

Sikafloor®-22N PurCem®

Medium to heavy duty - textured self-levelling polyurethane screed with anti-slip properties

Product Description

Sikafloor®-22N PurCem® is a three part, water dispersed high wear resistant polyurethane modified, cement and aggregate screed self-levelling properties.

It is broadcast with quartz and or silica carbide aggregates to increase surface texture and slip resistance. It is typically installed at 4.5 to 9 mm thick.

Uses

In areas of high loading, abrasion and high chemical exposure, to provide a 4.5 to 9 mm thick, textured, flat and decorative wearing surface, such as in:

- Food and beverage processing plants, in wet or dry process areas, freezers and coolers, thermal shock areas
- Chemical plants
- Laboratories
- Workshops
- Areas requiring resistance above that of other resin systems

Characteristics / Advantages

- **Fast cure system.** Turn around times for project completion greatly reduced
- **Food grade approved - Non taint - (see approvals below)**
- **Able to be applied to green concrete** - on to 7 to 10 day old concrete with a moisture level of Max.10%, after adequate preparation and with a tensile bond strength in excess of 1.5 MPa (218 psi)
- **Low VOC** - (Cert. Available)
- **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
- **Thermal cycling resistant** - 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 -40°C up to +120°C
- **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.
- **High abrasion resistance** resulting from its silica aggregate structure
- **Easily maintained**

Construction



Tests

Approval / Standards	<p>Conforms to the requirements of EN 13813: 2002 as CT – C50 – F7 – AR 0,5</p> <p>Conforms to the requirements of EN 1504-2 for principles 5 (PR) and 6 (CR) as a Coating (C)</p> <p>Concerning contact with foodstuffs, it conforms to the requirements of:</p> <ul style="list-style-type: none">- 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, Registered N° 24549 U 07, dated May 18th, 2007. (Tests performed on Sikafloor®-20N/-21N and -31N PurCem®.)- USDA. Acceptance for use in food plants in the US- 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/98152/5, dated March 30th, 2007 <p>Test reports from Warrington Fire Research Centre for Sikafloor® -21N PurCem®: WFRC No. 163875, dated 7th of July, 2008 (BS EN ISO 11925-2:2002) and WFRC No. 163878, dated 7th of July, 2008 (BS EN ISO 9239-1:2002) for Fire rating</p> <p>Fire classification report according to EN 13501-1 from Warrington Fire Research Centre for Sikafloor®-21N PurCem®: WFRC No.174952, dated 11th of July, 2008.</p> <p>All other values indicated are internal test results.</p>
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Product Data

Colours	Available colours (all are approximate):Slate grey (~ RAL 7015), Beige (~ RAL 1001), Maize yellow (~ RAL 1006), Oxide red (~ RAL 3009), Grass green (~ RAL 6010), Dusty grey (~ RAL 7037),
Packaging	Sikafloor®-21 PurCem® FG Part A+B+C: 20 kg (10.53L) ready to mix units Sikafloor®-31N PurCem® Part A+B+C 4.7kg (3.3L) ready to mix units
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. Parts A and B: 12 months from date of production. Must be protected from frost. Part C: 6 months from date of production. Must be protected from humidity.

