

Sikafloor®-29N PurCem®

High strength polyurethane coving and detailing mortar

Product Description

Sikafloor®-29N PurCem® is a three part, water dispersed, vertical grade, coloured polyurethane modified, cement and aggregate mortar for detailing work and vertical rendering.

It has a finely textured smooth aggregate appearance which offers excellent resistance to abrasion, chemical attack and mechanical damage.
Typically installed at 3 - 9 mm thickness

Uses

In combination with the rest of the PurCem® range in concrete substrate areas, to provide vertical, coving and detailing solutions in areas of abrasion and high chemical exposure, such as in:

- Food processing plants, in wet or dry process areas, freezers and coolers, thermal shock areas
- Chemical plants
- Laboratories & Workshops
- Suitable for resistance (Principle 5, method 5.1 of EN 1504-9)
- Suitable for chemical & physical resistance (Principle 6, method 6.1 of EN1504-9)

On properly prepared and supported steel surfaces, such as in:

- Steel decks
- Overpasses or platforms

Construction



Characteristics / Advantages

- 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.
- Designed specifically for trowel applications to vertical surfaces
- 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 (-40°F) up to +120°C (239°F)
- Bond strength in excess of the tensile strength of concrete. Concrete will fail first
- Non taint, odourless and VOC free
- High mechanical resistance. Behaves plastically subject to impact. Will deform but will not crack or de-bond.
- 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 (19N - 20N) and detailing mortar (29N) can withstand moisture vapor 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

Tests

Approval / Standards

Conforms to the requirements of EN 13813: 2002 as CT – C40 – 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. (Tests performed on Sikafloor®-20N/ -21N and -31N 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. (Tests performed on Sikafloor® -19N / -20N / -21N and -31N PurCem®.)

Test reports from Warrington Fire Research Centre for Sikafloor® -20N PurCem®: WFR No. 163876, dated 7th of July, 2008 (BS EN ISO 11925-2:2002) and WFR 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® -20N PurCem®: WFR No.174965, dated 11th of July, 2008

Capillary absorption and permeability to water report from Taylor Woodrow Construction, Ref. 11071, dated Nov. 28th, 2008

All other values indicated are internal test results.

Product Data

Form

Appearance / Colours	Part A:	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), Telegrey2 (~ RAL 7046).	
Packaging	Part A+B+C:	22.0 kg ready to mix units
	Part A:	1.60 kg plastic drum
	Part B:	1.40 kg plastic jerrycan
	Part C:	19.00 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. 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.
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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: ~ 2.015 kg/l ± 0.03 (at +20°C)
Capillary Absorption	Permeability to water: 0.02 kg /m ² h ^{0.5} (EN 1062-3) Class Low
Layer Thickness	3 mm min. / 9 mm max.
Thermal Expansion Coefficient	$\alpha \approx 1.3 \times 10^{-5}$ per °C (ASTM E 381, ASTM D-696, ISO 11359) (temperature range: -20°C to +60°C)
Water Absorption	0.18% (ASTM C 413)
Permeability	To Water Vapour: 0.104 g/h/m ² (ASTM E-96) (4.3 mm)
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	> 39 MPa after 28 days at +23°C / 50% r.h. (ASTM C 579)
	> 44 N/mm ² after 28 days at +23°C / 50% r.h. (BS EN 13892-2)
Flexural Strength	> 8.1 MPa after 28 days at +23°C / 50% r.h. (ASTM C 580)
	> 8 N/mm ² after 28 days at +23°C / 50% r.h. (BS EN 13892-2)
Tensile Strength	> 2.5 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) (EN 1542) (1.5 N/mm ² is the minimum pull out strength of the recommended concrete substrate)
Shore D Hardness	80 – 85 (ASTM D 2240)
Flexural Modulus	4050 MPa (ASTM C 580)

