

## Sikafloor®-81 EpoCem®

3-part cement and epoxy combination mortar for self-smoothing floor screeds of 1.5 to 3 mm

### Product 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

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

Construction



- 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 or external use
- Contains no solvents
- Will not corrode reinforcement steel

## Tests

|                             |   |
|-----------------------------|---|
| <b>Approval / Standards</b> | ITT reports (*) for EN 1504-2 Ref. 09/349-963, dated May 6 <sup>th</sup> 2009 and EN 1504-3 Ref. 09/351-965 dated May 4 <sup>th</sup> , 2009 by Applus Laboratory, Barcelona, Spain. * confirm with producing company<br><br>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. 0921, certificate 2017, and provided with the CE-mark |
|-----------------------------|---|

## Product Data

### Form

|                             |                    |                               |
|-----------------------------|--------------------|-------------------------------|
| <b>Appearance / Colours</b> | Part A - resin:    | white liquid                  |
|                             | Part B - hardener: | transparent yellowish liquid  |
|                             | Part C - filler:   | natural grey aggregate powder |
|                             | Colour:            | light grey                    |
|                             | Finish:            | matt                          |

|                  |  |
|------------------|--|
| <b>Packaging</b> | Pre-batched 21 kg units (10 Ltr).                |
|                  | Part A: 1.00 kg plastic container                |
|                  | Part B: 2.50 kg plastic container                |
|                  | Part C: 17.50 kg plastic lined double paper bags |

### Storage

|                                       |   |                       |
|---------------------------------------|---|-----------------------|
| <b>Storage Conditions/ Shelf-Life</b> | Part A, part B:   | 12 months             |
|                                       | Part C:   | 12 months             |
|                                       | From date of production if 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 |

### Technical Data

|   |   |                                   |
|---|---|-----------------------------------|
| <b>Chemical Base</b>  | Epoxy modified cementitious mortar.   |                                   |
| <b>Density</b>  | Part A:   | ~ 1.05 kg/l (at +20°C)            |
|   | Part B:   | ~ 1.03 kg/l (at +20°C)            |
|   | Part C:   | ~1.72 kg/l (at +20°C)             |
|   | Parts A+B+C mixed:  | ~2.10 kg/l (at +20°C) (EN 1015-6) |
| <b>Layer Thickness</b>  | 1.5 mm min. / 3.0 mm max.<br><br>If Sikafloor®-81 EpoCem® is used as a Temporary Moisture Barrier (TMB), a minimum of 2 mm must be applied. |                                   |
| <b>Carbon Dioxide Diffusion Coefficient (µCO<sub>2</sub>)</b> | µCO <sub>2</sub> ≈ 4168<br>Carbonation resistance for 3 mm thickness: R ≈ 12.5 m  | (SN EN 1062-6)                    |
| <b>Fire Rating</b>  | Class A2 <sub>(fl)</sub> S1   | (EN 13501-1)                      |
| <b>Service Temperature</b>                                    | -30°C to +80°C for continuous exposure.   |                                   |

## Mechanical / Physical Properties

### Compressive Strength

(EN 13892-2)

|         | +23°C / 50% r.h.       |
|---------|------------------------|
| 1 day   | ~ 15 N/mm <sup>2</sup> |
| 7 days  | ~ 50 N/mm <sup>2</sup> |
| 28 days | ~ 60 N/mm <sup>2</sup> |

### Flexural Strength

(EN 13892-2)

|         | +23°C / 50% r.h.         |
|---------|--------------------------|
| 1 day   | ~ 5.8 N/mm <sup>2</sup>  |
| 7 days  | ~ 11.1 N/mm <sup>2</sup> |
| 28 days | ~ 14 N/mm <sup>2</sup>   |

### Freeze / Thaw / De-Icing Salt Resistance BE II

Resistance factor WFT-L 98% (High)

D-R (SN / VSS 640 461)

### Slip Resistance

Slip Resistance Values

(EN 13036-4)

| Substrate             | SRV Dry | SRV Wet |
|-----------------------|---------|---------|
| Sikafloor®-81 EpoCem® | 89      | 65      |

TRRL Pendulum, Rapra 4S Slider

### Abrasion Resistance

11.9 cm<sup>3</sup> / 50 cm<sup>2</sup> and 2.4 mm wear depth (Böhme abrasion)

(EN 13892-3)

## 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 from the Sikafloor® and Sikagard® range. For occasional exposure or spillages, consult your local technical department.

## 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)

*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

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

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## Application Details

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### Consumption / Dosage

*Primer:*

Sikafloor®-155 WN (parts A+B), thinned with 10% water, ~ 0.3 - 0.5 kg/m<sup>2</sup> dependent on the substrate conditions, when repairing monolithic or vacuum concrete, or without a broadcast finish or when Sikafloor®-81 EpoCem® is over coated with itself.

*Self smoothing screed:*

Sikafloor®-81 EpoCem® ~ 2.25 kg/m<sup>2</sup>/mm

~ 4.5 kg/ m<sup>2</sup> for a 2 mm thick application (minimum for T.M.B)

*Extended mortar mix*

Sikafloor®-81 EpoCem® ~ 2.4 kg/m<sup>2</sup>/mm

These figures are theoretical and do not allow for any additional material due to surface porosity, surface profile, variations in level or wastage, etc.

