BUILDING TRUST
CONSTRUIRE LA CONFIANCE

PRODUCT DATA SHEET
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FLUID-APPLIED FLOORING

Sikafloor®-81 EpoCem®CA

THREE-COMPONENT CEMENT AND WATER-BASED EPOXY COMBINATION MORTAR FOR SELF-SMOOTHING FLOOR SCREEDS FROM 3 - 4 MM (120 - 160 MILS)

Description

Sikafloor®-81 EpoCem®CA is a three-component, solvent-free, odourless, moisture-insensitive, water-based epoxy-modified cementitious, fine textured mortar for self-smoothing floor screeds. Specifically formulated for levelling and structurally reprofiling on damp, green or saturated surface dry concrete slabs at an applied thicknesses ranging from 3 to 4 mm (120 to 160 mils).

Where to Use

- **As a Temporary Moisture Barrier (TMB)**, minimum thickness 3 mm (120 mils), allowing the application of epoxy, polyurethane and PMMA resin floors requiring dry substrates, over high moisture content substrates, even green concrete or saturated surface dry concrete slabs, for a lasting solution.
- **As a Permanent Moisture Barrier (PMB),** minimum thickness 3 mm (120 mils) must be sealed with Sikafloor®-1610 or Sika® MT Primer moisture tolerant epoxy coatings to form a permanent low permeability moisture barrier ~ 0.1 Perm when tested to ASTM E96 / wet method.
- **As a self-smoothing screed for** levelling or patching horizontal concrete surfaces in new construction or refurbishment projects, typically applied under epoxy, polyurethane and PMMA floor coatings / screeds, waterproofing membranes, tiles, sheet flooring, carpet or wooden floors.
- **Extended with quartz sand, as a patch and repair mortar** for thickness of 6 - 200 mm (1/4 - 8 in)

Advantages

- Water-based, solvent-free and odourless.
- Can be top coated with resin based floors after 24 hours (20 °C (68 °F) 75 % RH).
- Prevents osmotic blistering of resin based coatings over damp concrete substrates.
- Economical structural resurfacing compound that is fast and easy to apply.
- Good levelling properties.
- Impervious to liquids but permeable to water vapour.
- Good adhesion after long term water immersion.
- Excellent adhesion to dry, damp, green or saturated surface dry concrete substrates.
- Thermal expansion properties similar to concrete.
- Excellent early and final mechanical strength.
- Ideal preparation for smooth surface finishes
- Will not corrode reinforcement steel.
- Meets the requirements of CFIA and USDA for use in food plants.

Technical Data

Packaging
21 kg (46.3 lb) unit
Component A+B: 4 kg (8.8 lb) of binder (Sika® EpoCem® Module^CA)
Component C: 17 kg (37.4 lb) Bag (powder)

Colour
Grey after mixing

Yield
Primer -
Component A+B = 3.85 L (1 US gal.) of Sika® EpoCem® Module^CA
Depends on substrate porosity: 5 -10 m²/L (200 - 400 ft² / US gal.)
Primer sold separately
Self-Smoothing Mortar -
Component A+B+C = 10 L (2.64 US gal.) of mortar 3.3 m² (35 ft²) unit at 3 mm (120 mils)
Extended Patching Mortar -
Sikafloor®-81 EpoCem®CA extended with oven-dried quartz sand

Sikafloor®-81 EpoCem®CA pre-mix	21 kg (46.3 lb) (10 L)
Quartz sand # 24 (0.3 - 0.85 mm)	10 kg (22 lb) (6.9 L)
Quartz sand # 16 (0.6 - 1.6 mm)	10 kg (22 lb) (7.1 L)
Final mix	41 kg (90.3 lb) (19.1 L) (0.67 ft³)

Shelf Life
1 year in original, unopened packaging. Store dry at temperatures between 5 and 32 °C (41 and 89 °F). Protect from freezing and high temperatures. If frozen, discard.

Mix Ratio
Mix full units only

Properties at 23 °C (73 °F) and 50 % R.H.

Density, kg/L (lb/US gal.)	Components A+B+C	~ 2.1 (17.5)
Application Life	Components A+B	~ 40 min*
	Components A+B+C	~ 20 min*
	Maximum time before de-airing with spiked roller	~ 15 min

