

PRODUCT DATA SHEET

Sikafloor®-81 EpoCem®

3-COMPONENT, CEMENTITIOUS, EPOXY-MODIFIED SELF-LEVELING FLOOR TOPPING AND TEMPORARY MOISTURE BARRIER.

DESCRIPTION

Sikafloor®-81 EpoCem® is a three part, epoxy modified cementitious, fine textured mortar for self-smoothing floor screeds in thin layers of 1.5 to 3 mm.

USES

Sikafloor®-81 EpoCem® may only be used by experienced professionals.

As a Temporary Moisture Barrier (TMB)

(min. 2 mm thick) allowing the application of Epoxy, Polyurethane and PMMA* resin floors requiring dry substrates, over high moisture content substrates, even green concrete, for a lasting solution.

As a self-smoothing screed for:

- Levelling or patching horizontal concrete surfaces, in new work or repairs, in aggressive chemical environments
- Floor topping on non-ventilated damp substrates without particular aesthetic requirements
- Levelling layer under Epoxy, Polyurethane and PMMA* floor coatings / screeds, tiles, sheet floors, carpets or wooden floors
- Repair and maintenance of monolithic and vacuum concrete floors

Extended with quartz sand, as a patching and repair mortar:

- Under Epoxy, Polyurethane and PMMA floor coatings / screeds

Designed for use on cementitious substrates:

- Suitable for moisture control (Principle 2, method 2.3 of EN 1504-9)
- Suitable for physical resistance (Principle 5, method 5.1 of EN 1504-9)
- Suitable for restoration work (Principle 3, method 3.1 of EN 1504-9).

- Suitable for preserving or restoring passivity (principle 7, method 7.1 and 7.2 of EN 1504-9).
- Suitable for increasing resistivity (Principle 8, method 8.3 of EN 1504-9)

* See Notes on Application / Limitations

CHARACTERISTICS / ADVANTAGES

- Can be top coated with resin based floors after 24 hours (+20°C, 75% r.h.)
- Prevents osmotic blistering of resin based coatings over damp substrates
- Economical and fast, easy application
- Class R4 of EN 1504-3
- Good levelling properties
- Impervious to liquids but permeable to water vapour
- Frost and de-icing salt resistant
- Good chemical resistance
- Thermal expansion properties similar to concrete
- Excellent bond to green or hardened concrete whether damp or dry
- Excellent early and final mechanical strengths
- Excellent resistance to water and oils
- Ideal preparation for smooth surface finishes
- For internal use
- Contains no solvents
- Will not corrode reinforcement steel

APPROVALS / CERTIFICATES

- ITT reports (*) for EN 1504-2 Ref. 09/349-963, dated May 6th 2009 and EN 1504-3 Ref. 09/351-965 dated May 4th, 2009 by Applus Laboratory, Barcelona, Spain.
- Epoxy modified cementitious mortar for self-smoothing floor screeds according to EN 1504-2: 2004 , EN 1504-3: 2005 and EN 13813:2002, DoP 02 08 02 01 001 0 000001 1001, certified by Factory Production Control Body No. 2116 and provided with the CE-mark

PRODUCT INFORMATION

Composition	Epoxy modified cementitious mortar.		
Packaging	Pre-batched 23 kg units.		
	Part A	1.14 kg plastic container	
	Part B	2.86 kg plastic container	
	Part C	19 kg plastic bags	
Appearance / Colour	Part A-resin:	white liquid	
	Part B - hardener	transparent yellow liquid	
	Part C - filler:	natural grey aggregate powder	
	Colour:	light grey	
	Finish Colour:	Matt grey	
Shelf life	Part A, part B:	12 months	
	Part C:	9 months	
Storage conditions	The product must be stored in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +5°C and +30°C.		
	Part A, part B:	Protect from frost	
	Part C:	Protect from humidity	
Density	Part A	~ 1.05 kg/l (at +20°C)	(EN 1015-6)
	Part B	~ 1.03 kg/l (at +20°C)	
	Mixed resin	~ 1.72 kg/l (at +20°C)	
	Mixed A+B+C:	~ 2.10 kg/l (at +20°C)	

