BUILDING TRUST

PRODUCT DATA SHEET

Sikafloor®-20 PurCem®

Heavy duty, high strength, polyurethane Floor screed

DESCRIPTION

Sikafloor®-20 PurCem® is a multi-component, resin rich , water-based coloured polyurethane hybrid flooring screed. It has excellent resistance to abrasion, impact , chemical attack and other physical aggression. It is typically installed at 6 – 9 mm.

USES

Sikafloor®-20 PurCem® is Polyurethane resin floor with exceptional resistance to aggressive chemicals, heavy impact and temperatures up to 150°C. It is dense and impervious, providing the ideal floor finish for applications in different areas of application such as :

- Food and beverage production
- Chemical industries where aggressive chemicals resistance will be needed
- Pharmaceutical industries
- Areas where extreme temperature environments or thermal shock such as Cold rooms, Chillers and Freezers .
- Meat , Fish and Poultry Processing .
- Industries with sugary substances such as Juices , Soft Drinks , Candies ....etc
- Industries with fatty substances such as Dairies, Cheese , Bakeries and Milk Productions .

FEATURES

- Excellent chemical resistance to wide range of organic and inorganic acids, alkalis, amines, salts and solvents. Please refer to the Chemical Resistance Chart or consult your local Technical Dept.
- Similar coefficient of thermal expansion to concrete, allowing movement with the substrate through normal thermal cycling. It will perform and retain its physical characteristics through a wide temperature range from -40ºC (-40ºF) up to +120ºC (239ºF)
- 9mm thickness when frequent and intense steam cleaning and high pressure hot water jetting is needed
- Used for wet processes with high mechanical and thermal shock resistance
- It can withstand permanent service temperatures up to +150ºC, depending on the thickness, as well as the thermal shock from steam cleaning or boiling water discharge.
- Bond strength in excess of the tensile strength of concrete. Concrete will fail first
- High mechanical resistance. Behaves plastically subject to impact. Will deform but will not crack or debond
- Slip resistance. Natural textured surface provides anti-slip traction
- High abrasion resistance resulting from its silica aggregate structure
- Withstand moisture vapor transmission values of 12 lbs/1000 ft2 when tested in accordance with the ASTM F 1869 Anhydrous Calcium Chloride Test Method
- Jointless. Extra expansion joints are not necessary; simply maintain and extend existing expansion joints up through the Sikafloor® -PurCem® flooring system
- Substrate moisture tolerance: Can be applied directly onto 7 day old concrete, or old good quality concrete with high moisture contents without the use of special primers.
- Cleaning and hygiene: Accredited for use in facilities operating HACCP based food safety systems

SUSTAINABILITY

LEED Rating

Confirms Section FQ (Indoor Environment Quality), Credit 4.2 Low Emitting Materials Paints and Coatings (VOC content ≤ 50 g/l).
Complies with AgBB for use in indoor environment.
Test report Nr. 392-2014-00087003A_03.

CERTIFICATES AND TEST REPORTS

- Synthetic resin screed material according to EN 13813:2002, Declaration of Performance 02 08 02 02 001 0 000001 1088, certified by notified factory production control certification body 0086, certificate of conformity of the factory production control 541325, and provided with the CE marking.
- Coating for surface protection of concrete according to EN 1504-2:2004, Declaration of Performance 02 08 02 02 001 0 000001 1088, certified by notified factory production control certification body 0086, certificate of conformity of the factory production control 541325, and provided with the CE marking.
- EN1186, EN 13130, and prCEN/TS 14234 standards, and the Decree on Consumer Goods, representing the conversion of directives 89/109/EEC, 90/128/EEC and 2002/72/EC for contact with food stuffs, according to test report by ISEGA, 32758 U11 and 32759 U11, both dated December 6th, 2011. (Tests performed on Sikafloor® -20/21/22/29 and 31 PurCem® in standard and LP versions).
- British Standards Specifications (BSS) acceptance for use in the UK.
- Campden and Chorleywood Food Research Association, Ref. S/REP/125424/1a and 2a, dated 8th February, 2012
- Fire classification report according to EN 13501-1 from Exova Warrington Fire for Sikafloor®-20 PurCem® No.317045, dated 24th of March, 2012
- Liquid water transmission rate test report from the Technology Centre, Ref. 15456 dated January 25th, 2012
- Abrasion resistance tests performed by Face Consultants Ltd., according to BS 8204-2:2003, report ref. FC/12/3850, dated January 17th, 2012. (Tests performed on Sikafloor® -20/21 PurCem®)
- Impact resistance values tested at PRA, Ref. nº 75221-151a, dated February 15th, 2012
- Thermal expansion coefficient and freeze-thaw cycle resistance performed at RWTH / IBAC, report nº M-1614 dated May 29th, 2012.
- Conforms to the requirements of EN 13813: 2002 as CT - C50 - F10 - AR0.5
- Conforms to the requirements of EN 1504-2 for principles 5 (PR) and 6 (CR) as a Coating (C)
- USDA. Acceptance for use in food plants in the USA
- Canadian Food Inspection Agency acceptance for use in food plants in Canada.