Technical Data

Density	Sikafloor®-21 PurCem® FG - Part A+B+C mixed: 1.90 kg/l ± 0.03 (at +20°C) Sikafloor®-31N PurCem® - Part A+B+C Mixed: 1.43kg/l +- 0.03 (at +20°C)
Layer Thickness	4.5 mm min. / 9 mm max.
Thermal Expansion Coefficient	$\alpha \approx 1.6 \times 10^{-5}$ per °C (ASTM E 381, ASTM D-696, ISO 11359) (temperature range: -20°C to +60°C)
Water Absorption	0.10% (ASTM C 413)
Permeability	To Water Vapour: 0.260 g/h/m ² (1.2 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 +120°C. The minimum service temperature is -40°C.									
Mechanical / Physical Properties										
Compressive Strength	> 45 MPa after 28 days at +23°C / 50% r.h. > 50 N/mm ² after 28 days at +23°C / 50% r.h.	(ASTM C 579) (BS EN 13892-2)								
Flexural Strength	> 14.7 MPa after 28 days at +23°C / 50% r.h. >10 N/mm ² after 28 days at +23°C / 50% r.h.	(ASTM C 580) (BS EN 13892-2)								
Tensile Strength	> 6.5 N/mm ² after 28 days at +23°C / 50% r.h.	(ASTM C 307)								
Bond Strength	> 1.75 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	3900 MPa	(ASTM C 580)								
Coefficient of Friction	Steel: 0.3 Rubber: 0.5	(ASTM D 1894-61T)								
Slip Resistance	Slip Resistance Values	(BS 8204 Part 2)								
	<table border="1"> <thead> <tr> <th>System</th> <th>Slip rating</th> </tr> </thead> <tbody> <tr> <td>Sikafloor®-21 PurCem® FG - 80 mesh silica carbide 5% by vol. mixed integrally into 1 seal coat of Sikafloor®-31N PurCem®</td> <td>R11</td> </tr> <tr> <td>Sikafloor®-21 PurCem® FG - broadcast with 0.8 - 1mm aggregate 1 seal coat of Sikafloor®-31N PurCem® Sikafloor®-21 PurCem® FG Base - 60 mesh Silica carbide 5%by vol. mixed integrally into 1 seal coat of Sikafloor®-31N PurCem®</td> <td>R12</td> </tr> <tr> <td>Sikafloor®-21 PurCem® FG broadcast with 1.5 - 2mm aggregate. 1-2 seal coats of Sikafloor®-31N PurCem® Sikafloor®-21 PurCem FG Base 45 mesh Silica carbide 5% by vol. Mixed integrally into 1 seal coat of Sikafloor®-31N PurCem®</td> <td>R13</td> </tr> </tbody> </table>	System	Slip rating	Sikafloor®-21 PurCem® FG - 80 mesh silica carbide 5% by vol. mixed integrally into 1 seal coat of Sikafloor®-31N PurCem®	R11	Sikafloor®-21 PurCem® FG - broadcast with 0.8 - 1mm aggregate 1 seal coat of Sikafloor®-31N PurCem® Sikafloor®-21 PurCem® FG Base - 60 mesh Silica carbide 5%by vol. mixed integrally into 1 seal coat of Sikafloor®-31N PurCem®	R12	Sikafloor®-21 PurCem® FG broadcast with 1.5 - 2mm aggregate. 1-2 seal coats of Sikafloor®-31N PurCem® Sikafloor®-21 PurCem FG Base 45 mesh Silica carbide 5% by vol. Mixed integrally into 1 seal coat of Sikafloor®-31N PurCem®	R13	
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	Tested as per - AS4586:1999									
Abrasion Resistance	Class "Special" Severe abrasion resistance AR 0.5 (Less than 0.05 mm wear depth) 2.260 mg Taber Abrader H-22 wheel / 1000 gr / 1000 cycles	(BS 8204 Part 2) (EN 13892-4) (ASTM D 4060-01)								
Indentation	≈ 0%	(MIL – PFR 24613)								
Impact Resistance	Class A (Less than 1 mm indentation depth) 6.81 joules (5.02 ft-lb) at 3 mm (1/8 th in) of thickness	(BS 8204 Part 1) (ASTM D 2794)								
Resistance										
Chemical Resistance	Resistant to many chemicals. Please ask for a detailed chemical resistance chart.									
Thermal Resistance	The product is not designed to withstand thermal shock. Hot steam cleaning is not recommended. Use Sikafloor®-20N PurCem®. Sikafloor®-22N PurCem® can be subject to thermal shock up to 70°C at 6 mm									
Resistance to Thermal Shock	Pass	(ASTM C 884)								

Softening Point 130°C

System Information

System Structure

Use the products mentioned below as indicated in their respective Product Data Sheets.

Substrate Priming Systems

Substrate priming is normally not required under typical circumstances. (See Substrate Quality). When necessary use the systems indicated below.

System 1: moisture control on green concrete:

- Primer:
Scratch coat of Sikafloor®-21 PurCem® FG 1.5 mm thick, lightly broadcast with quartz sand 0.4 – 0.7 mm.

