Construction

Sikafloor®-20N PurCem®

Heavy duty, high strength, easy trowel, polyurethane screed

Product Description

Sikafloor®-20N PurCem® is a multi-component , resin rich, smooth trowel grade, coloured polyurethane modified, cement and aggregate screed suitable for floors subject to heavy loading, abrasion and chemical exposure.

It has a textured aggregate surface providing medium to heavy profile slip resistance and is typically installed at 6 to 9 mm thick.

Uses

In areas subject to heavy loading, abrasion and high chemical exposure, to provide a hard wearing surface, such as in:

- Food processing plants, in wet or dry process areas, freezers and coolers, thermal shock areas
- Chemical plants
- Laboratories
- Workshops
- Suitable for concrete protection providing physical resistance (Principle 5, method 5.1 of EN 1504-9)
- Suitable for concrete protection providing chemical resistance (Principle 6, method 6.1 of EN 1504-9)

Characteristics / Advantages

- Fluid consistency requires less labour to install than conventional heavy duty modified PU trowel grade screeds
- Excellent chemical resistance. Resists a 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 +160ºC (320ºF)
- Steam cleanable at 9 mm thick
- Bond strength in excess of the tensile strength of concrete. Concrete will fail first
- Non taint, odourless
- VOC free
- High mechanical resistance. Slip resistance. Natural textured surface provides anti-slip traction
- High abrasion resistance
- Rapid one step application. Normally, no concrete primer or sealer required
- Can be applied on to 7 to 10 day old concrete after adequate preparation and with a tensile bond strength in excess of 1.5 MPa (218 psi)
- Seamless, no additional expansion joints are necessary; simply maintain and extend existing expansion joints up through the Sikafloor®-PurCem® flooring system
- easy to maintain
- Wide range of application temperatures +10 ºC - +40 ºC

Environmental Information

Specific Approval/Standards

USGBC LEED® Rating

Conforms Section EQ (Indoor Environmental Quality), Credit 4.2
Low-Emitting Materials Paints and Coatings
Calculated VOC content ≤ 50 g / l

Tests

Approval / Standards

Polyurethane screed for concrete protection according to the requirements of EN 1504-2 and conforms to the requirements of EN 13813: 2002, DoP 02 08 02 02 001 0 000001 1088, certified by Factory Production Control Body, 0086, certificate 541325, and provided with the CE-mark.

Concerning contact with foodstuffs, it conforms to the requirements of:

- 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®)
- USDA. Acceptance for use in food plants in the USA
- Canadian Food Inspection Agency acceptance for use in food plants in Canada.
- 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®-20N 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® standard versions)

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.

Product Data

Form

Appearance / Colours

Part A: coloured liquid
Part B: brown liquid
Part C: natural grey powder

Available colours:

RAL 1001	**Beige**
RAL 3020	**Traffic Red**
RAL 3009	**Oxide Red**
RAL 5015	**Sky Blue**
RAL 6002	**Dark Green**
RAL 6019	**Pastel Green**
RAL 7042	**Light Grey**
RAL 7037	**Dark Grey**

Packaging	Part A+B+C:	14.9 litre (31.0 kg) ready to mix units
	Part A:	3.22 kg plastic drum
	Part B:	2.78 kg plastic jerrycan
	Part C:	25.0 kg plastic lined, double paper bags

Storage

Storage Conditions / Shelf-Life	If stored properly in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +10°C and +25°C.	
	Part A	12 months from date of production. **Protect from freezing**.
	Part B:	12 months from date of production. **Protect from freezing**
	Part C:	6 months from date of production. **Protect against humidity**.

Technical Data

Chemical Base	Part A:	Water borne polyol
	Part B:	isocyanate
	Part C:	Aggregates, cement and active fillers
Density	Part A:	~ 1.07 kg/l (at +20°C) (EN ISO 2811-1)
	Part B:	~ 1.24 kg/l (at +20°C) & (ASTM C 905)
	Part C:	~ 1.58 kg/l (at +20°C)
	Part A+B+C mixed:	~ 2.08 kg/l ± 0.03 (at +20°C)
Layer Thickness	6 mm min. / 9 mm max.	

