BUILDING TRUST

PRODUCT DATA SHEET

SikaEmaco® S 5450 PG

(formerly MEmaco S 5450PG)

High-strength, shrinkage compensated, fibre reinforced, flowable concrete repair mortar, Class R4; 20 to 200 mm application layer thickness

PRODUCT DESCRIPTION

SikaEmaco® S 5450 PG is a one-component, high strength, high modulus and shrinkage compensated concrete repair mortar that meets the requirements of Class R4 according to EN 1504-3.
SikaEmaco® S 5450 PG is a ready-to-use material that contains sulphate resistant Portland cement (HSR LA), hydraulic binders, well graded sands, selected polymer fibres (polyacrylonitryl or PAN) and special additives to significantly reduce the risk and incidence of shrinkage cracking.
When mixed with water, SikaEmaco® S 5450 PG forms a mortar with a fluid or flowable consistency which can be easily applied by hand or machine.
SikaEmaco® S 5450 PG can be used in thickness from 20 mm up to 200 mm.

USES

SikaEmaco® S 5450 PG is used for the structural concrete repair using formwork and casting method of:

- Columns, cross beams and piers of all bridges.
- Marine and other civil structures.
- Water treatment and sewage facilities.
- Areas of congested reinforcement where hand or spray application is not possible.

CHARACTERISTICS / ADVANTAGES

- Formulated with nanotechnology to minimise shrinkage and crack tendency.
- No segregation or bleeding.
- Long open time.
- High flow for full compaction even in areas with congested steelwork.
- For hand or machine application.
- For concrete replacements up to 200 mm in a single layer.
- Can be extended with clean, dry aggregate for applications exceeding 200 mm thickness.
- Good strength development exceeding requirement of Class R4 of EN 1504-3.
- Extra low shrinkage for durability.
- Only simple standard surface preparation required.
- Excellent freeze / thaw resistance.
- High carbonation resistance.
- Sulphate resistant.
- Very low permeability to water and chlorides.
- Can be used in contact with drinking water.

APPROVALS / STANDARDS

- CE Certification - Class R4 according to EN 1504-3.
- BELGAQUA Drinking Water Certificate.

PRODUCT INFORMATION

Packaging	SikaEmaco® S 5450 PG is available in 25 kg paper bags.
Shelf Life	12 months after date of production if stored in the correct conditions.
Storage Conditions	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. Do not store at +30 °C or above.
Appearance / Colour	Grey powder

Maximum Grain Size	1.5 mm	
Total Chloride Ion Content	≤ 0.01 %	(EN 1015-17)

TECHNICAL INFORMATION

Compressive Strength	1 day	≥ 15 N/mm²	(EN 12190)
	7 days	≥ 40 N/mm²	
	28 days	≥ 55 N/mm²	
	NOTE: Tested at +21 °C.		
Modulus of Elasticity in Compression	≥ 23,000 N/mm²		(EN 13412)
Flexural Strength	1 day	≥ 4 N/mm²	(EN 12190)
	7 days	≥ 6 N/mm²	
	28 days	≥ 8 N/mm²	
	NOTE: Determined at +21 °C.		
Pull-Out Resistance	Adhesion to concrete after 28 days	≥ 2.7 N/mm²	(EN 1542)
	Adhesion to Concrete after freeze-thaw (50 cycles with salt)	≥ 3.0 N/mm²	(EN 13687-1)
	Adhesion to Concrete after thunder-shower (50 cycles)	≥ 3.0 N/mm²	(EN 13687-2)
	Adhesion to Concrete after dry cycling (50 cycles)	≥ 3.0 N/mm²	(EN 13687-4)
Shrinkage	No cracking up to 180 days		
Ring test	No cracking up to 180 days		
Carbonation Resistance	dk ≤ Ref. Concrete		(EN 13295)
Reaction to Fire	EuroClass A1		(EN 13501-1)

