

PRODUCT DATA SHEET

Sikafloor®-381 ECF

2-PART, SMOOTH, CHEMICALLY HIGHLY RESISTANT AND ELECTROSTATIC CONDUCTIVE EPOXY FLOOR COVERING



DESCRIPTION

Sikafloor®-381 ECF is a two part, electrostatic conductive self-smoothing, coloured epoxy resin with very high chemical resistance. "Total solid epoxy composition acc. to the test method Deutsche Bauchemie e.V. (German Association for construction chemicals)".

USES

Sikafloor®-381 ECF may only be used by experienced professionals.

Sikafloor®-381 ECF is used as:

- Chemically highly resistant coating for concrete and screed surfaces in bund areas for the protection against water contaminating liquids (according to resistance table)
- Electrostatic conductive wearing layer for areas subject to chemical and mechanical exposure in production and storage facilities

CHARACTERISTICS / ADVANTAGES

- Very high chemical resistance
- High mechanical resistance
- Impervious to liquids
- Abrasion resistant
- Electrostatic conductive
- Slip resistant surface possible

SUSTAINABILITY

LEED Rating

Sikafloor®-381 ECF conforms to the requirements of LEED EQ Credit 4.2: Low-Emitting Materials: Paints & Coatings SCAQMD Method 304-91 VOC Content < 100 g/l

APPROVALS / CERTIFICATES

- Self-smoothing, coloured epoxy resin coating according to EN 1504-2: 2004 and EN 13813, DoP 02 08 01 02 019 0 000010 2017, certified by Factory Production Control Body No. 0921, certificate 2017, and provided with the CE-mark
- Conforms to the requirements of DIN IEC 61340-4-1 (Internal Test)
- Reaction to fire classification acc. to DIN EN 13501-1. Test report No.: 2013-B-1413/01. The fire behaviour of Sikafloor®-381 ECF is classified as: Bfl-s1
- Particle emission certificate Sikafloor®-381 ECF CSM Statement of Qualification - ISO 14644-1, class 4 - Report No. SI 1312-681
- Spark resistance in accordance with UFGS-09 97 23 of coating systems, Test report P 8625-E, Kiwa Polymer Institut



PRODUCT INFORMATION

Composition	Epoxy		
Packaging	Part A	21.25 kg containers	
	Part B	3.75 kg containers	
	Part A+B	25 kg ready to mix units	
	Bulk packaging:		
	Part A	250 kg drums	
	Part B	190 kg drums	
Appearance / Colour	Resin - part A	coloured, liquid	
	Hardener - part B	transparent, liquid	
	Almost unlimited choice of colour shades. Due to the nature of the carbon fibres providing the conductivity, it is not possible to achieve exact colour matching. With very bright colours (such as yellow and orange), this effect is increased. Under direct sun radiation there may be some discolouration and colour deviation, this has no influence on the function and performance of the coating.		
Shelf life	24 months from date of production		
Storage conditions	The packaging must be stored properly in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +5°C and +30°C.		
Density	Part A	~ 1.77 kg/l	(DIN EN ISO 2811-1)
	Part B	~ 1.04 kg/l	
	Mixed resin	~ 1.6 kg/l	
	All Density values at +23°C		
Solid content by weight	~100%		
Solid content by volume	~100%		

TECHNICAL INFORMATION

Shore D Hardness	~82 (7 days / +23°C)		(DIN 53 505)
Abrasion Resistance	Resin (filled 1:0.3 with F34): ~ 40 mg (CS 10 wheel / 1000 g / 1000 cycles) (8 days / +23°C)		(DIN 53 109) (Taber Abraser Test)
Compressive Strength	Resin (filled 1:0.3 with F34): ~ 80 N/mm ² (14 days / +23°C)		(EN 196-1)
Tensile Strength in Flexure	Resin (filled 1:0.3 with F34): ~ 55 N/mm ² (14 days / +23°C)		(EN 196-1)
Tensile Adhesion Strength	> 1.5 N/mm ² (failure in concrete)		(ISO 4624)
Chemical Resistance	Resistant to many chemicals. Please contact Sika technical service.		
Temperature Resistance	Exposure*	Dry heat	
	Permanent	+50°C	
	Short-term max. 7 d	+80°C	
	Short-term max. 12 h	+100°C	
	Short-term moist/wet heat* up to +80°C where exposure is only occasional (i.e. during steam cleaning etc.) *No simultaneous chemical and mechanical exposure.		
Electrostatic Behaviour	Resistance to ground ¹⁾	R _g < 10 ⁹ Ω	(IEC 61340-4-1)
	Typical average resistance to ground ²⁾	R _g < 10 ⁶ Ω	(DIN EN 1081)

