

## **EMACO® S88-CA**

- Description:** EMACO S88-CA is a one component, rheoplastic, cement-based, fiber reinforced shrinkage-compensated structural repair mortar.
- Application:** Sprayed or hand applied repairs on vertical or overhead concrete.
- Packaging:** EMACO S88-CA is packaged in 55 lb (25 kg) moisture-resistant bags. The yield is 0.45 ft<sup>3</sup> (0.013 m<sup>3</sup>) per 55 lb (25 kg) bag.
- Storage Life:** EMACO S88-CA has a shelf life of approximately 18 months when stored in a cool, dry environment. The expiration date is printed on each bag.
- Coverage:** A 55 lb (25 kg) bag of EMACO S88-CA mortar will cover approximately 5.4 ft<sup>2</sup> (0.52 m<sup>2</sup>) at a 1 in. (25 mm) thickness. For estimating purposes, allowance must be made for anticipated cut off and any other waste which will reduce in-place coverage accordingly.

### **IMPORTANT: READ THIS FIRST**

Master Builders, Inc. does not warrant the performance of this product unless the instructions of this document and other related Master Builders documents are adhered to in all respects.

### **DIRECTIONS**

#### **Surface Preparation:**

1. Saw cut the perimeter of the area to be repaired to a minimum depth of 1/4 in. (6 mm). Do not cut existing steel reinforcement. Where reinforcing steel with active corrosion is encountered, abrasive blast the reinforcing steel to remove rust, scale and contaminants to achieve a white metal finish. If half of the diameter of the reinforcing steel is exposed, chip out behind the reinforcing steel to a 3/4 in. (19 mm) minimum depth. Splice new reinforcing steel to existing steel where corrosion has depleted the cross-section area by 25%, as directed by the Architect/Engineer.
2. Chip unsound concrete to a depth necessary to reach sound concrete.
3. Remove areas that have been saturated with oil or grease. Simple light sandblasting will not provide a sufficient profile for most repairs. Minimum profile should be at least 1/4 in. (6 mm). Exposed aggregate condition is preferred. Limit the size of chipping hammers to 15 lbs to reduce micro fractures.
4. Thoroughly clean the chipped surface of contaminants such as dirt, loose chips and dust. Remove rust from exposed reinforcement by abrasive blasting or high pressure water blasting. It is extremely important that the prepared substrate be thoroughly wetted prior to application of EMACO S-88-CA. At the time of application, the surface must be in a saturated, surface dry (SSD) condition.

(In preparing concrete substrate and reinforcing steel, refer to the International Concrete Repair Institute Publication entitled "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion").

**Use of Mesh:**

1. When applying EMACO S88-CA in repairs greater than 10 lineal feet (3 m) in the longest direction or in overlays at depths of 1 in. to 1-1/2 in. (25 to 38 mm) or greater  $\frac{3}{4}$  and for overhead applications of the same size  $\frac{3}{4}$  a 4 in. x 4 in. low gauge mesh (10 to 12 gauge) must be firmly tied into the properly prepared substrate. Mesh is not necessary in applications where side restraints exist, such as square cut patches or where existing concrete reinforcement will provide adequate restraint. For depths over 2 in. (51 mm) consult your Master Builders representative.
2. Locate the mesh no closer than 3/8 in. (10 mm) and no more than 1 in. (25 mm) from the finished surface using spacers and concrete anchors. The mesh should be no smaller than 4 in. x 4 in. low gauge mesh (10 to 12 gauge). A minimum cover of EMACO S88-CA over the mesh should be 3/8 in. (10 mm).

**Mixing:**

1. Mix EMACO S88-CA mortar with approximately 0.7 to 1.0 U.S. gal (2.7 to 3.8 L) of potable water (10.5% to 15% by weight of EMACO S88-CA) per 55 lb (25 kg) bag.
2. Place the minimum amount of water in a paddle type mortar mixer and start the mixer, then add EMACO S88-CA mortar in a continuous manner and mix for 4 minutes minimum after the EMACO S88-CA has been added. If necessary, the remaining 0.3 U.S. gal (1.1 L) of water may be added to achieve the desired consistency. Continue mixing for 1 to 2 minutes after additional water is added.
3. For overhead applications a stiffer mix is recommended, while for formed and pumped applications a flowable mix may be used.

*NOTE: Manual mixing is not recommended since too much water is generally introduced by this method.*

**Hand Trowel Applications:**

1. For hand trowel applications maximum bond is achieved with installation of a bond scrub coat on the properly prepared substrate. Thoroughly scrub a thin layer of mixed EMACO S88-CA into the clean, saturated surface with a stiff-bristled brush. This should be done immediately before the application of the bulk of the mortar. Do not apply more of the slurry than can be covered with mortar before the slurry coat dries. Do not retemper this material. Spray application does not require a bondcoat slurry.
2. A mortar type mixer should be used in order to assure a workable mix. After the bondcoat slurry has been applied, the mixed material should be literally thrown onto the repair area with a trowel. This hawk and trowel plastering method will allow better adhesion and finishability.

