

Sikafloor[®]-20 N PurCem[®]

Heavy duty, high strength, easy trowel, polyurethane screed

Positioning Description

Sikafloor-20 N PurCem is a four part, resin rich, water dispersed, high strength, 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 physical resistance (Principle 5, method 5.1 of EN 1504-9)
- Suitable for chemical resistance (Principle 6, method 6.1 of EN 1504-9)

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 Sika's Technical Sales representative.
- 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 9mm 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
- Rapid one step application. Normally, no concrete primer or sealer required
- 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 (20 N) and detailing mortar (29 N) can withstand moisture vapour transmission values of 12 lbs/1000 ft² when tested in accordance with the ASTM F 1869 Anhydrous Calcium Chloride Test Method
- 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



Approval / Standards

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)

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 18th, 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: WFRC No. 163876, dated 7th of July, 2008 (BS EN ISO 11925-2:2002) and WFRC No. 163877, dated 7th of July, 2008 (BS EN ISO 9239-1:2002) for Fire rating

Fire classification report according to EN 13501-1 from Warrington Fire Research Centre for Sikafloor-20 N PurCem: WFRC No.174965, dated 11th of July, 2008

Capillary absorption and permeability to water report from Taylor Woodrow Construction, Ref. 11069, dated Dec. 5th, 2008

All other values indicated are internal test results.

Product Data

Appearance / Colours

Part A: Milky liquid
Part B: Brown liquid
Part C: Natural Grey powder
Part D: Coloured powder
Available Colours: Beige (~RAL1001)
Also available in a limited range of RAL colours subject to special order requirements

Packaging

Part A+B+C+D: 50kg ready to mix units
Part A: 5.00kg plastic pail
Part B: 4.6kg plastic pail
Part C: 2 x 19.4kg plastic lined, double paper bags
Part D: 1.6kg foil lined bag

Storage & 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: Twelve (12) months from date of production. Must be protected from frost.

Part C and D: Six (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: Aggregates, cement and active fillers
Part D: Colour pack and active fillers

Density

Part A+B+C+D mixed: ~ 2.08kg/l ± 0.03 (at +20°C)

Capillary Absorption

Permeability to water: 0.026kg / m² .h^{0.5} (EN 1062-3)
Class Low

Layer Thickness

6mm min. / 9mm 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)

Permeability

To Water Vapour: 0.148g/h/m² (ASTM E-96)
(6.1mm)

Fire Rating

Class B_(fi) 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 > 45MPa after 28 days at +23°C / 50% r.h. (ASTM C 579)

> 50N/mm² after 28 days at +23°C / 50% r.h. (BS EN 13892-2)

Flexural Strength > (3mm) 9.5MPa after 28 days at +23°C / 50% r.h. (ASTM C 580)

> 10N/mm² after 28 days at +23°C / 50% r.h. (BS EN 13892-2)

Tensile Strength > 4.3N/mm² after 28 days at +23°C / 50% r.h. (ASTM C 307)

Bond Strength > 1.75N/mm² (failure in concrete) (EN 1542)

(1.5N/mm² is the minimum pull off strength of the recommended concrete substrate)

Shore D Hardness 80 - 85 (ASTM D 2240)

Flexural Modulus 3750 MPa (ASTM C 580)

Coefficient of Friction Steel: 0.4 (ASTM D 1894-61T)

Rubber: 1.25

Slip Resistance Slip Resistance Values (BS 8204 Part 2)

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

TRRL Pendulum, Rapra 4S Slider

Abrasion Resistance Class "Special" Severe abrasion resistance (BS 8204 Part 2)
AR 0.5 (EN 13892-4)

(Less than 0.05mm wear depth)

2730 mg (ASTM D 4060-01)

Taber Abrader H-22 wheel / 1000gr / 1000 cycles

Indentation ≈ 0% (MIL - PFR 24613)

Impact Resistance Class A (BS 8204 Part 1)

(Less than 1mm indentation depth)

Class III (EN ISO 6272-1)

2 pounds / 45 inches (3mm thick) (ASTM D 2794)

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 9mm.

Resistance to Thermal Shock Pass (ASTM C 884)

Softening Point 130°C (266°F)

System Structure

Substrate Priming Systems

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.

When necessary use the systems indicated below.

System 1: moisture control on green concrete:

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

System 2: Inadequate substrate and moisture content between 4% and 6%

- Primers:
Sikafloor-155 W N
fully blinded with quartz sand 0.4 – 0.7mm for the subsequent application of Sikafloor-20 N PurCem

System 3: Inadequate substrate and moisture content below 4%

- Primers:
Sikafloor-155 W N or Sikafloor-156 or Sikafloor-161
any of which must be fully blinded with quartz sand 0.4 - 0.7mm for the subsequent application of Sikafloor-20 N PurCem

On porous excessively absorbent substrates use Sikafloor-155 W N, in two coats, the first thinned with 10% water and the second broadcast to refusal.

Finish Systems

Heavy duty screed

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

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).

- Seal Coat:
Optional, except for broadcast system, where seal coat is necessary. (1-2 top coats may be required depending on surface texture.)
1 - 2 x Sikafloor-31N PurCem

Coving and detailing and vertical applications:

- Primer:
Sikafloor-156 thickened to a butter consistency using Extender T.
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.

Application Details

Consumption / Dosage

Primer (If priming is necessary, see System Structure above and respective PDS)

Screed 6 - 9mm:

Sikafloor-20 N PurCem (part A+B+C+D) ~ 2.0kg/m² / 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.

Substrate Quality

The concrete substrate must be sound and of sufficient compressive strength (minimum 25N/mm²) with a minimum pull off strength of 1.5N/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.

