



PRODUCT DATA SHEET

SikaEmaco[®]-488 CI

(formerly MasterEmaco[®] S 488CI)

Sprayable, fibre-reinforced, structural repair mortar with integral corrosion inhibitor

PRODUCT DESCRIPTION

SikaEmaco[®]-488 CI is a one-component, shrinkage-compensated, fibre-reinforced repair mortar containing an integral corrosion inhibitor. It can be applied vertically or overhead by low-pressure spraying or hand troweling.

WHERE TO USE

- Interior and exterior
- Vertical and overhead
- Severe service environments such as sewer, lift stations, marine structures, and water collection

Substrates

- Concrete
- Masonry
- Brick

CHARACTERISTICS / ADVANTAGES

- Only requires the addition of potable water
- Achieves a tenacious bond to substrate without the need for a bonding agent
- Low-pressure sprayability improves placement speed and minimizes rebound for low-waste
- Sulfate-resistant and freeze/thaw durable for use in harsh environments
- Very low chloride permeability and an integral corrosion inhibitor protect reinforcing steel
- High early and ultimate compressive, flexural, and bond strengths for long-lasting, durable repairs
- Low shrinkage to produce a stable, durable bond

PRODUCT INFORMATION

CSC MasterFormat[®]

CSC Master Format[™] 03 01 00 - MAINTENANCE OF CONCRETE

Composition / Manufacturing

SikaEmaco[®]-488 CI is a one-component rheoplastic, silica-fume modified, fiber-reinforced repair mortar with an integral corrosion inhibitor.

Packaging

25 kg (55 lb) polyethylene-lined bags

Shelf Life

1 year when properly stored

Storage Conditions

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

Density

2,275 kg/m³ (139 lb/ft³)

TECHNICAL INFORMATION

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Compressive Strength	1 day	24.1 MPa (3,500 psi)	(ASTM C 1069)
	7 day	45.5 MPa (6,600 psi)	
	28 day	62.1 MPa (9,000 psi)	
Modulus of Elasticity in Compression	34.5 GPa (5.0 x 10 ⁶ psi) at 28 days		(ASTM C469)
Tensile Strength in Flexure	1 day	4.5 MPa (650 psi)	(ASTM C348)
	7 day	6.9 MPa (1,000 psi)	
	28 day	9.0 MPa (1,300 psi)	
Splitting Tensile Strength	1 day	2.4 MPa (350 psi)	(ASTM C496)
	7 day	3.5 MPa (500 psi)	
	28 day	6.2 MPa (900 psi)	
Pull-Off Strength	1 day	0.7 MPa (100 psi)	(ACI 503R, Appendix A)
	7 day	1.2 MPa (175 psi)	
	28 day	2.1 MPa (300 psi)	
Shear Adhesion Strength	1 day	10.3 MPa (1,500 psi)	(ASTM C882, modified ¹)
	7 day	17.2 MPa (2,500 psi)	
	28 day	20.7 MPa (3,000 psi)	
¹ No epoxy-bonding agent was used.			
Shrinkage	0.09 % at 1 day		(ASTM C157, modified ²)
² ICRI Guideline No. 320.2R "Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces" (formally No. 03733), 25 mm x 25 mm x 250 mm (1 in x 1 in x 10 in) prism, air cured.			
Chloride Ion Diffusion Resistance	Very low chloride penetrability, 100 -1,000 coulombs at 28 days		(ASTM C1202 / AASHTO T 277)
Sulfate Resistance	< 0.10 % 6 months		(ASTM C1012)
Freeze thaw resistance	91.0 % RDM at 300 cycles		(ASTM C666, Procedure A)
Freeze Thaw De-Icing Salt Resistance	None at 50 cycles		(ASTM C672)
APPLICATION INFORMATION			
Yield	0.013 m ³ (0.45 ft ³) per 25 kg (55 lb) bag		
Setting Time	Working time 45 minutes		
Initial Set Time	< 4 hours		(ASTM C266)
Final Set Time	< 7 hours		(ASTM C266)

BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

ENVIRONMENT, HEALTH & SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

SikaEmaco®-488 CI is designed for professional use only; not for sale to or use by the general public.

- Precondition material to approximately 21 °C (70 °F) for 24 hours before using.
- Protect repairs from direct sunlight, wind, and other conditions that could cause rapid drying of material.
- Do not mix partial bags.
- Minimum ambient and surface temperatures should be 7 °C (45 °F) and rising at the time of application.
- Proper application is the responsibility of the user. Field visits by Sika personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

SUBSTRATE PREPARATION

The substrate must be structurally sound and fully cured (28 days). Saw cut the perimeter of the area to be repaired into a square with a minimum depth of 6 mm (1/4 in). The surface to be repaired must be clean, free of laitance, and saturated surface-dry (SSD) following ICRI Guideline no. 310.2 to permit proper bond. For most applications, a CSP 4 - 10 will promote sufficient bond.

