

## PRODUCT DATA SHEET

# SikaEmaco® S 5800 DUO

(formerly MEmaco S 5800 DUO)

Fast setting, medium-strength, shrinkage compensated, tixotropic structural repair mortar and fairing coat (2-in-1 product), class R3 according to EN 1504-3

### DESCRIPTION

SikaEmaco® S 5800 DUO is a single component, fast setting, medium strength, medium modulus, shrinkage compensated structural repair mortar and fairing coat that meets the class R3 requirements of EN 1504-3. As a unique 2-in-1 universal product, it can be hand- and spray-applied from 1 to 50 mm thickness.

SikaEmaco® S 5800 DUO is a ready-to-use material that contains special hydraulic binders, well graded sands, specifically selected polymers and additives. When mixed with water, SikaEmaco® S 5800 DUO forms a fast-setting and tixotropic mortar that can easily be applied by hand and machine.

### USES

SikaEmaco® S 5800 DUO can be used for structural repair and levelling of medium strength concrete elements in exposure classes XC 1-4, XF 1-4, XD 1-3, XS 1-3 and XA 1-2 as described in EN 206 like e.g.:

- Columns, piers and cross beams.
- Structures in industrial environments where a fast return to service is required.
- Preparation of surfaces in water treatment and sewerage facilities.
- Tunnels, pipes, outfalls and all below ground construction.
- Façades of residential and commercial buildings.
- Prefabricated concrete elements.

### FEATURES

- Unique 2-in-1 properties: fairing coat and structural repair mortar in one product!
- Fast-setting, allows quick return to service.
- Universal use: can be applied inside and outside, on horizontal, vertical and overhead surfaces, in dry and wet environments.
- Easy to apply by both hand and spray
- Highly tixotropic - can be applied up to 50 mm without the need of secondary reinforcement.
- Medium strength and medium E-Modulus for best compatibility to medium strength concrete often found in refurbishment situations.
- Excellent workability for easy placing and finishing.
- Excellent adhesion to host concrete ensuring load transfer.
- Weatherproof: proven freeze/thaw and carbonation resistance.
- Very low permeability to water and chlorides.
- Sulphate resistant.

### PRODUCT INFORMATION

Packaging	SikaEmaco® S 5800 DUO is available in 25 kg paper bags.
Appearance and colour	Grey powder
Shelf life	12 months if stored at below mentioned storage conditions.
Storage conditions	Store at ambient temperatures, out of direct sunlight, in cool, dry ware-

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house conditions and clear of the ground on pallets protected from rainfall prior to application. Avoid permanent storage over +30° C.

Maximum grain size	0.4 mm	
Total chloride ion content	≤ 0.05 %	(EN 1015-17)