PRODUCT INFORMATION

Composition	Water-based polyurethane cement hybrid	
Packaging	Part A (pre-tinted)	3.00 kg plastic pail
	Part B	3.00 kg plastic jerrycan
	Part C	26.50 kg plastic lined, double paper bags
	Part A (pre-tinted)+B+C: 32.5 kg ready to mix units	
Appearance and colour	Part A (pre-tinted)	coloured liquid
	Part B	brown liquid
	Part C	natural grey powder
	Available colours (all are approximate): Beige (~RAL 1001), Maize yellow	

	(~RAL 1006), Oxide red (~RAL 3009), Sky blue (~RAL 5015), Grass green (~RAL 6010), Dusty grey (~RAL 7037), Agate grey (~RAL 7038), Pebble grey (~RAL 7032) , Light grey (~RAL 7035) Colour uniformity cannot be completely guaranteed from batch to batch . Do not mix batch numbers in a single area. Due to the technology used, colour stability of the products cannot be guaranteed when exposed to UV light.	
Shelf life	Part A	12 months from date of production. **Protect from freezing (frost).**
	Part B	12 months from date of production. **Protect from freezing (frost).**
	Part C	6 months from date of production. **Must be protected from humidity.**
Storage conditions	The package must be stored properly in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +10 °C and +25 °C.	
Density	Part A: ~ 1.07 kg/l (at +20°C) Part B: ~ 1.24 kg/l (at +20°C) Part C: ~ 1.58 kg/l (at +20°C) Part A+B+C mixed: ~ 2.08 kg/l ± 0.03 (at +20°C)	(EN ISO 2811-1) & (ASTM C 905)

TECHNICAL INFORMATION

Shore D Hardness	~80 - 85	(ASTM D 2240)
Resistance to impact	Class II (≥ 10 Nm) 2 pounds / 45 inches (3 mm thick)	(EN ISO 6272-1) (ASTM D 2794)
Abrasion resistance	Class “Special” Severe abrasion resistance	(BS 8204 Part 2)
	AR 0.5 (Less than 0.05 mm wear depth)	(EN 13892-4)
	187 mg CS10 wheel / 1000 gr load/ 1000 cycles	(ASTM D 4060)
Compressive strength	> 50 N/mm² after 28 days at +23 °C / 50 % r.h. > 46 N/mm² after 28 days at +23 °C / 50 % r.h.	(BS EN 13892-2) (ASTM C 579)
Flexural-strength	> 10 N/mm² after 28 days at +23 °C / 50 % r.h. > 11 N/mm² after 28 days at +23 °C / 50 % r.h.	(BS EN 13892-2) (ASTM C 580)
Modulus of elasticity in flexure	3750 MPa	(ASTM C 580)
Tensile strength	> 6 N/mm² after 28 days at +23°C / 50% r.h.	(ASTM C 307)
Tensile adhesion strength	> 1.75 N/mm2 (failure in concrete) > 1.75 N/mm2 (failure in concrete) (1.5 N/mm2 is the minimum pull off strength of the recommended concrete substrate)	(EN 1542) ISO 4624
Coefficient of thermal expansion	α ≈ 2.7 x 10^{-5} per °C (temperature range: -20°C to +60°C) Thermal expansion coefficient and freeze-thaw cycle resistance performed at RWTH / IBAC, report nº M-1614 dated May 29th, 201	(ASTM E 381, ASTM D-696, ISO 11359)
Reaction to fire	Class B(fl) S1 Fire classification report according to EN 13501-1 from Warrington Fire Research Centre for Sikafloor® -20 PurCem®: No.317045, dated 24th of March, 2012	(BS EN 13501-1)
Chemical resistance	Excellent chemical resistance to wide range of organic and inorganic acids,	

	alkalis, amines, salts and solvents. Please refer to the Chemical Resistance Chart or consult your local Technical Dept.
Permeability to water vapour	1.87 X 10^{-3} g/h.m^2 (ASTM E-96)
Water absorption	0.118% (ASTM C 413)

