BUILDING TRUST

PRODUCT DATA SHEET

Sikafloor®-81 EpoCem®

EPOXY-CEMENT HYBRID MULTIPURPOSE FLOORING MORTAR AND SELF-SMOOTHING SCREED (1.5–3.0 MM)

DESCRIPTION

Sikafloor®-81 EpoCem® is a 3-part, epoxy modified cementitious, multipurpose flooring mortar.

USES

Sikafloor®-81 EpoCem® is a construction products which only should be applied by trained applicators.

On interior industrial flooring cementitious substrates including vacuum dewatered concrete floors as a:

Temporary moisture barrier (TMB)
- Allows the application of Sika® Epoxy, Polyurethane and PMMA resin floors onto high moisture content substrates or green concrete

Self-smoothing screed
- Levelling or patch repairing horizontal floors for new, refurbishment or maintenance works
- Unaesthetic floor topping on non-ventilated damp substrates
- Levelling layer under Sika® Epoxy, Polyurethane and PMMA flooring systems, tiles, carpets, laminate, wooden, linoleum and vinyl sheet flooring

Repair mortar
- Repairing the substrate before application of Sika® Epoxy, Polyurethane and PMMA flooring systems

Concrete repair and protection EN standards principle and method approach
- 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)

CHARACTERISTICS / ADVANTAGES

- Can be overcoated with resin based floor finishes after 24 hours (+20 °C, 75% r.h.)
- Prevents osmotic blistering of resin based floor finishes on damp substrates
- Fast and easy application
- Concrete repair mortar: EN 1504-3: Class R4
- Good levelling properties
- Impervious to liquids, permeable to water vapour
- Freeze thaw and de-icing salt resistant
- Good chemical resistance
- Thermal expansion properties similar to concrete
- Good bond to green or hardened concrete whether damp or dry
- Good early and final mechanical strengths
- Good resistance to water and oils
- Suitable surface for overlaying smooth floor finishes
- Low VOC emissions
- Will not corrode reinforcement steel

SUSTAINABILITY

- Conformity with LEED v4 MRc 2 (Option 1): Building Product Disclosure and Optimization – Environmental Product Declarations.
- Conformity with LEED v4 MRc 4 (Option 2): Building Product Disclosure and Optimization - Material Ingredients.
- Conformity with LEED v2009 IEQc 4.2: Low-Emitting Materials - Paints and Coatings.
- IBU Environmental Product Declaration (EPD).

APPROVALS / CERTIFICATES

- CE Marking and Declaration of Performance to EN 1504-2 - Surface protection product for concrete - Coating
- CE Marking and Declaration of Performance to EN 1504-3 - Concrete repair product for structural

repair
- CE Marking and Declaration of Performance to EN 13813 - Resin screed material for internal use in buildings
- Migration test EN 23270, Sikafloor®-81 EpoCem, kiwa, Report No. P 8740a
- Water permeability test DIN 1048-5, Sikafloor®-81 EpoCem, Polymer Institut, Report No. P 3439
- Fire testing EN 13501-1, Sikafloor®-81 EpoCem, MPA Dresden, Report No. 041706
- Fire testing EN 13501-1, Sikafloor®-81 EpoCem, Hoch, Report No. KB-Hoch-170138
- Sliding test DIN 51130, Sikafloor®-264 N, Roxeler, Certificates No. 020044-17-7, 020044-17-7a, 020044-17-8a

PRODUCT INFORMATION

Composition

Epoxy modified cementitious mortar

Packaging

Part A	1.6 kg x 2 plastic bottle
Part B	4.0 kg x 2 plastic jerrycan
Part C	27.2 kg x 2 plastic lined double paper bags
Part A+B+C	32.8 kg x 2nos

Appearance / Colour

Final floor appearance: Smooth, matt finish

Part A-resin	white liquid
Part B - hardener	transparent yellow liquid
Part C - filler	natural grey aggregate powder
Final floor finish colour	light grey

Shelf life

Part A and Part B	12 months
Part C	9 months

Storage conditions

The product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5°C and +30°C. Always refer to packaging.

Part A, part B: Protect from frost
Part C: Protect from humidity

Density

Part A	~1.05 kg/l	(EN 1015-6)
Part B	~1.03 kg/l	
Resin mixed	~1.72 kg/l	
Parts A+B+C mixed	~2.10 kg/l	

All Density values at +20 °C.