## TECHNICAL INFORMATION

Compressive strength	All technical data refer to material mixed with approx. 160 g water pro kg powder (medium water demand) if not stated otherwise.			
		CC-Curing	PCC-Curing	(EN 12190)
	4 hours	≥ 4 N/mm <sup>2</sup>	-	
	1 day	≥ 15 N/mm <sup>2</sup>	-	
	2 days	-	≥ 20 N/mm <sup>2</sup>	
	3 days	≥ 20 N/mm <sup>2</sup>	-	
	7 days	≥ 30 N/mm <sup>2</sup>	≥ 30 N/mm <sup>2</sup>	
	28 days	≥ 35 N/mm <sup>2</sup>	≥ 35 N/mm <sup>2</sup>	
Modulus of elasticity in compression	23,000 N/mm <sup>2</sup>		(EN 13412)	
Flexural-strength		CC-Curing	PCC-Curing	(EN 12190)
	4 hours	≥ 1 N/mm <sup>2</sup>	-	
	1 day	≥ 4 N/mm <sup>2</sup>	-	
	2 days	-	≥ 4 N/mm <sup>2</sup>	
	3 days	≥ 5 N/mm <sup>2</sup>	-	
	7 days	≥ 6 N/mm <sup>2</sup>	≥ 5 N/mm <sup>2</sup>	
	28 days	≥ 6 N/mm <sup>2</sup>	≥ 6 N/mm <sup>2</sup>	
	Pull-out resistance	thickness:	5 mm*	50 mm**
24 hours		≥ 1 N/mm <sup>2</sup>	≥ 1 N/mm <sup>2</sup>	
48 hours		≥ 1.5 N/mm <sup>2</sup>	≥ 1.5 N/mm <sup>2</sup>	
thickness:		2 mm**	10 mm**	(EN 1542)
28 days		≥ 1.8 N/mm <sup>2</sup>	≥ 1.8 N/mm <sup>2</sup>	
* Material mixed with approx. 190 g water pro kg powder (maximum water demand)				
** Material mixed with approx. 160 g water pro kg powder (medium water demand)				
Shrinkage	90 days	≤ 0.95 mm/m		
	(EN 12617-4)			
Resistance to thermal shock	Adhesion to Concrete after Thunder-Shower (30 cycles)	≥ 2.0 N/mm <sup>2</sup>		(EN 13687-2)
Reaction to fire	Class A1	(EN 13501-1)		
Freeze thaw de-icing salt resistance	Adhesion to Concrete after Freeze-Thaw (50 cycles with salt)	≥ 1.8 N/mm <sup>2</sup>		
	(EN 13687-1)			
Sulfate resistance	Dimension stability after exposure to 10% Na <sub>2</sub> SO <sub>4</sub> -Solution compared to water storage after 112 days (prolonged Wittekindt-Method)	Diff. < 0.2 mm/mm		
Capillary absorption	28 days	≤ 0.5 kg·m <sup>-2</sup> ·h <sup>-0.5</sup>		
	(EN 13057)			

<b>Watertightness</b>	15mm mortar thickness after 28 days (EN 14891)	up to 1.5 bar
<b>Carbonation resistance</b>	28 days (EN 13295)	$dk \leq$ Reference Concrete
<b>Service temperature</b>	-30 to + 80 °C	
<b>Chloride Ion Ingress</b>	Total chloride content in relation to cement content in zone 8 – 10 mm after 6 months (EN 14629)	< 0.01 %

## APPLICATION INFORMATION

<b>Mixing ratio</b>	3.7 – 4.7 l water for 25 kg	
<b>Consumption</b>	Approx. 1,700 kg powder is needed to prepare 1 m <sup>3</sup> of fresh mortar. A 25 kg bag will yield approximately 14.5 – 15 litres of mortar, depending on the water amount used.	
<b>Layer thickness</b>	1 to 50 mm	
<b>Material temperature</b>	+5 to +30 °C	
<b>Pot Life</b>	40 - 55 minutes (at 21±2°C and 60±10% relative humidity. Higher temperatures will reduce these times and lower temperature will extend them)	
<b>Waiting time to overcoating</b>	Bond strength after 28 days (on 10mm mortar coated with Sikagard-330 EL after 4 h)	1.7 N/mm <sup>2</sup>
<b>Applied product ready for use</b>		5 mm*
	Residual humidity after 48 h	4.5 %
		50 mm**
		3.8 %
	* Material mixed with approx. 190 g water pro kg powder (maximum water demand)	
	** Material mixed with approx. 160 g water pro kg powder (medium water demand)	
<b>Fresh mortar density</b>	approx. 1.95 g/cm <sup>3</sup>	

## BASIS OF PRODUCT DATA

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

## IMPORTANT CONSIDERATIONS

- Do not apply SikaEmaco® S 5800 DUO at temperatures below +5°C nor above +30°C.
- Do not add cement, sand or other substances that could affect the properties of SikaEmaco® S 5800 DUO.
- Never add water or fresh mortar to a mortar mix which has already begun to set.
- Keep the mixing water ratio between the recommended limits.
- Finishing the surface too early or too late can cause delamination or cracks!

## ECOLOGY, HEALTH AND 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

### SUBSTRATE PREPARATION

#### For structural concrete repair:

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. Concrete must have a minimum direct tensile strength of 1.0 N/mm<sup>2</sup>.