System2: Inadequate substrate and moisture content below 4%

- Primer:
Sikafloor®-156 or Sikafloor®-161
either of which must be fully blinded with quartz sand 0.4 - 0.7 mm

Heavy duty screed

- **Layer thickness: 7 - 9 mm**
- Sikafloor®-21PurCem® FG base -5-6 mm
- Fully broadcast to excess
- Finish coat - Sikafloor®-31N PurCem®

Medium to heavy duty screed:

- **Layer thickness: 4.5 - 6 mm**

Option one:

- Sikafloor®-21 PurCem® FG base -3-4 mm
- Fully broadcast to excess
- Finish coat Sikafloor®-31N PurCem®

The broadcasting of the aggregate will increase the final thickness of the application by about 50%. (i.e. 4.5 mm will be about 6 mm and an initial layer of 6 mm will be about 8 - 9 mm)

Option two:

- Sikafloor®-21 PurCem® FG base 3 - 4 mm
- Finish coat Sikafloor®-31N PurCem® applied incorporating Silica carbide @5%

Scratch coat / levelling of substrate

A scratch coat 1.5 mm thick, lightly broadcast with quartz sand 0.4 – 0.7 mm will seal the surface and fill irregularities and improve appearance of the final layer.

- Isolated substrate imperfections can be filled with Sikafloor®-21 PurCem® FG
- The base system can be applied subsequently as soon as the in fill
- Material has commenced initial cure - approx 20-40 min

Coving and detailing and vertical applications:

- Primer:
Sikafloor®-156 / -161
Re-prime if no longer tacky.
 - Coving Mortar:
Sikafloor®- 29N PurCem®
 - Seal coat:
1-2 x Sikafloor®- 31N PurCem®
-

Application Details

Consumption / Dosage *Primer (If priming is necessary, see System Structure above and respective PDS)*

Scratch coat:

Typically not required.

Self-levelling screed 4.5 - 9 mm:

Sikafloor®-21 PurCem FG® 1.9 kg/m² / mm layer thickness.

Broadcast aggregate:

Fresh surface must be broadcast to refusal ~ 2 - 4 kg/m²

Seal coat on broadcast profile:

Sikafloor®-31N PurCem® 1.2 – 1.4 m²/kg (1.7 – 2m² per L)

Seal coat on smooth Sikafloor®-21 PurCem® FG:

Sikafloor®-31N PurCem® 2.4 – 2.8 m²/kg (3.5 -4m² per L)

This figure is theoretical depending on gradation selection of non slip aggregate.

Substrate Quality

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 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.

Substrate priming is normally not required under typical circumstances. However due to variations in concrete quality, surface conditions, surface preparation and ambient conditions, reference test areas are recommended to determine whether priming is required to prevent the possibility of blisters, debonding pinholes and other aesthetic variations.

Sikafloor®-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.

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 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.

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.

Substrate imperfections.

Can be filled

Edge terminations.

All free edges and working day joints of Sikafloor®-22N 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.

Expansion joints already existing in the substrate must be mirrored in the PurCem system. These joints are to be cut and filled using Sikaflex Tank. Polyurethane sealant

Application Conditions/Limitations

Optimum Substrate Temperature	+10°C min. / +30°C max.
Optimum Ambient Temperature	+10°C min. / +30°C max. *note - product can be installed down+2 degrees C however cure times will be significantly slower
Substrate Humidity	The substrate can be dry or damp with no free standing water (saturated surface dry or SSD). If any moisture is detectable according to ASTM D 4263 (Polyethylene sheet test) for the thin screeds (-21FG, -22N) and the coating (-31N), additional tests must be done to quantify actual relative moisture content amount or vapour drive. 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 Time	Material and ambient temperature will affect the mixing process. If necessary, condition the materials for best use to 15°C - 21°C. Premix part A and B separately, make sure all pigment is uniformly distributed with a low speed electric stirrer. Start mixer and add parts A and then B and blend for 30 seconds. Gradually add part C (aggregate) to the mixed resin parts over a period of 15 seconds. DON'T 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. Mix full units only.
Mixing Tools	Use a low speed electric stirrer (300-400 rpm) for mixing parts A and B. For preparation of the mortar mix use a pan type revolving mixer.
Application Method / Tools	Prior to application, confirm substrate moisture content, r.h. and dew point. Priming: Neither priming or applying a scratch coat are usually necessary. (See Substrate Quality) Body coat. Pour the mixed Sikafloor®-21 PurCem® FG onto the substrate and work with a trowel or pin screed to the desired thickness, achieving a flat surface. Take care to spread newly placed materials across the transition of previously applied mixes before the surface begins to set. Remove air with a spike roller immediately (less than two minutes). Sikafloor®-21 PurCem® FG requires aggregate broadcast onto the wet surface. Broadcast selected aggregates onto the wet surface to excess. Remove excess broadcast aggregate by broom then vacuum. This can be carried out as soon as the base is cured sufficiently - approx 4-6 hours depending on substrate and ambient temperatures Finish Coat. Apply Sikafloor®-31N PurCem® by pouring out then squeegee or steel trowel the product into the aggregate profile. Excess product can be immediately removed by roller to give the required finish surface profile. Important notes ; Discard mixing buckets every 2-4 mixes depending on ambient temp. Product must be placed on the floor immediately after mixing Subsequent mixes must be placed in a continuous fashion to ensure the joining of the wet edge is timely.