*Do not use after this period

Cure Times	**10 °C (50 °F)****	**20 °C (68 °F)****
Foot traffic	~ 24 hours	~ 15 hours
Light mechanical loading	~ 3 days	~ 2 days
Overcoatable after	~ 3 days	~ 1 day
Fully cured after	~ 14 days	~ 7 days
	**Product cured and tested at temperatures indicated.	
Compressive Strength ASTM C 109, MPa (psi)		
1 day	~ 23 MPa (3335 psi)	
3 days	~ 50 MPa (7251 psi)	
28 days	~ 65 MPa (9427 psi)	
Bond Strength CSA A23.2-6B	> 2.5 MPa (362 psi) substrate failure	
Permeability ASTM E96 / wet method	~ 5 Perm @ 3 mm (1/8") d.f.t. @ 28 days	
	~ 0.15 Perm @ 3 mm (1/8") d.f.t. overcoated with Sikafloor®-1610 or Sika® MT Primer at 10 mils d.f.t.	
	~ 0.10 Perm @ 3 mm (1/8") d.f.t. overcoated with Sikafloor®-1610 or Sika® MT Primer at 16 mils d.f.t.	
VOC Content	0 g/L	
Chemical Resistance	Contact Sika Canada	

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

HOW TO USE

Surface Preparation

The concrete substrate must be clean and sound. It may be dry, damp (free of standing water) or saturated surface dry. Green concrete maybe over coated as soon as mechanical preparation is possible. The compressive strength of the concrete should be at least 25 MPa (3625 psi) at 28 days and at least 1.5 MPa (218 psi) in tension at the time of Sikafloor®-81 EpoCem®CA application. Remove all dust, dirt, existing paint films, efflorescence, exudates, laitance, form oils, hydraulic or fuel oils, brake fluid, grease, fungus, mildew, biological residues or any other contaminants which may prohibit good bond. Prepare the surface by appropriate mechanical means, in order to achieve an open textured profile equivalent to ICRI / CSP 4 - 6. If in doubt, apply a test area first to confirm acceptable performance. Weak concrete must be removed and surface defects such as blow holes and voids must be fully exposed. Repairs to the substrate, filling of blow holes / voids and surface levelling must be carried out using an appropriate moisture tolerant, structural Sika® profiling mortar. Contact Sika® Canada for recommendations.

Mixing

Primer for Self-Smoothing Mortar
Shake Sika® EpoCem®CA Module components A and B to ensure all solids are uniformly in suspension, then pour them into an appropriate sized mixing container. Blend the combined components (A+B) at low speed (300 - 450 rpm) thoroughly for three (3) minutes using a drill fitted with an *Exomixer®* or *Jiffy* type paddle suited to the dimensions of the mixing container. During the mixing operation, scrape down the sides and bottom of the pail with a flat or straight edge trowel at least once to ensure thorough mixing.

Note: Do not try to attend to unmixed material that may gather on the sides of the mixing container while mechanical or electrical parts are in motion. Upon completion of mixing, Sika® EpoCem®CA Module should be uniform in consistency.

Self-Smoothing Mortar
Shake Sikafloor®-81 EpoCem®CA components A and B to ensure all solids are uniformly in suspension, then pour them into an appropriate 20 L (5 US gal) sized mixing container. Blend the combined components (A+B) at low speed (300 - 450 rpm) thoroughly for 30 seconds using a drill fitted with an *Exomixer®* or *Jiffy* type paddle suited to the dimensions of the mixing container. Progressively add component C while mixing, keeping the mixing paddle in the mortar to minimize entrapped air. Continue mixing thoroughly for three (3) minutes after complete addition of component C. During the mixing operation, scrape down the sides and bottom of the pail with a flat or straight edge trowel at least once to ensure thorough mixing.

Note: Do not try to attend to unmixed material that may gather on the sides of the mixing container while mechanical or electrical parts are in motion. Upon completion of mixing, Sikafloor®-81 EpoCem®CA should be uniform in colour and consistency.

Primer for Extended Patching Mortar - As a primer for extended mortar with oven-dried quartz sand, use Sikadur®-32 Hi-Mod in accordance with the respective Product Data Sheet. Apply Extended Patching Mortar ''wet on wet'' to the primer.

Extended Patching Mortar with quartz sand - To proceed with local repairs and slope corrections for thicknesses ranging from 6 to 200 mm (1/4 - 8 in), Sikafloor®-81 EpoCem®CA can be extended with oven-dried quartz sand. Refer to Yield section for mix design.

Blend Sikafloor®-81 EpoCem®CA unit (Components A+B+C) following the mixing instructions detailed above for Self-Smoothing Mortar. Continue mixing and progressively add quartz sand (# 24 and # 16). Continue mixing until all quartz aggregates are fully wetted out and the mixture is uniform in colour and consistency.

Application

Primer for Self-Smoothing Mortar - Sika® EpoCem®CA Module (A+B) at a rate of 5 - 10 m^2/L (200 - 400 ft^2/US gal.) using a brush or roller of appropriate length nap to control the coverage according to the surface profile of the concrete. Avoid puddling. Apply self-smoothing mortar after primer no longer appears whitish having become translucent. Typical waiting time is minimum one (1) hour at 20 °C (68 °F) but within three (3) hours at 20 °C (68 °F) maximum; colder temperatures and or high relative humidity will increase waiting times.