TECHNICAL INFORMATION

Abrasion Resistance	11.9 cm ³ / 50 cm ² and 2.4 mm wear depth (Böhme abrasion)	(EN 13892-3)
Compressive Strength		+23°C / 50% r.h. (EN 13892-2)
	1 day	~15 N/mm ²
	7 days	~50 N/mm ²
	28 days	~60 N/mm ²
Tensile Strength in Flexure		+23°C / 50% r.h. (EN 13892-2)
	1 day	~5.8 N/mm ²
	7 days	~11.1 N/mm ²
	28 days	~14 N/mm ²
Tensile Adhesion Strength	4.1 N/mm ² after 28 days at +20°C and 50% r.h. (100% concrete failure)	(EN 13892-8)
Coefficient of Thermal Expansion	$\alpha \approx 15.1 \cdot 10^{-6}$ per °C (Temperature range: -20°C to +60°C)	(EN 1770)
Freeze Thaw De-Icing Salt Resistance	Resistance factor WFT-L 98% (High)	D-R (SN / VSS 640 461)
Water Absorption	Water Absorption W ≈ 0.02 kg/m ² x h0.5	(DIN 52 617)
Service Temperature	-30°C to +80°C for continuous exposure.	
Permeability to Carbon Dioxide	$\mu\text{CO}_2 \approx 4168$	(Klopfer / Engelfried Method)
Carbonation Resistance	Carbonation resistance for 3 mm thickness: R ≈ 12.5 m	
Surface Burning Characteristics	Class A2(fl)	(EN 13501-1)

SYSTEMS

Systems

The system configuration as described must be fully complied with and may not be changed.

Primer indicated below is suitable for each of these substrates:

- Green concrete (as soon as mechanical preparation is possible)
- Damp concrete (> 14 days old)
- Damp aged concrete (rising moisture)

Patching and repair:

Layer thickness: 3 – 9 mm

Primer: SikaTop®-Armatec®-110 EpoCem®

Mortar: Sikafloor®-81 EpoCem® -Extended mortar mix. (See mixing for details)

Levelling screed for medium substrate roughness:

Layer thickness: 1.5 - 3 mm

Primer: Sikafloor®-155 WN / Sikafloor® EpoCem®- Mudule

Screed: Sikafloor®-81 EpoCem®

Top coat: Suitable product from the Sikafloor® and Sikagard® range.

Interlayer priming for Sikafloor -81/82 EpoCem:

Bonding bridge: Sikafloor®-155 WN

Please refer to the System Data Sheet of :

Sikafloor® MultiDur ES-14 ECC	Low textured epoxy hybrid screed with coloured epoxy roller coat
Sikafloor® MultiDur EB-24 ECC	Broadcast unicolour epoxy floor covering over epoxy hybrid screed
Sikafloor® MultiDur EB-25 ECC	Broadcast unicolour epoxy floor covering over epoxy hybrid screed
Sikafloor® MultiDur ET-14 ECC	Textured unicolour epoxy roller coat over epoxy hybrid screed

APPLICATION INFORMATION

Mixing Ratio

Part A : part B : part C - packing size : 1.14 : 2.86 : 19 kg

Flooring Screed:

At temperatures between +12°C to +25°C:

1 : 2.5 : 17 (by weight)

Parts (A+B) : C = 4 kg : 19 kg

At temperatures between +8°C to +12°C and +25°C to +30°C:

The amount of Part C can be reduced to 18 kg in order to improve workability.

Please note:

Never reduce Part C by more than this amount.

1 : 2.5 : 15.8 (by weight)

Parts (A+B) : C = 4 kg : 18 kg

Extended mortar mix. Repair mortar:

To repair surface irregularities and holes 3 to 5 cm in diameter and deeper than

3 mm and up to 9 mm the standard Sikafloor®-81 EpoCem® mix can be extended with dry quartz sand.