Product Declaration

EN 1504-2 - Surface protection product for concrete - Coating
Complies with the general requirements of EN 1504-3: Class R4
EN 13813 - Resin screed material for internal use in buildings

TECHNICAL INFORMATION

Abrasion Resistance

Compressive Strength

Time	Strength	
1 day	~15 N/mm²	(EN 13892-2)
7 days	~50 N/mm²	
28 days	~60 N/mm²	

Values +23°C / 50 % r.h.

Tensile Strength in Flexure	**Time** / **Strength** 1 day / ~5.8 N/mm² 7 days / ~11.1 N/mm² 28 days / ~14 N/mm² Values at +23 °C / 50 % r.h.	(EN 13892-2)
Tensile Adhesion Strength	4.1 N/mm² after 28 days at +20°C and 50% r.h. (100% concrete failure)	(EN 13892-8)
Coefficient of Thermal Expansion	15.2×10^{-6} 1/K	(EN 1770)
Reaction to Fire	A2(fl) S1	(EN 13501-1)
Chemical Resistance	The Sikafloor® EpoCem® product range has improved chemical resistance over plain concrete in aggressive environments, but is not designed as a chemical protection. For specific chemical resistance, always overcoat with a suitable product of the Sikafloor® range. For occasional exposure or spillages, please consult.	
Permeability to Water Vapour	μH_2O = 252 Equivalent air layer depth for 3 mm thickness: S_d = 0.75 m	(DIN 52615)
Freeze Thaw De-Icing Salt Resistance	Resistance factor WFT-L 98 % (High)	D-R (SN / VSS 640 461)
Water Absorption	0.02 $kg \cdot m^{-2} \cdot h^{-0.5}$	(DIN 52617)
Service Temperature	-30 °C to +80 °C for continuous exposure.	
Permeability to Carbon Dioxide	$\mu CO_2 \approx 4168$	(SN EN 1062-6)
Carbonation Resistance	Carbonation resistance for 3 mm thickness: R ≈ 12.5 m	

SYSTEMS

Systems

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

Temporary moisture barrier (TMB)
Layer thickness: 2.0 mm minimum
Primer: Sikafloor®-80 EpoCem® Primer (Part A+B)
TBM: Sikafloor®-81 EpoCem®

Self-smoothing screed (medium substrate roughness)
Layer thickness: 1.5-3 mm
Primer: Sikafloor®-80 EpoCem® Primer (Part A+B)
Screed: Sikafloor®-81 EpoCem®

Concrete patch repair
Layer thickness: 3-9 mm
Bonding primer: SikaTop®-Armatec®-110 EpoCem®
Concrete repair mortar: Sikafloor®-81 EpoCem® -Extended mortar mix. (refer to mixing details)

Floor finish
Resin: Suitable product from the Sikafloor® and Sikagard® range
The system structures as described must not be changed.

Also refer to the following System Data Sheets:
Sikafloor® MultiDur ES-14 N ECC
Sikafloor® MultiDur EB-24 N ECC
Sikafloor® MultiDur ET-14 N ECC

APPLICATION INFORMATION

Mixing Ratio

Packaging size:
Part A : Part B : Part C = 1.6 kg : 4.0 kg : 27.2 kg

TMB and Self-smoothing screed

Temperature	Mixing Ratio by weight
+12 °C min. / +25 °C max.	Part A : Part B : Part C = 1.6 : 4 : 27.2 Parts (A+B) : Part C = 5.6 kg : 27.2 kg
+8 °C min. / +12 °C max. +25 °C min. / +30 °C max.	Part A : Part B : Part C = 1.6 : 4 : 26 Parts (A+B) : Part C = 5.6 kg : 26 kg To improve workability, Part C can be reduced to 26 kg in order to improve workability. Never reduce Part C by more than this amount.

