F (cm/cm/° C)	5.5×10^{-6} (9.9×10^{-6})	CRD C 39
Dust Reduction , % MasterEmaco S 440 vs. Control	70%	DIN55992-2
Potential Alkali-Silica Reactivity , Aggregate	<0.10% (Innocuous expansion)	ASTM C 1260

¹No bonding agent

²RDM = Relative Dynamic Modulus

*2.75 qts water / 55 lb bag (Minimum water addition)

Results were obtained with a water per powder ratio of 2.7 qts per 55 lb (2.6 L per 25 kg) bag.

All application and performance values are typical for the material, but may vary with test methods, conditions, and configurations.

- Mix for a further 2–3 minutes to obtain a smooth consistency.
- When using the drill-and-paddle mixing method, place the complete 2.7 quarts (2.6 L) of water in the mixing drum. With the paddle rotating, add 1 full 55 lb (25 kg) bag of MasterEmaco S 440 and mix 3 minutes to reach a smooth, even consistency.
- Depending on the ambient temperatures and the desired consistency, additional water may be added. The total water content should not exceed 2.9 quarts (2.7 L) per 55 lb (25 kg) bag.

APPLICATION

- Build forms in accordance with ACI 347R. Keep the unrestrained surface area of the repair to a minimum.
- Saturate the prepared concrete substrate by filling the prepared formwork with clean water 24 hours before placement.
- Immediately before the placement of MasterEmaco S 440, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.
- 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.
- 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 440 before the bonding agent becomes tack free.
- Immediately after mixing, pump or pour the MasterEmaco S 440 into the formed area. The material does not require vibrating.
- The recommended application range of MasterEmaco S 440 is from 40 to 85 °F (4 to 29 °C). Follow ACI 305 and 306 for hot or cold weather guidelines.

CURING

- Leave the formwork in place until the compressive strength reaches 2,500 psi (17.2 MPa) or a strength specified by the engineer.
- 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

- Minimum ambient, surface, and material temperature is 40 °F (4 °C) and rising.
- Do not mix longer than 5 minutes.
- Minimum application thickness is 1.5" (38 mm). When the depth is less than 1.5", use MasterEmaco S 440 MC.
- Do not mix partial bags.
- Do not use to make overlay repairs where the surface of fresh, wet MasterEmaco S 440 will remain unrestrained during cure.
- Do not vibrate
- Do not add plasticizers, accelerators, retarders, or other additives.
- 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.com/en-us to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by Master Builders Solutions 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.com/en-us, e-mailing your request to mbsbscst@mbcc-group.com or calling 1(800)433-9517. Use only as directed.

IN CASE OF EMERGENCY: Call CHEMTEL +1 (800) 255-3924 or if outside the US or Canada, +1 (813) 248-0585.

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