Damaged or contaminated concrete should be removed to obtain a keyed surface. Non-impact/vibrating cleaning methods, e.g. shot blasting, sandblasting or high-pressure water jetting are recommended. Aggregate should be clearly visible on the surface of the concrete structure after surface preparation.

Cut the edges of the repair area vertically to a minimum depth of 5 mm.

If reinforcing steel is visible, clean to a minimum grade of SA 2 according to ISO 8501-1 / ISO 12944-4. Ensure back of rebar is also clean. In case of chloride contamination of the concrete or when depth of cover is less than 5 mm, the reinforcement should be protected by using SikaEmaco P 5000 AP.

The prepared substrate should be saturated with water, preferably for 24 hours, but at least 2 hours before applying SikaEmaco® S 5800 DUO. Before starting the application, the surface must be mat-damp, but without standing water.

#### **For fairing coat applications:**

The substrate must be rough, clean, able to bear weight and free from dust, oil and grease. Remove loose materials and cement slurry. In case of large-area repair works, the concrete substrate must have a pull-off strength in excess of 0.8 N/mm<sup>2</sup>.

Thoroughly moisten the substrate and allow it to dry to a matt, moist state before applying the mortar. The surface must be mat-damp, but without standing water.

#### **MIXING**

Pour the minimum amount of mixing water into a clean container. Mixing water needed: 3.7 to 4.7 litres per 25 kg bag depending upon consistency required. Add the SikaEmaco® S 5800 DUO powder rapidly and continuously while mixing with a suitable paddle attached to a powerful, slow speed electric drill (max. 400 rpm) until a plastic and uniform consistency is achieved without any lump in the mortar.

Allow the mortar to rest for 2 - 3 minutes and then re-mix briefly, adjusting the consistency when required.

**Note:** When used as a fairing coat, we recommend working in the upper range of water demand; when used as a repair mortar, we recommend working in the lower range of water amount. Add water if necessary but never exceed the maximum water demand!

#### **APPLICATION**

Temperatures during application and for the next 12 hours must be between +5°C and +30°C.

#### **As structural concrete repair mortar:**

First apply a thin scrape coat or contact layer to the prepared damp substrate. In case of very rough substrates we recommend brushing in a bonding slurry of SikaEmaco® S 5800 DUO (with max. 20% more water) and then apply the mixed mortar wet-on-wet on the bonding layer.

Apply SikaEmaco® S 5800 DUO using a screeding beam, trowel or wooden board in the desired thickness up to 50 mm directly onto the primed surface.

#### **As fairing coat:**

Apply a thin scrape coat or contact layer of mixed SikaEmaco® S 5800 DUO directly to the prepared damp substrate before building up to the required thickness. When the product is to be used to fill blowholes only, rub the material directly into the pores using e.g. a jute cloth or scrape it in with a trowel. Remove all excess material as soon as possible.

#### **Spray application:**

SikaEmaco® S 5800 DUO can be also spray-applied for both uses (as repair mortar and fairing coat).

First spray-apply a thin contact layer, then apply multiple layers of SikaEmaco® S 5800 DUO until the required layer thickness is obtained. Spraying with the necessary pressure will improve the adhesion of SikaEmaco® S 5800 DUO.

#### **Finishing:**

Smoothing with a trowel or finishing by float or sponge can be done as soon as the mortar has begun to stiffen (typically after around 30 to 60 minutes depending on the temperature). At lower temperatures and/or higher humidity these times will be extended.

#### **CURING TREATMENT**

SikaEmaco® S 5800 DUO is basically self-curing. Wet curing is not advised. Protect the repaired area in case of direct exposure to rain, sun or wind until the mortar is hardened.

#### **CLEANING OF EQUIPMENT**

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

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## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

## 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.

### Oy Sika Finland Ab

Koskelontie 23 C

PL 49

02921 Espoo

Puh. + 358 9 511 431

Fax. + 358 9 511 43 300

[www.sika.fi](http://www.sika.fi)



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