1) This product fulfils the requirements of ATEX 137

2) Readings may vary, depending on ambient conditions (i.e. temperature, humidity) and measurement equipment.

SYSTEMS

Systems

Please refer to the System Data Sheet of:

Sikafloor® Multidur ES-31 ECF	Smooth, epoxy floor covering, Chemically resistant conductive epoxy floor covering
Sikafloor® Multidur ET-31 ECF/V	Textured, electrostatically conductive, chemically resistant epoxy coating for vertical surfaces
Sikafloor® Multidur EB-31 ECF	Broadcast, unicolour conductive epoxy floor covering with high chemical resistance and slip resistance

APPLICATION INFORMATION

Mixing Ratio

Part A : part B = 85 : 15 (by weight)

Consumption

Coating System	Product	Consumption
Wearing course horizontal areas (Film thickness ~ 1.5 mm)	Sikafloor®-381 ECF filled with quartz sand 0.1 - 0.3	2.5 kg/m ² Binder + quartz sand 10 - 15°C: without filling 15 - 20°C: 1 : 0.1 pbw (2.3 + 0.2 kg/m ²) 20 - 30°C: 1 : 0.2 pbw (2.1 + 0.4 kg/m ²)
Wearing course vertical areas (Film thickness ~ 1.5 mm)	Sikafloor®-381 ECF + 2.5 - 4 wt.-% Extender T	2 x 1.25 kg/m ²
Broadcast system with slip resistance (Film thickness ~ 2.5 mm)	Sikafloor®-381 ECF, broadcast to excess with Silicon Carbide 0.5 - 1.0 mm	1.6 kg/m ² Binder without filling Silicon Carbide 0.5 - 1.0 mm (5 - 6 kg/m ²)

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

Ambient Air Temperature

+10°C min. / +30°C max.

Relative Air Humidity

80% r.h. max.

Dew Point

Beware of condensation!
The substrate and uncured floor must be at least 3°C above dew point to reduce the risk of condensation or blooming on the floor finish.

Substrate Temperature

+10°C min. / +30°C max.

Substrate Moisture Content

< 4% pbw moisture content. Test method: Sika®-Tramex meter, CM - measurement or Oven-dry-method.
No rising moisture according to ASTM (Polyethylene-sheet).

Pot Life

Temperatures	Time
+10°C	~ 60 minutes
+20°C	~ 30 minutes
+30°C	~ 15 minutes

Curing Time

Before applying Sikafloor®-220 W Conductive on Sikafloor®-381 ECF allow:

Substrate temperature	Minimum	Maximum
+10°C	48 hours	3 days
+20°C	24 hours	2 days
+30°C	12 hours	1 day

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

Applied Product Ready for Use

Temperature	Foot traffic	Light traffic	Full cure
+10°C	~ 24 hours	~ 3 days	~ 10 days
+20°C	~ 18 hours	~ 2 days	~ 7 days
+30°C	~ 12 hours	~ 1 day	~ 5 days

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

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 must be clean, dry and free of all contaminants such as dirt, 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 blowholes 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. The concrete or screed substrate has to be primed or levelled in order to achieve an even surface.

High spots must be removed by e.g. grinding. All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum.

