Construction

Sikafloor®-83 EpoCem®

3-part cement and epoxy combination mortar for floor screeds of 7 to 100 mm

Product Description

Sikafloor®-83 EpoCem® is a three part, epoxy modified cementitious, rough textured mortar for floor screeds in layers of 7 to 100 mm.

Uses

As a Temporary Moisture Barrier (TMB) (7 - 100 mm thick) under Epoxy, Polyurethane and PMMA floors, over high moisture content substrates, even green concrete.

As a trowel applied mortar screed with or without top coat or sealer for:

- Levelling or patching horizontal concrete surfaces, in new work or repairs, particularly in aggressive chemical environments
- Levelling layer under Epoxy, Polyurethane and PMMA* coatings on bridge decks
- Repair and maintenance of monolithic and vacuum concrete floors

Designed for use on cementitious substrates.

* See Notes on Application / Limitations

Characteristics / Advantages

- Can be over coated with resin based coatings after 24 hours (+20ºC, 75% r.h.)
- Prevents osmotic blistering of resin based coatings over damp substrates
- Economical and fast, easy application. Can be trowel finished
- Impervious to liquids but permeable to water vapour
- Frost and de-icing salt resistant. Dense surface
- Thermal expansion properties similar to concrete
- Excellent bond to green or hardened concrete whether damp or dry
- Excellent early and final mechanical strengths
- Fast curing, may be used after short waiting time
- Excellent resistance to water and oils
- It is the ideal preparation for levelling surfaces prior to application of waterproofing membranes
- For internal or external use
- Contains no solvents
- Will not corrode reinforcement steel

Tests

Approval / Standards	Test report A-27'627-1, dated 8/09/2004 by LPM AG, CH-5712 Beinwil am See. Abrasion Resistance. Test report A-20'237-1E, dated 12/05/2000by LPM AG, CH-5712 Beinwil am See Thermal expansion coefficient, Carbon dioxide diffusion coefficient, Water absorption coefficient, Bond strength, Freeze / Thaw - De-icing salt resistance BE-II, E - Modulus.

Product Data

Form

Appearance / Colours	Part A - resin: white, liquid Part B - hardener: translucent yellowish, liquid Part C - filler: natural grey, powder Colour (mixed): grey Finish: matt
Packaging	Prebatched 11.38 kg x 2 units (A+B+C) Part A: 0.25 kg x 2 plastic bottle Part B: 0.625 kg x 2 plastic jerrycan Part C: 10.5 kg x 2 bags

Storage

Storage Conditions/ Shelf-Life	Part A, Part B: 6 months Part C: 6 months From date of production if stored in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +5°C and +35°C. Part A, Part B: Protect from frost Part C: Protect from humidity

Technical Data

Chemical Base	Epoxy modified cementitious mortar.
Density	Part A: ~ 1.08 kg/l (at +27°C) Part B: ~ 1.04 kg/l (at +27°C) Part C: ~ 1.45 kg/l (bulk density)(at +27°C) Mixed A+B+C: ~ 2.30 kg/l (at +27°C)
Layer Thickness	7.0 mm min. / 100.0 mm max.
Thermal Expansion Coefficient	$\alpha \approx 12.4*10^{-6}$ per °C (According to EN 1770) (Temperature range: -20°C to +60°C)
Carbon Dioxide Diffusion Coefficient (μCO_2)	$\mu C0_2 \approx 681.-$ (According to Klopfer / Engelfried Method) Carbonation resistance for 30 mm thickness: R ≈ 20 m
Water Vapour Diffusion Coefficient (μH_2O)	$\mu H_20 \approx 353$ (According to DIN 52 615) Equivalent Air layer depth for 30 mm thickness Sd ≈ 10.6 m
Water Absorption Coefficient W	$W \approx 0.02$ kg/m^2 x h$^{0.5}$ (According to DIN 52 617)
Fire Rating	Class $A2_{(fl)}$ (According to EN 13501-1)
Service Temperature	0°C to +80°C in continuous exposure.

Mechanical / Physical Properties

Compressive Strength (According to IS 9162- 1979)

	+27ºC / 85% r.h.
1 day	~ 17.0 N/mm^2
7 days	~ 28.0 N/mm^2
28 days	~ 45.0 N/mm^2

Flexural Strength (According to IS 9162- 1979)

	+27ºC / 85% r.h.
1 day	~ 2.0 N/mm^2
7 days	~ 5.0 N/mm^2
28 days	~ 8.0 N/mm^2

Bond Strength 3.4 N/mm^2 after 28 days at +20ºC and 50% r.h. (According to EN 13892-8)
(100% concrete failure)

E- Modulus *Static:*

~34.7 kN/mm^2 (at +20°C) (According to SIA 162/1 Test nº 3)
~36.7 kN/m m^2 (at -20°C) sa

Abrasion Resistance ~ 0.7mm thickness loss (According to IS 1237 – 1980 and IS 9162 - 1979)

Resistance

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.