Concrete patch repair mortar

The standard Sikafloor®-81 EpoCem® mix can be bulked out with dry quartz sand.
For each 32.8 kg unit of Sikafloor®-81 EpoCem® prepared as indicated below, add:

Sikadur®-509 (quartz sand 0.7 - 1.2 mm)	5 - 10 kg
Sikadur®-510 (quartz sand 2.0 - 3.0 mm)	5 - 10 kg
Final mix will be :	38 - 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

TMB and Self-smoothing screed: Sikafloor®-81 EpoCem®	~2.25 kg/m²/mm
Concrete patch repair mortar: Sikafloor®-81 EpoCem®	~2.4 kg/m²/mm

Also refer to the following System Data Sheets:
- Sikafloor® MultiDur ES-14 N ECC
- Sikafloor® MultiDur EB-24 N ECC
- Sikafloor® MultiDur ET-14 N ECC

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

Temporary moisture barrier (TMB)	2.0 mm min.
Self-smoothing screed	1.5 mm min. / 3.0 mm max.
Concrete patch repair mortar maximum surface area ~3 x 5 cm	3.0 mm min. / 9.0 mm max.

Relative Air Humidity

20 % min. / 80 % max.

Substrate Temperature

+8 °C min. / +30 °C max.

Substrate Moisture Content

Can also be applied on green or damp concrete with no standing water. Although the system can be applied onto green concrete surfaces (> 24 hours), it is advised to allow at least 3 days for early concrete shrinkage to occur in order to prevent shrinkage cracks from appearing on the TMB / screed surface.

Pot Life

Temperature	Time
+10 °C	~40 minutes
+20 °C	~20 minutes
+30 °C	~10 minutes

Values at 75 % R.H

Curing Time

Once Sikafloor®-81 EpoCem® is tack free it is possible to apply vapour permeable resin finishes.
For the application of vapour tight resin finishes on Sikafloor®-81 EpoCem®, allow the substrate moisture content to fall below 4% and not earlier than:

Substrate Temperature	Waiting Time
+10°C	~48 hours
+20°C	~24 hours
+30°C	~24 hours

APPLICATION INSTRUCTIONS

EQUIPMENT

Select the most appropriate equipment required for the project:

Substrate preparation

- Abrasive blasting cleaning equipment
- Planing machine
- Scarifying machine
- High pressure water blasting equipment
- Mechanical hand held tools for breaking out concrete

For other types of preparation equipment, contact Sika Technical Services

Mixing

- Electric single or double paddle mixer (300–400 rpm) with helix paddle
- Forced action / rotating pan / double paddle or trough type mixer (300–400 rpm).
- Scraper
- Clean mixing containers

For other types of mixing equipment, contact Sika Technical Services

Application: TBM & Self-levelling screed

- Mixed material carrier
- Pin leveller
- Trowels
- Spiked roller
- Squeegee
- Fleece rollers

Application: Concrete patch repairs

- Plasterers hawk
- Trowel

Finishing

- Trowel (PVC or wooden)
- sponge

SUBSTRATE QUALITY / PRE-TREATMENT

TMB & Self-levelling screed

The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm²) with a minimum tensile adhesion strength of 1.5 N/mm².
The substrate can be damp but must be free of standing water (no puddles) and be free of all contaminants such as dirt, oil, grease, coatings and surface treatments etc.
Concrete substrates must be prepared mechanically using abrasive blast cleaning, scarifying or grinding equipment to remove cement laitance and achieve an open textured surface to suit the requirements of the next layer(s).
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 products from the Sikafloor®, Sikadur® and Sikagard® range of materials. Products must be cured before applying Sikafloor®-81 EpoCem®.
High spots can be removed by grinding.
All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush or vacuum.

Concrete Patch repairs

Repair surface areas must be prepared using mechanical hand held tools to provide simple square or rectangular layouts and depths of 3.0 mm minimum.

MIXING

TMB and Self-levelling screed

Prior to mixing, shake Part A (white liquid) briefly until uniformly mixed. Then pour into Part B container and shake vigorously for at least 30 seconds. When dosing out of drums, uniformly mix Parts A and B separately before mixing together
Pour the mixed binder mixture (Parts A+B) into a suitable mixing container (capacity ~30 litres). Using an electric single or double paddle mixer or other similar equipment, gradually add Part C. Mix for a further 3.0 minutes until a uniform lump free mix has been achieved. Mix full units only. Do not add water. Mixing time for A+B = ~30 seconds. A+B+C = ~3.0 minutes 30 seconds.