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.

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. Also, filling of deep unevenness up to 30 mm deep can be done by adding aggregate to the pre-dosed set, 30% (9kg) of dry quartz sand 2 – 3 mm.

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 N / 21 and 29 N 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 or rebate.

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.

Application Conditions / Limitations

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

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

Substrate Humidity The substrate can be dry or damp with no free standing water (saturated surface dry).

Sikafloor PurCem screeds (20 N) and detailing mortar (29 N) can withstand moisture vapour transmission values of around 12 lbs/1000 ft² 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:D = 1 : 0.92 : 7.76 : 0.32 (packaging size = 5 : 4.6 : 38.8 : 1.6) by weight

Mixing Time Material and ambient temperature will affect the mixing process. If necessary, condition the materials to 15°C – 21°C for best use.

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 and D (aggregate / powder) to the mixed resin parts over a period of 15 seconds. DON'T DUMP!

Allow part C and D 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+D) to ensure complete mixing. **Mix full units only.**

When adding aggregate to prepare a patching mortar, gradually add the 9 kg of 2 – 3 mm dry quartz sand after mixing the full set.

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.

Proceed with placement of the material to facilitate the release of entrapped air from the mix and CO₂ from the reaction. Place every batch in a consistent manner in order to avoid colour differences due to increased temperatures in the reaction.

Pour the mixed Sikafloor-20 N 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 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 1 x Sikafloor-31 N PurCem to lock in the aggregate. In this last case, allow a minimum of 36 hours cure period at 20°C before light traffic.

Flow check (ASTM C 230-90 / EN 1015-3)

Top internal diam: 70mm
Bottom internal diam.: 100mm
Height: 60mm
Flow = 210mm ± 10mm

Cleaning of Tools

Clean all tools and application equipment with Sika 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-20 N PurCem on Sikafloor-155 W N or Sikafloor-156 (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.

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

Notes on Application / Limitations

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.

If an added aggregate screed layer is applied, retaining grooves must also be created for this screed.

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.

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-31 N 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.

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.

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

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

Refer to Sika "Cleaning and Maintenance Recommendations for Sika Flooring Installations".

Methods

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

Notes

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


- To avoid rare allergic reactions, we recommend the use of protective gloves. Change soiled work clothes and wash hands before breaks and after finishing work.
- Local regulations as well as health and safety advice on packaging labels must be observed.
- For further information refer to the Sika Safety Data Sheet which is available on request.
- If in doubt always follow the directions given on the pack or label.

CE Labelling

The harmonized European Standard EN 13 813 'Screed material and floor screeds - Screed materials - Properties and requirements' specifies requirements for screed materials for use in floor construction internally.

Structural screeds or coatings, i.e. those that contribute to the load bearing capacity of the structure, are excluded from this standard.

Resin floor systems as well as cementitious screeds fall under this specification. They have to be CE-labelled as per Annex ZA. 3, Tables ZA. 1.1 or 1.5 and Z.A. 3.3 and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):

	
Sika (NZ) Limited 85-91 Patiki Road, Avondale Auckland, New Zealand	
07 ¹⁾	
EN 13813 CT – C40 – F8 – AR 0.5	
Cementitious screed material for indoors in buildings (systems as per Product Data Sheet)	
Reaction to fire:	B _(fl)
Release of corrosive substances (Cementitious Screed):	CT
Water permeability:	NPD ²⁾
Water vapour permeability	NPD
Compressive strength	C50
Flexural strength	F10
Abrasion:	AR 0.5
Sound insulation:	NPD
Sound absorption:	NPD
Thermal resistance:	NPD
Chemical resistance:	NPD

¹⁾ Last two digits of the year in which the marking was affixed.

²⁾ No performance determined

EU Regulation 2004/42

VOC - Decopaint Directive

According to the EU-Directive 2004/42, the maximum allowed content of VOC Product category IIA / j type **wb**) is 140g/l (Limit 2010), for the ready to use product.

Sikafloor-29 N PurCem, is VOC free for the ready to use product.

CE Labelling

The harmonized European Standard EN 1504-2 'Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 2 : Surface protection systems for concrete' gives specifications for products and systems based on methods 'hydrophobic impregnation', 'impregnation' and 'coating' for the various principles presented under EN 1504-9.

Products which fall under this specification have to be CE-labelled as per Annex ZA. 1, Tables ZA1a to ZA 1g according to the scope and relevant clauses there indicated, and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):

For flooring systems not dedicated to protect or reinstate the integrity of a concrete structure, EN 13813 applies. Products acc. EN 1504-2 used as flooring systems with mechanical loads also must fulfil EN 13813.

Here below indicated are the performance classes achieved according to the standard. For the specific performance results of the product to the particular tests, please see the actual values above in the PDS.

CE	
0086	
Sika (NZ) Limited 85-91 Patiki Road, Avondale Auckland, New Zealand	
09 ¹⁾	
0086 CPD - 541325	
EN 1504-2	
Surface Protection Systems for Concrete Physical Resistance / Chemical Resistance	
Abrasion resistance	Class AR 0.5
Capillary absorption and permeability to water	$w < 0.1 \text{ kg/m}^2 \cdot \text{h}^{0.5}$
Resistance to severe chemical attack	Class 2
Impact resistance	Class III: $\geq 20 \text{ Nm}$
Adhesion strength by pull-off test	$\geq 2.00 \text{ N/mm}^2$
Reaction to fire	B _{fl} S1

¹⁾ Last two digits of the year in which the marking was affixed.

²⁾ No performance determined

³⁾ Tested as part of a full system

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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