Coefficient of Friction	Steel: 0.7 Rubber: 0.8	(ASTM D 1894-61T)
Slip Resistance	Slip Resistance Values (BS 8204 Part 2)	
	Substrate	SRV Dry
	Sikafloor®-29N PurCem® overcoated with Sikafloor®-31N PurCem®	65
		SRV Wet
		40
	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)
	4010 mg Taber Abrader H-22 wheel / 1000 gr / 1000 cycles	(ASTM D 4060-01)
Indentation	≈ 0%	(MIL - PFR 24613)
Impact Resistance	Class A (Less than 1 mm indentation depth)	(BS 8204 Part 1)
	2 pounds / 40 inches (3 mm thick)	(ASTM D 2794)
Resistance		
Chemical Resistance	Resistant to many chemicals. Please ask for a detailed chemical resistance table.	
Thermal Resistance	The product is designed to withstand thermal shock caused by steam cleaning when thickness is 9 mm or more.	
Resistance to Thermal Shock	Pass	(ASTM C 884)
Softening Point	130°C (266°F)	

System Information

System Structure	<p>Use the products mentioned below as indicated in their respective Product Data Sheets.</p> <p>Substrate Priming Systems</p> <p>Substrate priming is normally not required under typical circumstances. (See Substrate Quality). When necessary use the systems indicated below.</p> <p><i>System 1: moisture control on green concrete:</i></p> <ul style="list-style-type: none"> - Primer: Scratch coat of Sikafloor®-21N PurCem® 1.5 mm thick, lightly broadcast with quartz sand 0.4 – 0.7 mm. <p><i>System 2: Inadequate substrate and moisture content between 4% and 6%</i></p> <ul style="list-style-type: none"> - Primers: Sikafloor®-155W N fully blinded with quartz sand 0.4 – 0.7 mm for the subsequent application of Sikafloor®-19N / 20N PurCem®. <p><i>System 3: Inadequate substrate and moisture content below 4%</i></p> <ul style="list-style-type: none"> - Primers: Sikafloor®-155W N or Sikafloor®-156 or Sikafloor®-161 or Sikafloor®-159 for faster curing any of which must be fully blinded with quartz sand 0.4 - 0.7 mm for the subsequent application of Sikafloor®-19N / -20N PurCem®. <p>On porous excessively absorbent substrates use Sikafloor®-155W N, in two coats, the first thinned with 10% water and the second broadcast to refusal.</p> <p><i>Heavy duty screed</i></p> <ul style="list-style-type: none"> - Layer thickness: 6 - 9 mm <p>Screed: Sikafloor®-19N PurCem® or Sikafloor®-20N PurCem®</p>
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Medium to heavy duty screed:

- Layer thickness:
4.5 – 6 mm (including scratch coat)
- Priming for Sikafloor®-21N PurCem®:
Epoxy primer Sikafloor -156 / 161 lightly broadcast with quartz sand 0.4 – 0.7 mm, or
Scratch coat:
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.
- Standard screed:
Sikafloor®-21N PurCem® or
- High slip resistance screed:
Sikafloor®-22N PurCem® broadcast with quartz sand sealed with 2 coats of Sikafloor®-31N PurCem® depending on the desired texture.
(See build up Slip Resistance in Sikafloor®-22N PurCem® PDS)
Sikafloor®-22N PurCem® does not normally require any priming.

Coving and detailing and vertical applications:

- Primer:
Sikafloor®-10N PurCem® Primer or Sikafloor®-156 / -161
Reprime if no longer tacky.
- Coving Mortar:
Sikafloor®-29N PurCem®

Seal coat:

1 x Sikafloor®-31N PurCem®

Seal Coat:

- Base coat:
Sikafloor®-20N or Sikafloor®-21N or Sikafloor®-22 N or Sikafloor®-29N PurCem®
- Seal Coat:
1 x Sikafloor®-31N PurCem®

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

Application Details

Consumption / Dosage

Primer:

Sikafloor®-10N PurCem® Primer) ~ 0.2 - 0.4 kg/m² .

It is also possible to use Sikadur 32N, Sikafool®-156 or Sikafloor®-161 as primers

(Consumption may vary depending on substrate conditions)

Always apply on to tacky primer. Reprime if allowed to cure.

Coving and detailing mortar 3 - 9 mm:

Sikafloor®-29N PurCem (part A+B+C) ~ 2.0 kg/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 25 N/mm²) with a minimum pull off strength of 1.5 N/mm².