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### Substrate Quality

The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm<sup>2</sup>) with a minimum pull off strength of 1.5 N/mm<sup>2</sup>.

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.

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### Substrate Preparation

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.

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.

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## Application Conditions / Limitations

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**Substrate Temperature** +8°C min. / +30°C max.

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**Ambient Temperature** +8°C min. / +30°C max.

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**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.

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**Relative Air Humidity** 20% min. / 80% max.

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**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.

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## Application Instructions

|                                   |   |                            |               |                            |           |
|-----------------------------------|---|----------------------------|---------------|----------------------------|-----------|
| <b>Mixing</b>                     | <p>Part A : part B : part C - packing size : 1.00 : 2.50 : 17.5 kg</p> <p><i>Flooring Screed:</i><br/>At temperatures between +12°C to +25°C:<br/>1 : 2.5 : 17 (by weight)<br/>Parts (A+B) : C = 3.5 kg : 17.5 kg</p> <p>At temperatures between +8°C to +12°C and +25°C to +30°C:<br/>The amount of Part C can be reduced to 16.5 kg in order to improve workability.<br/>Never reduce Part C by more than this amount.<br/>1 : 2.5 : 15.8 (by weight)<br/>Parts (A+B) : C = 3.5 kg : 16.5 kg</p> <p><i>Extended mortar mix. Repair mortar:</i><br/>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.</p> <p>For each 21 kg unit of Sikafloor®-81 EpoCem® prepared as indicated below, add:</p> <table><tr><td>(quartz sand 0.7 - 1.2 mm)</td><td>5 - 10 kg and</td></tr><tr><td>(quartz sand 2.0 - 3.0 mm)</td><td>5 - 10 kg</td></tr></table> <p>Final mix will be : 31 - 41 kg</p> <p>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.</p> | (quartz sand 0.7 - 1.2 mm) | 5 - 10 kg and | (quartz sand 2.0 - 3.0 mm) | 5 - 10 kg |
| (quartz sand 0.7 - 1.2 mm)        | 5 - 10 kg and   |                            |               |                            |           |
| (quartz sand 2.0 - 3.0 mm)        | 5 - 10 kg   |                            |               |                            |           |
| <b>Mixing Time</b>                | <p>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.</p> <p>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.</p> <p>Mix only full units of A+B+C components. Do not mix smaller amounts. Do not add water.</p> <p>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.</p>  |                            |               |                            |           |
| <b>Mixing Tools</b>               | <p>Mix using a slow speed electric mixer (300 - 400 rpm) with helical paddle or other suitable equipment.</p> <p>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.</p>   |                            |               |                            |           |
| <b>Application Method / Tools</b> | <p>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.</p> <p>Workability can be adjusted by varying slightly the amount of part C. See "Mixing" above.</p> <p>Do not use additional water, which would disturb the surface finish and cause discolouration.</p> <p>A seamless finish can be achieved if a 'wet' edge is maintained during application.</p>   |                            |               |                            |           |
| <b>Cleaning of Tools</b>          | <p>Clean all tools and application equipment with water immediately after use. Hardened / cured material can only be removed mechanically.</p>  |                            |               |                            |           |

**Potlife**

21 kg unit

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

**Waiting Time / Overcoating**

Before applying Sikafloor®-81 EpoCem® on Sikafloor®-155 WN allow:

| Substrate temperature | Waiting time |          |
|-----------------------|--------------|----------|
|                       | Minimum      | Maximum  |
| +10°C                 | 12 hours     | 72 hours |
| +20°C                 | 6 hours      | 48 hours |
| +30°C                 | 4 hours      | 24 hours |

Once Sikafloor®-81 EpoCem® is tack free it is possible to apply vapour permeable seal coats.

Sikafloor®-81 EpoCem® can be overcoated with vapour tight coatings when the surface humidity falls below 4%! Not earlier than :

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

Note: Successive coats of Sikafloor®-81/82 EpoCem® must be applied after priming with Sikafloor®-155 WN and allowing at least the minimum times indicated above between applications.

Times are approximate at 75% r.h. and will be affected by changing ambient and substrate conditions, particularly temperature and relative humidity.

**Notes on Application / Limitations**

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/m<sup>2</sup>)

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.

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.

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.

## Curing Details

### Applied Product ready for use

| Temperature | Foot traffic | Light traffic | Full cure |
|-------------|--------------|---------------|-----------|
| +10°C       | ~ 24 hours   | ~ 3 days      | ~ 14 days |
| +20°C       | ~ 15 hours   | ~ 2 days      | ~ 7 days  |
| +30°C       | ~ 7 hours    | ~ 1 day       | ~ 4 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®-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.

### 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.

### 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.

### 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

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.

### EU Regulation 2004/42 VOC - Decopaint Directive

According EU-Directive 2004/42, the maximum allowed content of VOC (Product category IIA / Cat. C / Type wb) is, ready for use, 40 g/l (limit 2010). The max. content of Sikafloor®-81 EpoCem®, ready for use, is <40 g/l VOC.



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