For each 23 kg unit of Sikafloor®-81 EpoCem® prepared as indicated below, add:

- Sikadur®-509 (quartz sand 0.7 - 1.2 mm) 5 - 10 kg and
- Sikadur®-510 (quartz sand 2.0 - 3.0 mm) 5 - 10 kg

Final mix will be : 33 - 43 kg

For this application, to achieve a good bond of the mortar to the substrate, SikaTop®-Armatec®-110 EpoCem® must be used as bonding bridge. Apply the mortar wet on wet to the primer.

Ambient Air Temperature	+8°C min. / +30°C max.	
Consumption	Self smoothing screed:	Sikafloor®-81 EpoCem® ~2.25 kg/m ² /mm
	Extended mortar mix:	Sikafloor®-81 EpoCem® ~2.4 kg/m ² /mm
Please refer to the System Data Sheet of :		
	Sikafloor® MultiDur ES-14 ECC	Low textured epoxy hybrid screed with coloured epoxy roller coat
	Sikafloor® MultiDur EB-24 ECC	Broadcast unicolour epoxy floor covering over epoxy hybrid screed
	Sikafloor® MultiDur EB-25 ECC	Broadcast unicolour epoxy floor covering over epoxy hybrid screed
	Sikafloor® MultiDur ET-14 ECC	Textured unicolour epoxy roller coat over epoxy hybrid screed
These figures are theoretical and do not allow for any additional material due to surface porosity, surface profile, variations in level or wastage, etc.		
Layer Thickness	1.5 mm min. / 3.0 mm max. If Sikafloor®-81 EpoCem® is used as a Temporary Moisture Barrier (TMB), a minimum of 2 mm must be applied.	
Relative Air Humidity	20% min. / 80% max.	
Substrate Temperature	+8°C min. / +30°C max.	
Substrate Moisture Content	Can be applied on green or damp concrete, without any standing water. Although the product can be applied onto green concrete surfaces (> 24 hours), it is advised to allow at least 3 days for early shrinkage of concrete to occur in order to prevent concrete shrinkage cracks from appearing on the screed surface.	
Pot Life	Temperature / R.H 75%	Time
	+10°C	~ 40 minutes
	+20°C	~ 20 minutes
	+30°C	~ 10 minutes
	23 kg units	
Curing Time	Once Sikafloor®-81 EpoCem® is tack free it is possible to apply vapour permeable seal coats. For the application of vapour tight coatings on Sikafloor®-81 EpoCem®, allow the surface moisture to fall below 4%, not earlier than:	
	Substrate Temperature	Waiting Time
	+10°C	~ 2 days
	+20°C	~ 1 day
	+30°C	~ 1 day

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

- The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm²) with a minimum pull off strength of 1.5 N/mm².
- The substrate can be damp but must be free of standing water and free of all contaminants such as oil, grease, coatings and surface treatments etc. If in doubt, apply a test area first.
- Concrete substrates must be prepared mechanically using abrasive blast cleaning or scarifying equipment to remove cement laitance and achieve an open textured surface.
- Weak concrete must be removed and surface defects such as blow holes and voids must be fully exposed.
- Repairs to the substrate, filling of blowholes/voids and surface levelling must be carried out using appropriate products from the Sikafloor®, Sikadur® and Sikagard® range of materials.
- All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush or vacuum.

MIXING

Prior to mixing, shake part A (white liquid) briefly until homogenous, then pour into container of part B and shake vigorously again for at least 30 seconds. When dosing out of drums, stir and homogenise first. Pour the mixed binder mixture (A+B) into a suitable mixing container (capacity of about 30 litres) and gradually add part C to the mixer while stirring with a power mixer. Mix thoroughly for 3 minutes until a uniform mix has been achieved with no lumps.

Mix only full units of A+B+C components. Do not mix smaller amounts. Do not add water.

When dosing with additional aggregates, add them after adding part C to the mix. Mix thoroughly for 3 minutes until a uniform mix has been achieved.