MIXING

Prior to mixing, stir part A mechanically. When all of part B has been added to part A, mix continuously for 2 minutes until a uniform mix has been achieved. When parts A and B have been mixed, add the quartz sand 0.1 - 0.3 mm and mix for a further 2 minutes until a uniform mix has been achieved. To ensure thorough mixing pour materials into another container and mix again to achieve a consistent mix. Over mixing must be avoided to minimise air entrainment. Sikafloor®-381 ECF must be thoroughly mixed using a low speed electric stirrer (300 - 400 rpm) or other suitable equipment.

APPLICATION

Wearing course (horizontal areas):

Sikafloor®-381 ECF is poured, spread evenly by means of a serrated trowel e.g. Large-Surface Scraper No. 656, Toothed blades No. 25 (www.polyplan.com). After spreading the material evenly, turn the serrated trowel and smooth the surface in order to achieve an

aesthetically higher grade of finish. Roll immediately (within max. 10 minutes of application) in two directions with a steel spiked roller to ensure even thickness and to remove entrapped air. To obtain the highest level of aesthetic finish, spike roll in two directions at a 90 degree angle, passing only once in each direction.

Wearing course (vertical areas):

The first layer of Sikafloor®-381 ECF, mixed with 2.5 - 4 wt.-% Extender T, has to be applied by trowel. After placing of the earthing plates and application of the conductivity layer, apply the second layer of Sikafloor®-381 ECF, mixed with 2.5 - 4 wt.-% Extender T, by trowel.

Wearing course with slip resistance:

Sikafloor®-381 ECF is poured, spread evenly by means of a serrated trowel and the fresh layer is broadcasted to excess with silicon carbide 0.5 - 1.0 mm. After final drying the surplus silicon carbide must be swept off and the surface must be vacuumed.

CLEANING OF EQUIPMENT

Removal of fresh remnants from tools and application equipment can be carried out using Thinner C immediately after use. Hardened / cured material can only be mechanically removed.

MAINTENANCE

To maintain the appearance of the floor after application, Sikafloor®-381 ECF must have all spillages removed immediately and must be regularly cleaned using rotary brush, mechanical scrubbers, scrubber dryer, high pressure washer, wash and vacuum techniques etc using suitable detergents and waxes. For further details please refer to the Method Statement "Cleaning & Maintenance of Sikafloor® Systems".

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".

Maintenance

Please refer to "Sikafloor®- CLEANING REGIME".

IMPORTANT CONSIDERATIONS

- Prior to application, confirm substrate moisture content, relative air humidity and dew point. If > 4% pbw moisture content, Sikafloor® EpoCem® may be applied as a T.M.B. (temporary moisture barrier) system.
- Levelling: Rough surfaces need to be levelled first because varying thickness of the Sikafloor®-381 ECF wearing course will influence the conductivity and aesthetical appearance. Therefore use Sikafloor®-156 / -161 levelling mortar (see PDS).
- Do not apply Sikafloor®-381 ECF on substrates with rising moisture.
- Do not blind the primer.
- Freshly applied Sikafloor®-381 ECF must be protected from damp, condensation and water for at least 24 hours.
- Only start application of Sikafloor® conductive primer after the priming coat has dried tack-free all over. Otherwise there is a risk of wrinkling or impairing of the conductive properties.
- The incorrect assessment and treatment of cracks may lead to a reduced service life and reflective cracking - reducing or breaking conductivity.
- For exact colour matching, ensure Sikafloor®-381 ECF in each area is applied from the same control batch numbers.
- Under certain conditions, underfloor heating or high ambient temperatures combined with high point loading, may lead to imprints in the resin.
- If heating is required do not use gas, oil, paraffin or other fossil fuel heaters, these produce large quantities of both CO₂ and H₂O water vapour, which may adversely affect the finish. For heating use only electric powered warm air blower systems.

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 Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

VOC DATA

According to the EU-Directive 2004/42, the maximum allowed content of VOC (Product category IIA / j type sb) is 500 g/l (Limits 2010) for the ready to use product.

The maximum content of Sikafloor®-381 ECF is < 500 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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Product Data Sheet
Sikafloor®-381 ECF
October 2018, Version 01.02
020811020020000053

Sikafloor-381ECF-en-GR-(10-2018)-1-2.pdf