Temperature resistance

Total Layer Thickness	Minimum service Tª	Maximum service Tª	Steam cleanable
6mm	-25ºC	+80ºC	Not Recommended
9mm	-40ºC	+120ºC	Fully
12mm	-40ºC	+150ºC	Fully

Resistance to Thermal Shock	Pass (No cracks and/or elemination)	(ASTM C 884)

Softening point	>180ºC (356ºF) (ASTM D-1525 ISO 306 Method B)

APPLICATION INFORMATION

Mixing ratio

- Part A (pre-tinted) : B : C = 1 : 1 : 8.83 (packaging size = 3.0 : 3.0 : 26.5) by weight

Mix full units only.

Ambient air temperature

+10 °C min. / +30 °C max.

Consumption

~ 2.1 kg/m^2/mm

Layer thickness

6 – 9 mm

Relative air humidity

85 % 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 ºC

Substrate moisture content

Can be installed on substrates with higher moisture content. No ponding water. Check rising moisture. The substrate needs to be visibly dry and have adequate pull-off strength min 1.5 N/mm^2.
Sikafloor® -20 PurCem® withstand moisture vapor transmission values of 12 lbs/1000 ft2 when tested in accordance with the ASTM F 1869 Anhydrous Calcium Chloride Test Method

Pot Life

Temperatures	Time
+10 °C	~ 35 - 40 minutes
+20 °C	~ 22 - 25 minutes
+30 °C	~ 15 – 18 minutes
+35 °C	~ 10 - 15 minutes

Curing time

Substrate temperature	Foot traffic	Light traffic	Full cure
+10°C	~ 24 hours	~ 36 hours	~ 7 days
+20°C	~ 12 hours	~ 18 hours	~ 5 days
+30°C	~ 8 hours	~ 15 hours	~ 3 - 4 days

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

Waiting time to overcoating

- If you have primed the substrate before applying Sikafloor®-20 PurCem® on Sikafloor®-161 (all fully blinded), Scratch layer of Sikafloor®-21 PurCem® allow :

Always make sure primer is fully cured before application.

Substrate temperature	Minimum	Maximum
+10 °C	24 hours	7 days
+20 °C	12 hours	5 days
+30 °C	8 hours	4 days
+35 °C	6 hours	3 days

- Before any subsequent application over Sikafloor®-20 PurCem® allow :

Substrate temperature	Minimum	Maximum
+10 °C	24 hours	72 hours
+20 °C	16 hours	48 hours
+30 °C	8 hours	24 hours
+35 °C	6 hours	24 hours

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

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

The surface must be clean, dry and free of all contaminants such as dirt, oil, grease, coatings and surface treatments, etc. All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by vacuum. Pull of strength shall not be less than 1.5 N/mm². If in doubt apply a test area first.
Sikafloor® -20 PurCem® can be applied onto recent concrete over 7 to 10 days old or onto old damp concrete (SSD) without having to prime first, as long as the substrate fulfils the above requirements.

Surface Preparation :
Concrete substrates must be prepared mechanically using abrasive blast cleaning or scarifying equipment to remove cement laitance and achieve an open textured surface to achieve CSP 3-6 according to the International Concrete Repair Institute.
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 and/or vacuum.

Edge terminations :
All free edges and working day joints of Sikafloor® -20 PurCem®, whether at the perimeter, along gutters or at drains require extra anchorage to distribute mechanical and thermal stresses. This is best achieved by forming or cutting grooves in the concrete. Grooves must have a depth and width of twice the thickness of the Sikafloor®- PurCem®.
Refer to the edge details provided in the Method Statement. If necessary, protect all free edges with mechanically attached metal strips. Never featheredge, always turn into an anchor groove.

Expansion joints :
Expansion joints must be provided in the substrates at the intersection of dissimilar materials. Isolate areas subject to thermal stresses, vibration movements or around load-bearing columns and at vessels sealing rings.
Refer to the edge details provided in the Method Statement.