Note: For porous or excessively absorbent concrete, prime with a second application of Sika® EpoCem®CA Module applied at a rate of 5 - 10 m^2/L (200 - 400 ft^2/US gal.).

Self-Smoothing Mortar - After mixing, immediately apply the self-smoothing mortar using a notched trowel 4 x 4 mm (3/16 x 3/16 in) or a flooring spreader (rubber or metal) to obtain even coverage. Immediately work down with a spiked roller to ensure uniform thickness and to remove entrapped air. When Sikafloor®-81 EpoCem®CA has cured sufficiently, sand if required and apply appropriate Sikafloor® epoxy resin-based product or any other authorized finished flooring systems directly over the mortar coating, ideally within three (3) days. Maintain the floor topping in a clean, dry surface condition prior to the application of the coating.
Note: The consistency of the mix may be adjusted to suit application requirements by slightly reducing the powdered C component. Contact Sika Canada for more information. 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.

Clean Up

Clean all tools and equipment immediately with water. Once hardened, product can only be removed mechanically. Wash soiled hands and skin thoroughly in hot soapy water.

Limitations

- Sikafloor®-81 EpoCem®CA is best installed by skilled and experienced applicators. Contact Sika Canada for advice and recommendations.
- Prior to application, measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point. During installation, confirm and record above values at least once every three (3) hours, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.).
- Mixing and Application attempted at Material, Ambient and/or Substrate Temperature conditions less than 18 °C (65 °F) will result in a decrease in product workability and slower cure rates.
- Do not hand mix Sikafloor® materials. Mechanical mix only.
- Under no circumstances add water to the mix.
- Any aggregate used with Sikafloor® systems must be non-reactive and oven-dried.
- Ambient and substrate temperature: Minimum/ Maximum: 8 °C (46 °F) / 30 °C (86 °F).
- Relative air humidity Minimum / Maximum: 20 % / 80 %.
- Application 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.
- Prevent premature drying by protecting from strong wind and do not expose to direct sun light while fresh.
- Apply Sika® EpoCem®CA Module primer and Sikafloor®-81 EpoCem®CA mortar on a falling temperature. If applied during rising temperatures "pin holing" can occur.
- Direct-fired gas or kerosene heaters produce by-products that can have adverse effects on curing. To avoid this occurrence, heaters must be exhausted to the exterior of the building to avoid defects such as amine blush, whitening, loss of adhesion or other surface deficiencies.
- Always ensure good ventilation when using Sikafloor®-81 EpoCem®CA in a confined space to remove excess moisture.
- Freshly applied Sikafloor® EpoCem® must be protected from damp, condensation and water for at least 24 hours.
- Do not apply Sikafloor® materials to concrete substrate containing aggregates susceptible to ASR (Alkali Silica Reaction) due to risk of natural alkali redistribution below the Sikafloor® product after application. If concrete substrate has or is suspected to have ASR (Alkali Silica Reaction) present, do not proceed. Consult with design professional prior to use.
- Application on green or early concrete (before shrinkage cracks have fully developed in the base concrete) may result in post application reflective cracking on the surface.
- Temporary Moisture Barrier (TMB) effect of Sikafloor®-81 EpoCem®CA is limited in time, without additional application.
- Permanent Moisture Barrier (PMB) effect is only achieved when Sikafloor®-81 EpoCem®CA is sealed with a suitable epoxy coating such as Sikafloor®-1610 or Sika® MT Primer to form a permanent vapour barrier.
- Maximum surface moisture content of Sikafloor®-81 EpoCem®CA before application of standard Sikafloor®, Sikagard® or Sikalastic® resin-based coatings must be ≤ 4 % by mass (pbw – part by weight) as measured with a Tramex® CME/CMExpert type concrete moisture meter. Moisture tolerant primers; Sikafloor®-1610 and Sika® MT Primer can be applied over Sikafloor®-81 EpoCem®CA if the surface moisture content is < 6 % by mass (pbw – part by weight) as measured with Tramex® CME/CMExpert type concrete moisture meter.
- This product is not designed for negative side waterproofing.
- When overlaying with PMMA screeds, the surface of the Sikafloor®-81 EpoCem®CA must be fully broadcast with oven-dried quartz sand 0.4 - 0.7 mm.
- Sikafloor®-81 EpoCem®CA will discolour over time when exposed to sunlight (UV) and under certain artificial lighting conditions. The product is not intended as a finish and must be overcoated.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent SAFETY DATA SHEET containing physical, ecological, toxicological and other safety-related data.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

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, within their shelf life. 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 recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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 or may be downloaded from our website at: www.sika.ca

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