

# Sikafloor®-20 N PurCem®

## Heavy duty, high strength, easy trowel, polyurethane screed

### Description

Sikafloor®-20 N PurCem® is a four part, resin rich, water dispersed, high strength, 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:

- Food processing plants, in wet or dry process areas, freezers and coolers, thermal shock areas
- Chemical plants
- Laboratories
- Workshops

### 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
- 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
- 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. 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
- It is possible to apply 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)
- Sikafloor®- PurCem® screeds (20N) and detailing mortar (29N) can withstand moisture vapour transmission values of 12lbs/1000 ft<sup>2</sup> when tested in accordance with the ASTM F 1869 Anhydrous Calcium Chloride Test Method
- Rapid one step application. Normally, no concrete primer or sealer required
- Fast curing will allow foot traffic after twelve hours and full service after two days. Production downtime is cut to an absolute minimum.
- Jointless. Extra expansion joints are not necessary; simply maintain and extend existing expansion joints up through the Sikafloor®-PurCem® flooring system
- Easily maintained

Construction

## Tests

### Approval / Standards

Conforms to the requirements of EN 13813: 2002 as CT - C50 - F10 - AR0.5

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, Registered N° 24549 U 07, dated May 18<sup>th</sup>, 2007.
- 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/98152/2A, dated March 6th, 2007

Test reports from Warrington Fire Research Centre for Sikafloor®-20 N PurCem®

Fire classification report according to EN 13501-1 from Warrington Fire Research centre for Sikafloor®-20 N PurCem® : WRFC No. 174965, dated 11<sup>th</sup> of July 2008

All other values indicated are internal test results.

## Product Data

### Form

**Colour** Slate Grey RAL 7015  
Oxide Red RAL 3009

### Packaging

Part A	5 kg
Part B	4.6 kg
Part C	2 x 19.4 kg
Part D	1.6 kg

Part A+B+C+D: 50 kg 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 and D: 6 months from date of production. Must be protected from humidity.

### Technical Data

#### Chemical Base

Part A: Water borne polyol  
Part B: isocyanate  
Part C and D: 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 and D: ~ 2.7 kg/l (at +20°C)  
Part A+B+C+D mixed: ~ 2.08 kg/l ± 0.03 (at +20°C)

#### Capillary Absorption

Permeability to water: 1.07 g/h/m<sup>2</sup> (EN 1062-3)  
(3 mm)

#### Layer Thickness

6 mm min. / 9 mm max.

#### Thermal Expansion Coefficient

$\alpha \approx 2.7 \times 10^{-5}$  per °C (ASTM E 381, ASTM D-696, ISO 11359)  
(temperature range: -20°C to +60°C)

#### Water Absorption

0.22% (ASTM C 413)