Mixing Tools:

Mix using a slow speed electric mixer (300 - 400 rpm) with helical paddle or other suitable equipment.

For mixing 2 – 3 bags at once, single or counter rotating double mortar (basket type) and forced action (pan type) mixers are also recommended. Free fall mixers must not be used.

APPLICATION

Place mixed Sikafloor®-81 EpoCem® onto the primed substrate and spread evenly to the required thickness uniformly with a rubber or metal trowel or spatula and immediately roll with a spike roller to remove entrapped air and obtain an even thickness layer. Workability can be adjusted by varying slightly the amount of part C.

Do not use additional water, which would disturb the surface finish and cause discolouration.

A seamless finish can be achieved if a 'wet' edge is maintained during application.

CLEANING OF EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened / cured material can only be removed mechanically.

MAINTENANCE

Due to the texture of its surface, Sikafloor®-81 EpoCem® is not suitable to be used as wearing layer where easy staining can occur. A seal coat of the Sikafloor® range with suitable cleaning capabilities is advisable.

Remove dirt using a brush and/or vacuum. Do not use wet cleaning methods until the product is fully cured. Do not use abrasive methods or cleaners.

FURTHER INFORMATION

Substrate quality & Preparation

Please refer to Sika Method Statement: "EVALUATION AND PREPARATION OF SURFACES FOR FLOORING SYSTEMS".

Application instructions

Please refer to Sika Method Statement: "MIXING & APPLICATION OF FLOORING SYSTEMS".

IMPORTANT CONSIDERATIONS

- If Sikafloor®-81 EpoCem® is used as TMB (Temporary Moisture Barrier), a layer of a minimum 2 mm thick must be applied. (~ 4.5 kg/m²)
 - Always ensure good ventilation when using Sikafloor®-81 EpoCem® in a confined space to remove excess moisture.
 - Freshly applied Sikafloor®-81 EpoCem® must be protected from damp, condensation and water for at least 24 hours.
 - Prevent premature drying by protecting from strong wind and do not expose to direct sun light while fresh.
 - Apply primer and Sikafloor®-81 EpoCem® on a falling temperature. If applied during rising temperatures "pin holing" can occur.
 - Applications under extreme conditions (high temperature and low humidity) which can cause fast drying of the product must be avoided as the product does not allow the use of curing compounds.
 - Under no circumstances add water to the mix.
 - Colour variations can occur on unsealed Sikafloor®-81 EpoCem® through exposure to direct sun light. This however, will not adversely influence the mechanical properties.
 - When overlaying with PMMA screeds, the surface of Sikafloor®-81 EpoCem® must be fully broadcast with sand 0.4 - 0.7 mm.
 - The TMB effect in Sikafloor®-EpoCem® is limited in time, without additional preparation.
 - Always verify the surface moisture content if more than 5-7 days have passed since application.
- Non-moving construction joints require pre-treatment with a stripe of primer and Sikafloor®-81 EpoCem®.
- Treat as follows:
- Static Cracks: Prefill and level with Sikadur® or Sikafloor® epoxy resin.
 - Dynamic Cracks (> 0.4mm): To be assessed on site and if necessary apply a stripe coat of elastomeric material or design as a movement joint.
 - The incorrect assessment and treatment of cracks can lead to a reduced service life and reflective cracking.

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.

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.

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 Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

DIRECTIVE 2004/42/CE LIMITATION OF EMISSIONS OF VOC

According to the EU Directive 2004/42/CE, the maximum allowed content of VOC (product category IIA / C type wb) is 40 g/l (Limits 2010) for the ready to use product.

The maximum content of Sikafloor®-81 EpoCem® is ≤ 40 g/l VOC for the ready to use product.

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 (Thailand) Limited

700/37 Moo 5 Amata City Chonburi
Industrial Estate, T. Klong Tamhru
A. Muang, Chonburi 20000, Thailand
Tel : +66 3810 9500
E-mail : sikathai@th.sika.com
Website: tha.sika.com



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