**Spray Application:**

1. EMACO S88-CA may be applied using low pressure spray equipment such as a Moyno or a screw type machine as would commonly be used for plastering. Spray application is recommended for larger repairs.
2. Thorough knowledge of pump and spray equipment is recommended prior to spraying of EMACO S88-CA. Normal techniques of pumping water first, then a cement slurry (neither being applied to the repair area) prior to application of normal mixes of EMACO S88-CA should be used. This is done to lubricate the hoses. Care should be taken not to proceed too far in advance of the finishing crew as EMACO S88-CA stiffens rapidly after placement. Also, periodic cleaning of the pump may be helpful when applying large quantities.

*Note: Existing concrete colors vary considerably. If color match is a concern, field evaluation may be necessary. Allow for sample to dry to a uniform color. Contact your local Master Builders representative.*

**Application Thickness:**

EMACO S88-CA may be applied on vertical or overhead surfaces in thicknesses varying between 3/8 in. and 2 in. (10 mm to 51 mm). For depths over 2 in. (51 mm) consult your Master Builders representative. Thicker build is best achieved by making multiple passes with the spray nozzle.

- 1. Vertical Applications** - EMACO S88-CA can be applied on vertical applications in a thickness up to 2 in. (51 mm) in one lift.
- 2. Overhead Applications** - Unless forming is used, the thickness for overhead application should be no more than 1 in. to 1-1/2 in. (25 to 38 mm) per pass. For depths greater than 1-1/2 in. (38 mm), succeeding lifts of no more than 1 in. (25 mm) should be used.
- 3. Multiple Lifts** - Timing between lifts is critical and will vary with several factors, including mix consistency, mix and ambient temperature, wind conditions, humidity and application technique. Succeeding lifts may be placed after repair mortar has developed initial set. Finish preliminary lifts to a rough, scratched surface to ensure proper adhesion. In situations where succeeding lifts will not be applied the same day, surface should be kept continually moist. If necessary, a wooden float may be used to level the surface. The final surface should be finished using a wooden, plastic or synthetic sponge trowel.

**Finishing:**

1. After placement of EMACO S88-CA, the surface should be leveled immediately using a wooden float. A darby or screed may be necessary in larger applications.
2. In hot, dry or windy conditions it is recommended that CONFILM® then be applied as an evaporation reducer.
3. Final finishing may start only when the mortar has begun to set, that is, when finger pressure does not penetrate the surface, but marks it lightly. Final finishing may be done using a wooden or synthetic sponge trowel. If the material is difficult to finish at this point, a very light misting of full strength CONFILM may assist.

**Curing:**

1. The finished patch requires curing to obtain optimum performance and durability. Either keep the finished patch continuously moist with water for a minimum of 7 days or use a two-coat application of quality curing compound such as MASTERKURE, MASTERKURE® 100W or 200W from Master Builders, Inc.
2. The first coat of curing compound should be applied **immediately** after finishing operations are completed. The second coat should be applied the following day.

*Note: During the interval between placing and curing, the repair area must be protected from exposure to wind and sun, particularly if the humidity is low.*

**HOT WEATHER APPLICATION [Above 80 °F (27 °C)]:**

Do not apply repair mortar when ambient and surface temperatures are 100 °F (38 °C) and above. Shade the material and prepared surface area to keep them cool. To extend working time, mix the material with cool water or equivalent weight of crushed or shaved ice. Be certain the substrate is SSD (saturated surface dry) before application begins. When finishing is required, work the material quickly once it has stiffened to the point that a finger pressed against the material will not sink beneath the surface but will mark it lightly. Proper curing is always required and is particularly important in hot weather. Refer to the previous section marked "Curing".

**COLD WEATHER APPLICATION [Below 50 °F (10 °C)]:**

Do not make the repair if the ambient temperature is expected to fall below 40 °F (4 °C) within 72 hours of placement. Both the substrate and ambient temperature must be at least 50 °F (10 °C) at the time of placement. Low substrate and ambient temperatures slow down rate of set and strength development. Protect the finished patch with insulating blankets to aid in the development of early strength gain. At temperatures below 50 °F (10 °C), warm the material, water and substrate. Proper ventilation during heating is required.

**CLEAN UP:**

1. EMACO S88-CA bonds extremely well to most surfaces. Remove repair mortar as soon as possible from tools and mixing equipment with water.
2. Cured material can only be removed mechanically. Periodic cleaning is recommended.

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