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

If in doubt, apply a test area first.

Substrate Preparation	<p>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 3-9 according to the International Concrete Repair Institute.</p> <p>Weak concrete must be removed and surface defects such as blow holes and voids must be fully exposed.</p> <p>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.</p> <p>High spots can be removed by grinding.</p> <p>All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum.</p> <p>Edge terminations. All free edges and working day joints of Sikafloor[®]-19N / -20N / -21N / -22N 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.</p> <p>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.</p> <p>Refer to the edge details provided in the Method Statement.</p>
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Application Conditions / Limitations

Substrate Temperature	+10°C min. / +30°C max.
Ambient Temperature	+10°C min. / +30°C max.
Substrate Humidity	<p>≤ 4% pbw – as required by the primer Test method: Sika[®]-Tramex meter (equipment limited to < 6%), CM - measurement or Oven-dry-method.</p> <p>Sikafloor[®]-PurCem[®] screeds (-19N, -20N) and detailing mortar (-29N) can withstand moisture vapour transmission values of around 12 lbs/1000 ft² tested according to ASTM F 1869 Anhydrous Calcium Chloride test.</p> <p>Always confirm substrate moisture content prior to the application. Refer to System Structure and options for substrate priming.</p>
Relative Air Humidity	85% max.
Dew Point	<p>Beware of condensation!</p> <p>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.</p>

Application Instructions

Dew Point	<p>Beware of condensation!</p> <p>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.</p>
Mixing	Part A : B : C = 1 : 0.88 : 11.88 (packaging size = 1.60 : 1.40 : 19.00) by weight

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.

If moisture content is > 6% pbw, Sikagard®-720 EpoCem® can be applied as T.M.B. (temporary moisture barrier) system prior to priming with Sikafloor®-10N PurCem® Primer, Sikafloor® -156 or Sikafloor® -161 or Sikadur -32 on vertical surfaces.

Primer coat.
Mix and apply the primer according to its corresponding Product Data Sheet, using a brush or roller to provide uniform coverage. The primer must be tacky during the application of Sikafloor®-29N PurCem®. Mix and apply only the amount of primer which can be overlaid before it cures. If the primer becomes glossy or loses tackiness, remove any surface contaminants, then recoat with additional material.

Mortar
Apply the mixed Sikafloor®-29N PurCem® onto the ready primed substrate and compact to the appropriate thickness, then finish the detailing profile with a coving trowel or steel float. Apply Sikafloor®-29N PurCem® while the primer is still tacky. If the primer becomes tack free, reapply the primer. A light brushing while the mortar is still workable will close any surface voids. Allow a minimum 10 hour cure period at 20°C. (See Waiting time / Overcoating)

For maximum sealing of the cove, application must be performed with one or two coats of Sikafloor®-31N PurCem® to seal the surface and improve aesthetics.

Cleaning of Tools Clean all tools and application equipment with Thinner C immediately after use. Hardened/cured Sikafloor®-29N PurCem® 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

Allow primer to become tacky. Reprime if allow to cure.
See "Substrate Humidity" for suitable type.
Before any subsequent application on Sikafloor®-29N PurCem® allow:

	Waiting time	
	+10°C	20 hours
+20°C	10 hours	48 hours
+30°C	5 hours	24 hours
+10°C	20 hours	72 hours

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

Notes on Application / Limitations

A retaining groove must be placed top and bottom of the cove detail to anchor the coving mortar as well as around details such as drains, etc., 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 mortar.

Do not featheredge.

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®-29N PurCem® in a confined space, to prevent excessive ambient humidity.

Freshly applied Sikafloor®-29N PurCem®, must be protected from damp, condensation and direct water contact (rain) for at least 24 hours.

For maximum hygienic requirements always seal Sikafloor®-29N PurCem® with Sikafloor®-31 PurCem® (1-2 coats).

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 the primer to wet or green concrete or polymer modified patches if the moisture content is above 4%.

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.

Avoid puddles during primer application.

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.

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 aesthetical matter. Products can be used outside provided the change in appearance is acceptable by the customer.

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	~ 22 hours	~ 5 days
+30°C	~ 8 hours	~ 16 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®-29 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.

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



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