Reinforcing Steel

Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R. For additional protection from future corrosion, coat the prepared reinforcing steel with Sikagard® P-8100 AP.

Reinforcing Mesh

Use a 102 x 102 mm (4 in x 4 in) low-gauge (10 - 12) mesh firmly tied into the properly prepared substrate. If repairing chloride-contaminated concrete consider using galvanized or stainless mesh. Locate the mesh no closer than 10 mm (3/8 in) and no more than 25 mm (1 in) from the finished surface using spacers and concrete anchors.

Note that mesh is not necessary in applications with side restraints, such as square-cut patches or areas where existing concrete reinforcement will provide adequate restraint. For depths over 51 mm (2 in), consult your Sika Technical Sales Representative.

Note: The use of galvanic anodes or Sikagard® P-8100 AP should also be considered to protect adjacent concrete in the following situations:

- When applying SikaEmaco®-488 CI mortar in repairs greater than 3 m (10 lineal feet) in the longest direction
- In overlays at depths of 25 - 38 mm (1 - 1½ in) or greater
- For overhead applications of the same size

MIXING

Add 2.7 - 3.8 L (0.7 - 1.0 US gal.) of potable water per 25 kg (55 lb) bag. Mechanically mix using a forced-action mortar mixer of appropriate size. Pour approximately 90 % of the mix water into the mixing container, and then charge the mixer with the bagged material. Add the remaining mix water as required. Mix the material for three (3) to five (5) minutes until it has reached a homogeneous consistency. For overhead applications, use a stiffer mix.

APPLICATION

Hand-trowel Application

Dampen the surface with potable water; it must be saturated surface-dry (SSD) with no standing water. With a gloved hand, scrub a small quantity of mixed material into the SSD substrate. Thoroughly key in and work the material throughout the cavity to promote bond. Do not apply more of the bond coat than can be covered with mortar before the bond coat dries. Apply SikaEmaco®-488 CI in lifts of 6 - 51 mm (1/4 - 2 in). Avoid featheredging. For optimum mechanical bond on successive lifts, thoroughly score each lift and allow it to reach the initial set before the next layer is applied. Placement time is 45 minutes at 21 °C (70 °F) and 50 % relative humidity. Trowel material to the desired finish after the initial set. The recommended application range of SikaEmaco®-488 CI is from 7 °C to 32 °C (45 °F to 90 °F). Follow ACI 305 and 306 for hot or cold weather concreting guidelines.

Spray Application

Spray application is recommended for larger repairs refer to ACI RAP 3.

Applicators must have a thorough knowledge of pump and spray equipment before spray-applying SikaEmaco®-488 CI. Use normal techniques of pumping water first and then a cement slurry to prime and lubricate the base (neither being applied to the repair area). Be careful not to get too far ahead of the finishing crew; SikaEmaco®-488 CI mortar stiffens rapidly after placement. Periodic cleaning of the pump may be helpful when applying large quantities. SikaEmaco®-488 CI may be applied on vertical or overhead surfaces at thicknesses ranging from 10 mm to 51 mm (3/8 to 2 in). For thicknesses exceeding 51 mm (2 in), consult your Sika Technical Sales Representative. Achieve a thicker build by making multiple passes with the spray nozzle.

Remarks:

- SikaEmaco®-488 CI can be applied vertically in a thickness up to 51 mm (2 in) in a single lift.
- Unless forming is used, the overhead application should be no more than 38 mm (1½ in) per pass. For depths greater than 38 mm (1½ in), succeeding lifts of no more than 25 mm (1 in) should be used.
- 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 the repair mortar has developed the initial set. Roughen or profile the preliminary lifts to ensure the adhesion of subsequent lifts. When succeeding lifts will not be applied the same day, keep the surface continually moist.

CURING TREATMENT

Finishing

After placing SikaEmaco®-488 CI, the surface must be immediately levelled using a wooden float. In hot, dry, or windy conditions, the use of Sika® Antisol® ER 50 evaporation reducer is recommended. Start final finishing when the mortar has begun to set using a wooden or sponge float.

Curing

Wet cure for a minimum of seven (7) days or cure with an approved curing compound compliant with ASTM C309 or preferably ASTM C1315.

CLEAN UP

Clean tools and equipment with clean water immediately after use. Once hardened, the material can only be removed mechanically.

LEGAL NOTES

The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request or may be downloaded from our website at: www.sika.ca

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