Mechanical / Physical Properties

Capillary Absorption / Liquid water transmission rate	Permeability to water: <0.016 kg /m^2 h$^{0.5}$ Class Low (Average of three values, of Sikafloor® -20 PurCem®)	(EN 1062-3
Thermal Expansion Coefficient	α ≈ 2.96 x 10^{-5} per °C (temperature range: -20°C to +40°C)	EN 177(
Water Absorption	<0.25%	(ASTM C 413)
Permeability	To Water Vapour: 0.148 g/h/m^2 (6.1 mm)	(ASTM E-96)
Fire Rating	Class B$_{(fl)}$ S1	(BS EN 13501-1)
Service Temperature	The product is suitable for use when exposed to continuous temperatures, wet or dry, of up to +160°C. The minimum service temperature is -40ºC at 9 mm and -20ºC at 6mm.	
Compressive Strength	> 45 MPa after 28 days at +23°C / 50% r.h.	(ASTM C 579)
	> 50 N/mm^2 after 28 days at +23°C / 50% r.h.	(BS EN 13892-2)
Flexural Strength	> (3 mm) 9.5 MPa after 28 days at +23°C / 50% r.h.	(ASTM C 580)
	>10 N/mm^2 after 28 days at +23°C / 50% r.h.	(BS EN 13892-2)
Tensile Strength	> 4.3 N/mm^2 after 28 days at +23°C / 50% r.h.	(ASTM C 307)
Bond Strength	> 2.5 N/mm^2 (failure in concrete) (1.5 N/mm^2 is the minimum pull off strength of the recommended concrete substrate)	(EN 1542
Shore D Hardness	80 - 85	(ASTM D 2240)
Flexural Modulus	4310 ± 547 MPa	(ASTM C 580
Coefficient of Friction	Steel: 0.4 Rubber: 1.25	(ASTM D 1894-61T)
Slip Resistance	Slip Resistance Values	(BS 8204 Part 2)

Substrate	SRV Dry	SRV Wet
Sikafloor®-20N PurCem®	70	65

TRRL Pendulum, Rapra 4S Slider

Abrasion Resistance	Class “Special” Severe abrasion resistance AR 0.5 (Less than 0.05 mm wear depth)	(BS 8204 Part 2 (EN 13892-4
	2730 mg Taber Abrader H-22 wheel / 1000 gr / 1000 cycles	(ASTM D 4060-01
	Class A 6	(EN 13892-3
	5,2 $cm^3/50cm^2$	
Indentation	≈ 0%	(MIL - PFR 24613)
Impact Resistance	Class A (Less than 1 mm indentation depth)	(BS 8204 Part 1)
	Class III 2 pounds / 45 inches (3 mm thick)	(EN ISO 6272-1) (ASTM D 2794)

Resistance

Chemical Resistance	Resistant to many chemicals. Please ask for a detailed chemical resistance chart.	
Thermal Resistance	The product is designed to withstand thermal shock caused by steam cleaning when thickness is 9 mm.	
Resistance to Thermal Shock	Pass No cracks and/or delamination	(ASTM C 884
	Sikafloor® -20 PurCem® can be subject to thermal shock up to 120ºC at 9 mm	
Softening Point	>180ºC (356ºF) Tested on Sikafloor® -20 PurCem®	(ASTM D-1525 ISO 306 Method B

System Information

System Structure

Standard System Build-up Sikafloor®-20N PurCem®

- Bodycoat Sikafloor®-20N PurCem®

Alternative on green concrete:
- **Scratch coat** of Sikafloor®-21N PurCem® min 1.5 mm thick, lightly broadcast with quartz sand 0.4 – 0.7 mm.
- bodycoat of Sikafloor®-20N PurCem® 6 – 9 mm

Alternative when used with Sikafloor® epoxy primer:
- Primer with Sikafloor®-155W N , Sikafloor®-161 any of which must be fully blinded with quartz sand 0.4 - 0.7 mm for the subsequent application of Sikafloor®--20 PurCem®.
- Wear layer of Sikafloor®-20N PurCem®

Application Details

Consumption / Dosage

Primer see respective PDS

Scratch coat:
Sikafloor®-21PurCem® (part A+B+C) ~ 3 kg/m^2 for a 1.5 mm layer, and broadcast with quartz sand 0.4-0.7 mm, 1 – 1.6 kg/m^2

Bodycoat 6 - 9 mm:
Sikafloor®-20N PurCem® (part A+B+C) ~ 2.0 kg/m^2 / mm layer thickness.