Concrete patch repair mortar

Prior to mixing, shake Part A (white liquid) briefly until uniformly mixed. Then pour into Part B container and shake vigorously for at least 30 seconds. When dosing out of drums, uniformly mix Parts A and B separately before mixing together
Pour the mixed binder mixture (Parts A+B) into a suitable mixing container (capacity ~30 litres). Using an electric single or double paddle mixer or other similar equipment, gradually add Part C. Mix for a further 3.0 minutes until a uniform lump free mix has been achieved. When Parts A+B+C have been thoroughly mixed, gradually add the additional aggregates in the required quantities. Mix for a further 3.0 minutes until a uniform mix has been achieved. Mix full units only. Do not add water. Mixing time for A+B = ~30 seconds. A+B+C = ~3.0 minutes 30 seconds. A+B+C+ aggregate =

~6.0 minutes 30 seconds.

APPLICATION

TMB and SELF- LEVELLING SCREED

Primer

Pour mixed Sikafloor®-80 EpoCem® Primer onto the prepared substrate and apply by brush, roller or squeegee then back roller in two directions at right angles to each other. Ensure a continuous, pore free coat covers the substrate.

Sikafloor®-81 EpoCem®

Pour mixed Sikafloor®-81 EpoCem® onto the prepared primed substrate and spread evenly using a suitable trowel or pin leveller to the required thickness.
Spike roller immediately in two directions at right angles to each other to remove trowel marks, aid air release, ensure an even thickness and obtain the required surface finish. A seamless finish can be achieved if a 'wet' edge is maintained during application.

CONCRETE PATCH REPAIR

Bonding primer

Apply the mixed SikaTop®-Armatec®-110 EpoCem® onto the prepared substrate by brush.

Repair Mortar

Place the mixed Sikafloor®-81 EpoCem® repair mortar onto the bonding primer 'wet on wet' by gloved hand or trowel between the minimum and maximum layer thicknesses without the formation of voids.

Surface finishing

Finishing must be carried out to the required surface texture using trowel and / or sponge as soon as the repair mortar has started to harden.

CLEANING OF EQUIPMENT

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

MAINTENANCE

Sikafloor®-81 EpoCem® must not be used as wearing layer where staining can occur and needs to be removed for aesthetic reasons. A seal coat from the Sikafloor® range of products 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

- Sika® Method Statement: Evaluation and Preparation of Surfaces for Flooring Systems
- Sika® Method Statement: Mixing & Application of Flooring Systems
- System Data Sheet: Sikafloor® MultiDur ES-14 N ECC
- System Data Sheet: Sikafloor® MultiDur EB-24 N ECC
- System Data Sheet: Sikafloor® MultiDur ET-14 N ECC

IMPORTANT CONSIDERATIONS

- The incorrect assessment and treatment of cracks in the floor substrate can lead to a reduced service life and reflective cracking.
- Pre-treat cracks as follows before application of Sikafloor®-81 EpoCem®: Static Cracks: Prefill and level with Sikadur® or Sikafloor® epoxy resin. Dynamic Cracks (> 0.4 mm): To be assessed on site and if necessary apply a stripe coat of elastomeric material or design as a movement joint.
- Do not use any water in the mix or for finishing as this will affect the performance, surface finish and cause discolouration.
- If Sikafloor®-81 EpoCem® is used as TMB (Temporary Moisture Barrier), a 2 mm minimum thickness must be applied. (~4.5 kg/m²)
- Always ensure good ventilation when using product in a confined space to remove excess moisture.
- After application, product must be protected from damp, condensation and direct water contact for at least 24 hours
- Prevent premature drying by protecting from strong winds and do not expose to direct sun light while in an unhardened condition.
- Apply primer and Sikafloor®-81 EpoCem® on a falling temperature. If applied during rising temperatures "pin holing" can occur.
- Curing is not required, however applications under extreme conditions (high temperature and low humidity) which can cause fast drying of the product must be avoided.
- Do not add water to the mix.
- When product is exposed to direct sunlight, there may be some discolouration and colour variation, this has no influence on the function and performance of the floor finish.
- When overlaying with PMMA screeds, the wet surface of Sikafloor®-81 EpoCem® during application must be fully broadcast with kiln dried quartz sand 0.4 - 0.7 mm granulometry.
- The TMB effect in Sikafloor® -EpoCem® is limited in time, without additional preparation. Contact Sika Technical Services for additional information.
- Always verify the surface moisture content if more than 5-7 days have passed since application.

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 declared data for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data.

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.

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.

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