System Information

System Structure 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)

Horizontal repair and patching:
Layer thickness: 7 - 100 mm
Primer: SikaTop®-Armatec-110 EpoCem®
Topping: Sikafloor®-83 EpoCem®

Interlayer priming:
Substrate: Sikafloor®-83 EpoCem®
Primer: Sikafloor®-155 WN / Sikafloor®-80 Primer
Topping: Sikafloor®-81 or -82 EpoCem®

Application Details

Consumption / Dosage	*Primer:* SikaTop®-Armatec-110 EpoCem® ~ 1.0 - 2.0 kg/m^2 dependent on the substrate conditions. *Mortar:* Sikafloor®-83 EpoCem® ~ 2.1 - 2.3 kg / m^2 / mm ~ 16.8 - 18.5 kg/m^2 for 8 mm thick application (minimum for T.M.B.) These figures are theoretical and do not include for any additional material required due to surface porosity, surface profile, variations in level or wastage, etc.
Substrate Quality	The concrete substrate must be sound and of sufficient compressive strength (minimum 20 N/mm^2) with a minimum pull off strength of 1.5 N/mm^2. 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.
Substrate Preparation	Concrete substrates must be prepared mechanically using abrasive blast cleaning, scarifying or grinding 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. 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.

Application Conditions / Limitations

Substrate Temperature	+8°C min. / +35°C max.
Ambient Temperature	+8°C min. / +35°C max.
Substrate Moisture Content	Can be applied on green or damp concrete, without any standing water.
Relative Air Humidity	30% min. / 80% max.
Dew Point	Beware of condensation! The substrate and uncured floor temperature must be at least 3°C above the dew point to reduce the risk of condensation or blooming on the floor finish.

Application Instructions

Mixing	Part A : Part B : Part C - 1.00 : 2.5 : 42 kg
Mixing Time	Prior to mixing, shake part A (white liquid) briefly until homogenous, then pour into container of part B and shake vigorously for at least 30 seconds. When dosing out of drums, stir and homogenise first. Pour the mixed binder (A+B) into a suitable mixing container (capacity of about 60 litres) and gradually add part C to the mixer while stirring. Mix thoroughly for 3 minutes until a uniform mix has been achieved.

Mixing Tools

A forced action (pan type) mixer at slow speeds (300 - 400 rpm) is recommended.

Also suitable are single or counter rotating double mortar (basket type) mixers. Free fall mixers must not be used.

Application Method / Tools

Place the mixed Sikafloor®-83 EpoCem® *wet on wet* onto the still tacky primer and spread evenly to the required thickness with a suitable rake and compact by tamping. Level by means of a levelling beam across steel rails (8 - 10 mm), followed by mechanical finishing with synthetic disc power float, using a little water (injected through the jets situated on top of the disc).

For applications in thicknesses above 30 mm, apply the mortar in at least two layers and compacting each of them separately.

Workability can be adjusted by varying slightly the amount of part C.
See “Mixing” above.

Cleaning of Tools

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

Potlife

11.38 kg mass

Temperature / r.h. 75%	Time
+10°C	~ 80 minutes
+20°C	~ 40 minutes
+30°C	~30 minutes

Waiting Time / Overcoating

The application of Sikafloor®-83 EpoCem® over SikaTop®-Armatec-110 EpoCem® primer must always be carried out *wet on wet.*

Sikafloor®-83 EpoCem® can be over coated with vapour tight surface sealers when the surface moisture content falls below 4%! Not earlier than:

Substrate temperature	Waiting time
+10°C	2 days
+20°C	1 day
+30°C	1 day

Note: Times are approximate and will be affected by changing ambient and substrate conditions, particularly temperature and relative humidity.

Notes on Application / Limitations

Always ensure good ventilation when using Sikafloor®-83 EpoCem® in a confined space to remove excess moisture.

Freshly applied Sikafloor®-83 EpoCem® must be protected from damp, condensation and water for at least 24 hours.

Under no circumstances add water to the mix.

Floor cracks and joints require pre-treatment with a stripe coat of primer and Sikafloor®-83 EpoCem®. Treat as follows:
Static: Prefill and level with Sikadur® or Sikafloor® epoxy resin.
Dynamic (> 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.

Colour variations can occur on unsealed Sikafloor®-83 EpoCem® through exposure to direct sun light. This however, will not influence the mechanical properties.

When overlaying with PMMA screeds, the surface of Sikafloor®-82 EpoCem® must be fully broadcast with sand 0.4 - 0.7 mm.

Construction

Curing Details

Applied Product ready for use

Temperature	Foot traffic	Light traffic	Full cure
+30°C	~ 24 hours	~2 days	~ 7 days

Note: Times are approximate and will be affected by changing ambient and substrate conditions.

Cleaning / Maintenance

Methods

Due to the texture of its surface, Sikafloor®-83 EpoCem® is not suitable to be used as a wearing layer where easy staining may 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.

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.

Health and Safety Information

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.

Legal Notes

Sika India Pvt. Ltd.
Commercial Complex II
620, Diamond Harbour Road
Kolkata, 700 034, India

Phone +91 33 2447 2448/2449
Telefax +91 33 2468 8688/2665
www.sika.in
info@in.sika.com