Failure to apply Sikafloor®-31N PurCem® in a timely and continuous process will result in uneven texture, gloss level and colour.

Cleaning of Tools

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

Pot life

Refer to individual TDS for Sikafloor 21PurCemFG and Sikafloor®-31N PurCem®

Waiting Time / Overcoating

Top coat application - Sikafloor®-31N PurCem® to Sikafloor®-21 PurCem® FG

Degrees	Time – Approx.
15	6-7 hours
20	5-6 hours
25	4-5 hours
30	3-4 hours

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

Notes on Application / Limitations

Construction joints require pre-treatment with a scratch coat to verify and seal loss of material through the joint.

It is advisable to perform a groove along the perimeter of the application area particularly if there are columns or gullies in the floor surface, as indicated in the application details of the Method Statement for Application, to prevent curling during curing. Large areas do not require perimeter groove. Width and depth must be twice the thickness of the floor finish.

Do not featheredge.

Do not apply to PCC (polymer modified cement mortars) that may expand when sealed with an impervious resin."

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.

Sika® Thinner C is flammable. NO NAKED FLAMES.

Always ensure good ventilation when using Sikafloor®-22N PurCem® in a confined space, to prevent excessive ambient humidity.

After application, Sikafloor®-22N PurCem® must be protected from damp, condensation and direct water contact (rain) for 24 hours.

Hot steam cleaning may lead to delamination due to thermal shock.

Do not apply below 9°C or above 31°C or a maximum relative humidity above 85%.

Do not apply to un-reinforced sand cement screeds, asphaltic or bituminous substrate, glazed tile or non-porous brick, tile and magnesite, copper, aluminium, soft wood or urethane composition, elastomeric membrane and fibre reinforced polyester (FRP) composites.

Do not apply to wet or green concrete or polymer modified patches if the moisture content is above 10%.

Do not apply to concrete if the air or substrate temperature is within 3°C of the dew point.

Protect the substrate during application from condensation from pipes or any overhead leaks.

Do not mix Sikafloor®-PurCem® products by hand. Use only mechanical means.

Do not apply to cracked or unsound substrates.

Colour uniformity can not be completely guaranteed from batch to batch (numbered). Take care when using Sikafloor®-PurCem® products to draw from inventory in batch number sequence. Do not mix batch numbers in a single floor area.

Products of the Sikafloor®-PurCem® product range are subject to yellowing when exposed to UV radiation. There are no measurable losses of other properties when this occurs and it is a purely aesthetic matter. Products can be used outside provided the change in appearance is acceptable by the customer.

Good towelling and levelling prior to broadcast will result better surface appearance (reduced waviness) and more homogeneous aspect of the seal coat.

Curing Details

Applied Product ready for use

Substrate temperature	Foot traffic	Light traffic	Heavy Traffic
+10°C	~ 10 hours	~ 24 hours	~ 4 days
+20°C	~ 8 hours	~ 15 hours	~ 2 days
+30°C	~ 5 hours	~ 10 hours	~ 1 days

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

Cleaning / Maintenance

Methods

To maintain the appearance of the floor after application, Sikafloor®-22N PurCem® must have all spillages removed immediately and must be regularly cleaned using rotary brushes, mechanical scrubbers, scrubber dryers, high pressure washers, wash and vacuum techniques, etc., using suitable detergents and waxes.

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.

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 Australian version of the Product Data Sheet for the product concerned, copies of which will be supplied on request.