<b>Permeability</b>	To Water Vapour: 0.148 g/h/m <sup>2</sup> (6.1 mm)	(ASTM E-96)
<b>Service Temperature</b>	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	
<b>Mechanical / Physical Properties</b>		
<b>Compressive Strength</b>	> 45 MPa after 28 days at +23°C / 50% r.h. > 50 N/mm <sup>2</sup> after 28 days at +23°C / 50% r.h.	(ASTM C 579) (BS EN 13892-2)
<b>Flexural Strength</b>	> (3 mm) 9.5 MPa after 28 days at +23°C / 50% r.h. >10 N/mm <sup>2</sup> after 28 days at +23°C / 50% r.h.	(ASTM C 580) (BS EN 13892-2)
<b>Tensile Strength</b>	> 4.3 N/mm <sup>2</sup> after 28 days at +23°C / 50% r.h.	(ASTM C 307)
<b>Bond Strength</b>	> 1.75 N/mm <sup>2</sup> (failure in concrete)  (1.5 N/mm <sup>2</sup> is the minimum pull off strength of the recommended concrete substrate)	(EN 1542)
<b>Shore D Hardness</b>	80 - 85	(ASTM D 2240)
<b>Flexural Modulus</b>	3750 MPa	(ASTM C 580)
<b>Coefficient of Friction</b>	Steel: 0.4 Rubber: 1.25	(ASTM D 1894-61T)
<b>Abrasion Resistance</b>	Class "Special" Severe abrasion resistance AR 0.5 (Less than 0.05 mm wear depth)  2730 mg Taber Abrader H-22 wheel / 1000 gr / 1000 cycles	(BS 8204 Part 2) (EN 13892-4)  (ASTM D 4060-01)
<b>Impact Resistance</b>	Class A (Less than 1 mm indentation depth)  2 pounds / 45 inches (3 mm)	(BS 8204 Part 1)  (ASTM D 2794)
<b>Resistance</b>		
<b>Chemical Resistance</b>	Resistant to many chemicals. Please ask for a detailed chemical resistance chart.	
<b>Thermal Resistance</b>	The product is designed to withstand thermal shock caused by steam cleaning when thickness is 9 mm.	
<b>Resistance to Thermal Shock</b>	Pass	(ASTM C 884)
<b>Softening Point</b>	130°C	
<b>System Information</b>	Use the products mentioned below as indicated in their respective Technical Data Sheets.  Substrate Priming Systems	
<b>System Structure</b>	<p><i>Substrate priming is normally not required under typical circumstances. (See Substrate Quality). When necessary use the systems indicated below.</i></p> <p><i>System 1: Moisture control on green concrete:</i></p> <ul style="list-style-type: none"> <li>- Primer: Scratch coat of Sikafloor®-21 FG PurCem® 1.5mm thick, lightly broadcast with quartz sand 0.4 – 0.7mm.</li> </ul> <p><i>System 2: Inadequate substrate and moisture content between 4% and 6%</i></p> <ul style="list-style-type: none"> <li>- Primer: Sikafloor®-156 fully blinded with quartz sand 0.4 - 0.7 mm for the subsequent application of Sikafloor®-20 N PurCem®.</li> </ul> <p><i>System 3: Inadequate substrate and moisture content below 4%</i></p> <ul style="list-style-type: none"> <li>- Primer: Sikafloor®-156 or Sikafloor®-161 any of which must be fully blinded with quartz sand 0.4 - 0.7 mm for the</li> </ul>	



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subsequent application of Sikafloor®-20N PurCem®

On porous excessively absorbent substrates use Sikafloor®- 156, in two coats, the first thinned with Thinner 10% water and the second broadcast to refusal.

*Heavy duty screed*

- Layer thickness:  
6 - 9 mm
- Screed:  
Sikafloor®-20 N PurCem®

*Medium to heavy duty screed:*

- Layer thickness:  
4.5 - 6 mm (including scratch coat)
- Scratch coat:  
A scratch coat Sikafloor®-21 FG PurCem®, 1.5 mm thick will seal the surface and fill irregularities and improve appearance of the final layer.
- Standard screed:  
Sikafloor®-20 N PurCem®
- High slip resistance screed:  
(Scratch coat typically not required)  
Sikafloor®-20 N PurCem® broadcast with coloured quartz sand or natural quartz sand sealed with 1 - 2 coats of Sikafloor®-31 N PurCem® depending on the desired texture.

*Coving and detailing and vertical applications:*

- Primer:  
Primer or Sikafloor®-156  
Reprime if no longer tacky.
- Coving Mortar:  
Sikafloor®-29 N PurCem®
- Seal coat:  
1 x Sikafloor®-31 N PurCem®

NOTE: These system configurations must be fully complied with as described and may not be changed.

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## Application Details

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

*Screed 6 - 9 mm:*

Sikafloor®-20 N PurCem® (part A+B+C+D) ~ 2.0 kg/m<sup>2</sup> / mm layer thickness.

This figure is theoretical and does 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 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.

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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 and/or vacuum.

Edge terminations.

All free edges and working day joints of Sikafloor®-20N / 21FG and 29N 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.

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### Application Conditions / Limitations

**Substrate Temperature** +10°C min. / +30°C max.

**Ambient Temperature** +10°C min. / +30°C max.

**Substrate Moisture Content** The substrate can be dry or damp with no free standing water (saturated surface dry or SSD)

Sikafloor® - PurCem® screeds (20N) and detrailling mortar (29N) can withstand moisture vapour transmission values of around 12lbs/ 1000 ft<sup>2</sup> tested according to ASTM F 1869 Anhydrous Calcium Chloride test.

