

## PRODUCT DATA SHEET

# SikaEmaco® S 488

(formerly MEmaco S 488)

Thixotropic, shrinkage compensated, structural concrete repair mortar for hand and spray application

### DESCRIPTION

SikaEmaco® S 488 is a single component, high strength, high modulus, shrinkage compensated structural repair mortar that meets the requirements of EN 1504-3 class R4. Mixed with water it forms a thixotropic mortar that can be easily applied by trowel or spray.

### USES

SikaEmaco® S 488 is used for the structural repair of concrete elements such as:

- Columns, piers and cross beams of bridges
- Cooling towers and chimneys and other industrial environments
- Water treatment and sewerage facilities before subsequent coating
- Tunnels, pipes, outfalls and all below ground construction
- Marine structures

### CHARACTERISTICS / ADVANTAGES

- Easy-to-use product, only mix with water.
- Thixotropic mortar, application without extra bonding primer.
- Very good workability, can be easily spray- or trowel-applied.
- Can be applied inside and outside, on horizontal, vertical and overhead surfaces.
- Shrinkage-compensated mortar to reduce the risk of shrinkage cracking both in the fresh and in the hardened state under dynamic load.
- High carbonation resistance.
- High resistance against freeze/thaw and de-icing salts.

### PRODUCT INFORMATION

<b>Packaging</b>	SikaEmaco® S 488 is available in 25 kg paper bags. Larger packaging (Big bags) available on request in several locations. Please check with your local Sika contact.
<b>Appearance / Colour</b>	Grey Powder
<b>Shelf Life</b>	Please refer to information given on the packaging.
<b>Storage Conditions</b>	Store at ambient temperatures, out of direct sunlight, in cool, dry warehouse conditions and clear of the ground on pallets protected from rainfall prior to application.
<b>Maximum Grain Size</b>	Approx. 2 mm
<b>Soluble Chloride Ion Content</b>	≤ 0.05 % (EN 1015-17)

## TECHNICAL INFORMATION

<b>Compressive Strength</b>	1 day (at 21±2 °C)	≥ 17 MPa	
	7 days (at 21±2 °C)	≥ 30 MPa	
	28 days (at 21±2 °C)	≥ 50 MPa	
<b>Modulus of Elasticity in Compression</b>	≥ 25,000 N/mm <sup>2</sup>		(EN 13412)
<b>Tensile Strength in Flexure</b>	28 days (at 21±2 °C)	≥ 7 N/mm <sup>2</sup>	(EN 196-1)
<b>Pull-Out Resistance</b>	Adhesion to Concrete after 28 days	≥ 2.0 MPa	(EN 1542)
<b>Reaction to Fire</b>	Class A1		(EN 13501-1)
<b>Freeze Thaw De-icing Salt Resistance</b>	Adhesion to Concrete after Freeze-Thaw (50 cycles with salt)	≥ 2.0 MPa	(EN 13687-1)
<b>Capillary Absorption</b>	≤ 0.5 kg·m <sup>-2</sup> ·h <sup>-0.5</sup>		(EN 13057)
<b>Carbonation Resistance</b>	dk ≤ Reference Concrete		(EN 13295)

## APPLICATION INFORMATION

<b>Mixing Ratio</b>	Please refer to information given on the packaging. Do not exceed the maximum water amount.
<b>Consumption</b>	Approx. 1,850 kg powder is needed to prepare 1 m <sup>3</sup> of fresh mortar. A 25 kg bag will yield approx. 13 to 13.5 l of mortar.
<b>Layer Thickness</b>	From 6 to 40 mm in one layer.
<b>Product Temperature</b>	+5 to +30 °C
<b>Ambient Air Temperature</b>	+5 to +35 °C
<b>Substrate Temperature</b>	+5 to +35 °C
<b>Pot Life</b>	Approx. 45 to 60 minutes (at 21±2°C and 60±10% relative humidity). Higher temperatures will reduce these times and lower temperatures will extend them.
<b>Curing Rate</b>	Full cure of material is reached after 28 days (at 21±2 °C).
<b>Fresh mortar density</b>	approx. 2.0 to 2.1 kg/l

## BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## LIMITATIONS

- Only mix complete, undamaged bags of SikaEmaco® S 488.
- Do not apply SikaEmaco® S 488 at temperatures below +5 °C nor above +35 °C
- Do not apply SikaEmaco® S 488 in case of strong winds.
- Do not add cement, sand or other substances to SikaEmaco® S 488 mixes.
- Never add water or fresh mortar to a mortar mix which has already begun to set.

