N°: 850 83 02
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Construction

Method Statement
Sikafloor®-PurCem®
PU Modified cementitious floor screeds

Sika Services AG
BU Contractors

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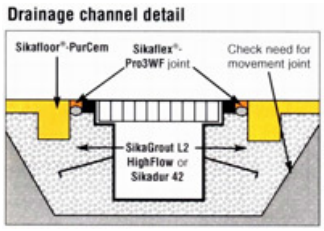
Key Words: Sikafloor PurCem, application,
Scope: Method Statement for the Application of the PU modified cementitious screed range.

Sikafloor®-19 N PurCem®, Sikafloor®-20 N PurCem®, Sikafloor®-21 N PurCem®, Sikafloor®-22 N PurCem, Sikafloor®-29 N PurCem, and Sikafloor®-31 N PurCem.



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1. System Description

Polyurethane modified cementitious screeds were originally designed almost 50 years ago to improve the chemical and thermal resistance of floors subject to extremely demanding service conditions in the chemical and food industries. They are capable of performing under the harshest of conditions, whether by exposure to hot and cold chemicals, thermal shock, intensive heavy traffic and abrasion and impact or point loads.

Polyurethane modified cementitious products are a 3 part reactive system composed water based polyol, and MDI and a special mix of cement aggregates and other reactive ingredients, all of which participate in the reaction. A 4 part system where the colour is separate from part A will soon be available.

After several years with our Sikafloor® –PurCem® brand, our introduction of the “N” series of Sikafloor® N PurCem® has the objective to improve the workability and the productivity of the contractor allowing for greater competitiveness in the market, and is composed of the following systems.

- Sikafloor®-19N PurCem®

Heavy duty, hand trowel grade, 3 part PU modified levelling screed.

- Sikafloor®-20N PurCem®

Heavy duty, easy trowel grade, 3 part PU modified levelling screed.

- Sikafloor®-21N PurCem®

Moderate to heavy duty, self levelling, 3 part PU modified smooth levelling screed

- Sikafloor®-22N PurCem®

Moderate to heavy duty, self levelling, 3 part PU modified broadcast texture levelling screed

- Sikafloor®-29N PurCem®

Easy trowel grade, heavy duty, thixotropic, 3 part PU modified detailing, coving and vertical rendering mortar.

- Sikafloor®-31N PurCem®

Thin film, 3 part PU modified top coat or stand alone coating.

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- Sikafloor®-10N PurCem® Primer
Detail and vertical substrate primer.

Appearance of packaging may vary due to local supplier availability.

1.1. References

Concerning substrate preparation , please refer to the recommendations of the ICRI, the International Concrete Repair Institute. www.icri.org
Always refer to the latest version of the Product Data Sheet (PDS) issued.

1.2. Limitations

For the limitations of use concerning chemical resistance, please consult the latest Sikafloor® Chemical Resistance Chart, which can be found at the Flooring and Coating site at www.sika.com or consult your local Technical Department.

Concerning thermal shock resistance, please consult the relevant Product Data Sheets for specific information on each product.
In general, steam cleaning or shock freezing can only be withstood by the heavy duty screeds Sikafloor® -19N and 20N PurCem® and should be the only ones recommended for such conditions.

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.

It is the responsibility of the contractor to ensure that all requirements indicated in this document and the product data sheets are met, which include but are not limited to :

- Understanding of the end-user performance requirements for each specific area
- Suitable build-up for each of the areas
- Correct determination of the area to be treated
- Substrate evaluation
    - Age
    - Cohesive strength
    - Surface porosity / absorption
    - Presence of moisture
- Substrate preparation
    - Surface texture
    - Roughness or profile for increase in consumption over normal rates
    - Grooves and anchorages (see item 3.3.3)
    - Need or not of priming.
- Health and safety equipment
- Adequate application tools and mixing equipment.

This document aims to provide the local Sika companies and their customers with all the available information and know-how on the application of the Sikafloor® -Purcem® range, based on the combined experience of the flooring experts in the leading companies, as compiled by the CPE. This document shall serve as a basis for the training and development of local specialised contractors.

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The blue text in italics is for the internal use of Sika and shall not be included in the documentation provided to the contractors.