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<b>Relative Air Humidity</b>	85% max.								
<b>Dew Point</b>	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.								
<b>Application Instructions</b>									
<b>Mixing</b>	Part A : B : C/D = 1 : 0.92 : 8.08 (packaging size = 5 : 4.6 : 38.8 : 1.6) by weight								
<b>Mixing Time</b>	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 individually, 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.  While mixing, add component D within 15 seconds.  Gradually add part C (aggregate) to the mixed resin parts over a period of 15 seconds. <b>DO NOT DUMP.</b> 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. <b>Mix full units only.</b>								
<b>Mixing Tools</b>	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.								
<b>Application Method / Tools</b>	Prior to application, confirm substrate moisture content, r.h. and dew point.  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. Allow the mortar to stand for a few minutes to allow entrapped air to escape.  Finish the surface using a flat, round edge steel trowel.  A short pile roller can be used <i>once or twice</i> , and always in the same direction, to provide a more homogeneous finish to the surface. No excessive backrolling! Excessive backrolling 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 x Sikafloor®-31N PurCem® to lock in the aggregate. In this last case, allow a minimum of 36 hours cure period at 20°C before light traffic.								
<b>Cleaning of Tools</b>	Clean all tools and application equipment with Thinner C immediately after use. Hardened / cured material can only be mechanically removed.								
<b>Potlife</b>	<table border="1"> <thead> <tr> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>+10°C</td> <td>~ 35 - 40 minutes</td> </tr> <tr> <td>+20°C</td> <td>~ 18 - 22 minutes</td> </tr> <tr> <td>+30°C</td> <td>~ 10 - 15 minutes</td> </tr> </tbody> </table>	Temperature	Time	+10°C	~ 35 - 40 minutes	+20°C	~ 18 - 22 minutes	+30°C	~ 10 - 15 minutes
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## Waiting Time / Overcoating

If you have primed, before applying Sikafloor®-20 N PurCem® on Sikafloor®-156 or (all fully blinded), allow:

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

Always make sure primer is fully cured before application.

Before any subsequent application on Sikafloor®-20 N PurCem® allow:

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

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

## Notes on Application / Limitations

Products of the Sikafloor®-20 N PurCem® product range are subject to yellowing when exposed to UV radiation. There is no significant loss of other 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.

A retaining groove must be placed at exposed edges along the application area (perimeter, joints, connections, plinths, columns, covings and drains / gullies) as indicated in the application details of the method statement for application, to prevent curling during curing. Width and depth must be twice the thickness of the floor finish.

Do not apply to PCC (polymer modified cement mortars) that may expand due to moisture 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®-20 N PurCem® in a confined space, to prevent excessive ambient humidity.

Sikafloor®-20 N PurCem® shares the resin (part A) and hardener (part B) with Sikafloor®-21 FG PurCem®. Make sure the correct pack sizes of aggregate are used.

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

Improved slip resistance can be obtained by broadcasting the surface with aggregate of suitable granulometry and back rolling with a short pile roller (1 - 2 passes only).

For the highest hygienic demands, a subsequent top coat of Sikafloor®-31N PurCem® may be required. This must be applied within 48 hours after the initial Sikafloor®-20 N PurCem® application.

Always allow a minimum of 48 hours after product application prior to placing into service in proximity with food stuffs.



## 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

To maintain the appearance of the floor after application, Sikafloor® -20N 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.

### 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 Technical 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.

### Important Notification

The information, and, in particular, the recommendations relating to the application and end-use of Sika's 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 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 proprietary rights of third parties must be observed. All orders are accepted subject of our terms and conditions of sale. Users should always refer to the most recent issue of the Australian version of the Technical Data Sheet for the product concerned, copies of which will be supplied on request.

PLEASE CONSULT OUR TECHNICAL DEPARTMENT FOR FURTHER INFORMATION.