## ECOLOGY HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

# APPLICATION INSTRUCTIONS

## SUBSTRATE PREPARATION

Concrete must be fully cured, clean and sound to ensure good adhesion. All loose traces of concrete or mortar, dust, grease, oil, etc. must be removed. SikaEmaco® S 488 needs a rough surface to bind to. Non-impact/vibrating cleaning methods, e.g. shot blasting, sandblasting or high-pressure water jetting are recommended to prepare and roughen the surface. Aggregate should be clearly visible on the surface of the concrete structure after surface preparation. Make surface rough, using a chisel or scarifier. Cleaning methods, e.g. grit or high water pressure blasting are recommended. Aggregate should be clearly visible on the surface of the concrete structure after surface preparation. The prepared concrete must have a minimum direct tensile strength of 1.5 N/mm<sup>2</sup>. Cut the edges of the repair vertically to a minimum depth of 6 mm. The prepared substrate should be completely pre-soaked for preferably 12, but least 2 hours before applying SikaEmaco® S 488. The surface must be mat-damp, but without standing water. If reinforcing steel is visible, clean to a minimum grade of Sa 2 according to ISO 8501-1 / ISO 12944-4. Sandblasting of reinforcement is recommended. In case of chloride contamination of the concrete or when depth of cover is less than 10 mm, the reinforcement must be protected by using protective primers like e.g. SikaEmaco P 5000 AP.

## MIXING

Open the bags a short time before the mixing is started. Damaged or opened sacks should not be used. Pour the minimum amount of mixing water into the forced action mixer. Use clean tap water only! Start the mixer and add SikaEmaco® S 488 rapidly and continuously. Mix for about 3 minutes until the mortar has a uniform and lump-free consistency. Add water if necessary within the allowed mixing ratio until required consistency is achieved and mix again for about 2 minutes. The water content can slightly vary depending on ambient temperature and relative humidity. Small mortar quantities can be mixed with a suitable paddle attached to a powerful, slow speed electric drill (max. 500 rpm). Do not exceed the maximum allowed water amount!

## APPLICATION

### Hand Application:

Before SikaEmaco® S 488 is applied to the final layer thickness, we advise to apply a thin scrape coat of mixed mortar or a bonding slurry mixed of SikaEmaco® S 488 mortar (with a bit more water) onto the prepared damp substrate. Then apply the mixed SikaEmaco® S 488 mortar wet-in-wet using a screeding beam, trowel or wooden board to the desired thickness between 6 to max. 40 mm.

### Spray Application:

First spray-apply a thin contact layer onto the prepared damp substrate, then apply multiple layers of SikaEmaco® S 488 until the required layer thickness of max. 40 mm is obtained. Spraying with the necessary pressure will improve the adhesion of SikaEmaco® S 488.

### Finishing:

Smoothing with a trowel or finishing by wood or steel float can be done as soon as the mortar has begun to stiffen (usually after 60 to 90 minutes at 21±2 °C and 60±10 % rel. humidity). At lower temperatures and/or higher humidity these times will be extended; at higher temperatures and/or lower humidity these times will be shortened.

## CURING TREATMENT

Immediately after the SikaEmaco® S 488 surface is finally finished, cover all exposed mortar with clean wet hessian and keep moist by covering with polythene between 1 to 7 days depending on the weather conditions.

## CLEANING OF TOOLS

Tools and mixer must be cleaned immediately after use with water. Cured material can only be removed mechanically.

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## LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

## 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 written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. 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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

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