APPLICATION INFORMATION

Fresh mortar density	~2.2 kg/l	
Consumption	(a) Fluid consistency ~1,900 kg powder is needed to prepare 1 m³ of fresh mortar. One 25 kg bag will yield ~13 litres of mortar. (b) Flowable consistency ~2,000 kg powder is needed to prepare 1 m³ of fresh mortar. One 25 kg bag will yield ~12.5 litres of mortar.	
Layer Thickness	20 to 200 mm	
Product Temperature	+5 °C to +30 °C	
Ambient Air Temperature	+5 °C to +30 °C	
Mixing Ratio	Flowable Consistency	3.1 to 3.5 litres of water per 25kg bag
	Fluid Consistency	3.5 to 4.0 litres of water per 25kg bag
Substrate Temperature	+5 °C to +30 °C	
Pot Life	~60 minutes at +21 ± 2°C and 60 ± 10% relative humidity. Higher temperat-	

VALUE BASE

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

- SikaEmaco® S 5450 PG is a concrete repair mortar, not a precision grout. For machinerey grouting, please refer to our Sikagrout® product range.
- Do not apply SikaEmaco® S 5450 PG at temperatures below +5 °C, nor above +30 °C.
- Do not add cement or other substances that could affect the properties of SikaEmaco® S 5450 PG.
- Do not use vibration when placing or compacting the mortar.
- Never add water or fresh mortar to a mortar mix which has already begun to set.
- Keep the mixing water within the recommended limits.

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

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 1.5 N/mm².
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 vertically to a minimum depth of 20 mm.
If reinforcing steel is visible, clean to a minimum grade of Sa 2 according to ISO 8501-1 / ISO 12944-4. Ensure the backs of rebars are also clean. Only in case of chloride contamination of the concrete should the reinforcement be protected by using SikaEmaco® P 5000 AP, Sika MonoTop®-1010 or SikaTop® Armatec®-110 EpoCem®.
The prepared substrate should be pre-soaked, preferably for 24 hours, but at least 2 hours before applying SikaEmaco® S 5450 PG. The surface must be matt-damp, but without standing water (i.e. saturated surface dry).
The formwork shall be sound and watertight. Use a light application of Sika® release agent to the inner face of the formwork. Fill the formwork with water to test for tightness and pre-soak substrate. Provision must be made for draining of pre-soaking water and air venting during placement. The concrete substrate shall be water saturated, without free standing water, at the moment of application.

MIXING

Only mix full bags. Damaged or opened bags should not be used.
Pour the minimum amount of mixing water into a clean vessel.
Mixing water needed: 3.5 to 4.0 litres per 25 kg bag are required for fluid consistency. A flowable consistency can be achieved by with 3.1 to 3.5 litres per 25kg bag. Only use clean uncontaminated water.
Add the SikaEmaco® S 5450 PG powder rapidly and continuously and mix with a suitable paddle attached to a powerful, slow speed electric drill (max. 400 rpm) for 3 minutes until fluid or flowable consistency is achieved without any lump in the mortar.
Note: Add water if necessary but never exceed the maximum water demand!
For applications exceeding 200 mm thickness, the mix must be extended with clean aggregate with a suitable grading (e.g. 4 – 8 or 8 – 16 mm) up to maximum 30 to 35% of the total weight of the dry mix.

APPLICATION

For optimum curing of the product the temperatures during application of SikaEmaco® S 5450 PG must be between +5°C and +30°C.
The material can be placed or pumped behind the formwork or poured into the patch repair area.
SikaEmaco® S 5450 PG is cast in situ continuously with a fluid consistency, placing it inside the formwork from one side only to allow air to escape. It is self-compacting without requiring vibration even in structures that are heavily reinforced or have a complex shape.
Leave the formwork in place for as long as possible or ensure proper curing.
SikaEmaco® S 5450 PG can be also placed in a pourable consistency in horizontal patch repair areas brushing the first poured material into the surface roughness of the substrate. Pour further material up to the required thickness wet in wet.

CLEANING OF TOOLS

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

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.

SIKA LIMITED
Watchmead
Welwyn Garden City
Hertfordshire, AL7 1BQ
Tel: 01707 394444
Web: www.sika.co.uk
Twitter: @SikaLimited