MIXING

- Sikafloor®-20 PurCem® is supplied in pre-weighed sets, ready for mixing.
- Premix Part A and Part B separately. Make sure all pigment is uniformly distributed with a low speed electric stirrer.
- Pour the resin and hardener (Part A and Part B) into the mixing vessel and blend for 30 seconds.
- Gradually add Part C (aggregate) to the mixed resin and hardener parts over a period of 15 seconds. **DO NOT DUMP!**
- Allow Part C to blend for further 2 minutes minimum, to ensure complete mixing and a uniform moist mix is obtained. During the operations, scrape down the sides and bottom of the container with a flat or straight edge trowel at least once (Parts A+B+C) to ensure complete mixing.
- Allow the mortar to stand for a few minutes to allow entrapped air to escape.

APPLICATION

APPLICATION OF THE SCRATCH COAT :
Priming of concrete substrates is usually not required under typical circumstances. Mix and apply a scratch coat of Sikafloor®-21PurCem® using steel trowels to spread the materials to approximately 1.5 mm thickness, (approximately 2.9 kg/m2). This application will seal the concrete surface, fill the surface irregularities including pock marks, non-moving control joints and cracks.
Broadcast the quartz sand onto the wet scratch coat. The consumption should not exceed 2.0kg/m2.
Allow overnight cure (16 hours at +20°C) before application of the body coat.

APPLICATION OF THE BODY COAT :
For placing the heavy duty screed mortars, Sikafloor-20 PurCem , the most convenient method is by using a screed box which allows spreading and controlling the applied thickness in a single action.
Another very practical way of spreading the material and controlling its thickness is using a pin-rake. This is most suitable for the easy trowel grade screed Sikafloor-20 PurCem .

After the material has been placed onto the surface, using a steel trowel, simply smooth over the joints that appear between each pass of the screed box, or between the pours of the material spread with the pin-rake.
Take care to spread newly mixed materials across the transition of previously applied mixes (wet edge), before the surface begins to set.
Finish the surface using a flat, round edge steel trowel.
Excessive backrolling or trowelling will bring up more resin to the surface, reducing the desired anti-slip surface texture which characterises this product.
A short pile roller can be used once or twice, and always in the same direction, to provide a more homogeneous finish to the surface. No excessive backrolling!

CLEANING OF EQUIPMENT

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

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.

IMPORTANT CONSIDERATIONS

- Do not apply to PCC (polymer modified cement mortars) that may expand due to moisture when sealed with an impervious resin.
- Always ensure good ventilation when using Sikafloor®-20 PurCem® in a confined space, to prevent excessive ambient humidity.
- Freshly applied Sikafloor®-20 PurCem®, must be protected from damp, condensation and direct water contact (rain) for at least 24 hours.
- Protect the substrate during application from condensation from pipes or any overhead leaks.
- Do not apply to cracked or unsound substrates.
- No excessive backrolling , Excessive backrolling or trowelling will bring up more resin to the surface, reducing the desired anti-lip surface texture which characterises this product .
- As a second texture option, selected mineral aggregates can be broadcast on the wet surface and sealed with a top coat of Sikafloor®-31 PurCem® to lock in the aggregate. In this last case, allow a minimum of 36 hours cure period at 20ºC before light traffic .
- Do not apply to water soaked, glistening wet concrete substrates.
- Do not apply to porous surfaces where significant moisture vapour transmission (out-gassing) will occur during application.
- For the highest hygienic demands, a subsequent top coat of Sikafloor®-31 PurCem® may be required. This must be applied within 48 hours after the initial Sikafloor®-20 PurCem® applications.
- Always allow a minimum of 48 hours after product application prior to placing into service in proximity with food stuffs.
- Products of the Sikafloor® -PurCem® product range are subject to discolouration and yellowing when exposed to UV radiation. Extend depends on colour. There are no measurable losses of any properties when this occurs and it is a purely aesthetical matter. Products can be used outside provided the change in appearance is acceptable by the customer.
- In some slow curing conditions, soiling of the surface may occur when opened to foot traffic, even though mechanical properties have been achieved. It is advised to remove dirt using a dry mop or cloth. Avoid scrubbing with water for the first three days.

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, the maximum allowed content of VOC Product category IIA / j type wb) is 140 g/l (Limit 2010), for the ready to use product. Sikafloor®-20 PurCem, is <140 g/l for the ready to use product.

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.

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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

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