Substrate Quality

Refer to the Sikafloor®- PurCem® method statement

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

The substrate must be clean dry, or saturated surface dry (SSD) and free of all contaminants such as oil, grease, coatings and surface treatments, etc.

If in doubt, apply a test area first.

Sikafloor® PurCem® can be applied onto recent concrete over 7 to 10 days old or onto old damp concrete (SSD), as long as the substrate fulfils the above requirements.

Substrate Preparation	Refer to the Sikafloor®- PurCem® method statement

Application Conditions / Limitations

Substrate Temperature	+10°C min. / +40°C max.
Ambient Temperature	+10°C min. / +40°C max.
Substrate Humidity	The substrate can be dry or damp with no free standing water (saturated surface dry or SSD). Sikafloor®- PurCem® screeds (19N, 20N) and detailing mortar (29N) can withstand moisture vapour transmission values of around 12 lbs/1000 ft^2 tested according to ASTM F 1869 Anhydrous Calcium Chloride test. Refer to System Structure and options for substrate priming.
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.

Application Instructions

Mixing	Part A : B : C = 1 : 0.86 : 7.76 (packaging size = 3.22 : 2.78 : 25) by weight
Mixing Time	Refer to the Sikafloor®- PurCem® method statement Material and ambient temperature will affect the mixing process. If necessary, condition the materials for best use to 15ºC – 21ºC Premix part A with a low speed electric stirrer and add part B and premix for 30 seconds. Make sure all pigment is uniformly distributed. Start the pan mixer or double spiral forced mixer and gradually add part C (aggregate) to the mixed resin. DON'T DUMP! Allow part C to blend for further 2 minutes minimum, to ensure complete mixing and a uniform 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. **Mix full units only.**
Mixing Tools	Refer to the Sikafloor®- PurCem® method statement
Application Method / Tools	Refer to the Sikafloor®- PurCem® method statement Pour the mixed Sikafloor®-20N PurCem® onto the substrate and spread evenly with a rake or screed box to the required thickness. 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. 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 back rolling! Excessive back rolling or trowelling will bring up more resin to the surface, reducing the desired anti-slip 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 1-2 x Sikafloor®-31N PurCem® to lock in the aggregate. In this last case, allow a minimum of 36 hours cure period at 20ºC before light traffic. This will limited the use of steam cleaning on the surface.
Cleaning of Tools	Clean all tools and application equipment with Thinner C immediately after use. Hardened / cured material can only be mechanically removed.

Potlife

Temperature	Time
+10°C	~ 35 - 40 minutes
+20°C	~ 18 - 22 minutes
+30°C	~ 10 - 15 minutes

Waiting Time / Overcoating

If you have primed, before applying Sikafloor®-20N PurCem® on Sikafloor®-155 WN or Sikafloor®-161 (all fully blinded), allow:

	Waiting time	
Substrate temperature	Minimum	Maximum
+10°C	24 hours	12 days
+20°C	12 hours	7 days
+30°C	6 hours	4 days
+35ºC	4 hours	2 days

Always make sure primer is fully cured before application.

Before overlaying Sikafloor®-20N PurCem® with Sikafloor®-20N PurCem® allow:

	Waiting time	
Substrate temperature	Minimum	Maximum
+10°C	16 hours	72 hours
+20°C	8 hours	48 hours
+30°C	4 hours	24 hours
+35°C	4 hours	24 hours

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

This table above applies also for application on to the patching mortar made by aggregate addition.

Notes on Application / Limitations

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®-20N PurCem® in a confined space, to prevent excessive ambient humidity.

Freshly applied Sikafloor®-20N PurCem® must be protected from damp, condensation and water for at least 24 hours.

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 when exposed to UV radiation. Extent 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.

Applications of less than the recommended 6 mm can result in unacceptably rough surfaces, particularly in food industries.

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.

Due to the technology used, colour stability of the products cannot be guaranteed when exposed to UV light.

Construction

Curing Details

Applied Product ready for use

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

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

Cleaning / Maintenance

Methods

Refer to the method statement Sikafloor®- Cleaning Regime with cleaning agents from Diversey Care™

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 should refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

Legal Notes

Sika South Africa (Pty) Ltd
9 Hocking Place,
Westmead, 3608
South Africa

E-mail: headoffice@za.sika.com
Phone +27 31 792 6500
Telefax +27 31 700 1760
www.sika.co.za