2. Products

2.1. Available pack sizes

At present there are 3 distinct geographical pack size configurations for the Sikafloor® –PurCem® range, mainly for historical reasons due to regional preferences in packaging sizes.

Pack sizes by source country		UK Oct. 2008		Canada BBP free (Jan, 2008)		China (suggested)	
		UK Oct. 2008	Ratio	Weight	Ratio	Weight	Ratio
SR -19N PurCem	Part A	3,22	1	2,84	1	5,35	1
	Part B	2,78	0,86	2,44	0,86	4,65	0,87
	Part C	28,00	8,70	25,00	8,80	46	8,60
	Part D						
	Total	34,00 kg		30,28 kg		56,00 kg	
	Min. Ord	?					
SR -20N PurCem	Part A	3,22	1	2,84	1	5,35	1
	Part B	2,78	0,86	2,44	0,86	4,65	0,87
	Part C	25,00	7,76	21,18	7,46	41	7,66
	Part D						
	Total	31,00 kg		26,46 kg		51,00 kg	
	Min. Ord	120 Ud					
SR -21N PurCem	Part A	3,22	1	2,84	1	5,35	1
	Part B	2,78	0,86	2,44	0,86	5,05	0,94
	Part C	14,00	4,35	12,16	4,28	24	4,49
	Part D						
	Total	20,00 kg		17,44 kg		34,40 kg	
	Min. Ord	120 Ud					
SR -22N PurCem	Part A	3,22	1	2,84	1		1
	Part B	2,78	0,86	2,44	0,86		#¡DIV/0!
	Part C	16,50	5,12	14,41	5,07		#¡DIV/0!
	Part D						
	Total	22,50 kg		19,69 kg		0,00 kg	
	Min. Ord	?					
SR -29N PurCem	Part A	1,60	1	1,42	1	2,2	1
	Part B	1,40	0,88	1,22	0,86	2	0,91
	Part C	19,00	11,88	14,20	10,00	22	10,00
	Part D						
	Total	22,00 kg		16,84 kg		26,20 kg	
	Min Ord	240 Ud					
SR -31N PurCem	Part A	1,60	1	1,42	1	5,35	1
	Part B	1,40	0,88	1,22	0,86	5,05	0,94
	Part C	1,70	1,06	1,36	0,96	5,4	1,01
	Part D						
	Total	4,70 kg		4,00 kg		15,80 kg	

Sikafloor® -19N / -20N / -21N and -22N PurCem® share A parts and B.
Sikalfoor® -29N and -31N PurCem® share parts A and B.
Always make sure the correct pack sizes of part C are used in each case according to the PDS.

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Please include above the correct pack size configuration corresponding to your country.

2.2. Colours / Special colours

The formulation of the colours does not have significant influence in the workability of the products. Any variations in workability are mainly due to external factors such as application conditions

Colour	Name
RAL 1001	**Beige**
RAL 1006	**Maize yellow**
RAL 3009	**Oxide red**
RAL 5015	**Sky blue**
RAL 6010	**Grass green**
RAL 7037	**Dusty grey**
RAL 7038	**Agate grey**
RAL 7046	**Telegrey 2**

Worldwide, companies are producing the same corporate range of colours which you're already familiar with and which is available from stock and minimal lead times (5 days).
Other colours may also be available locally as standard colours too, depending on preferred tastes or customer colours.

Please refer to the respective Product Data Sheets for which special colours require lead times and minimum order amounts.

Custom colour matching is available upon request, but minimum order quantities, and a colour matching charge may apply.
Please consult for lead times, as sourcing pigments may delay the process from six to eight weeks.

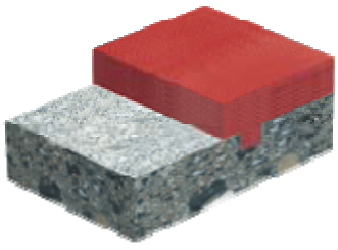
Even though companies may source pigments from the same suppliers, colour uniformity cannot be completely guaranteed from batch to batch (numbered).

Take care when using any product, to draw from inventory in batch number sequence. Do not mix batch numbers in a single area.

2.3. System Build - Ups

Use the products mentioned below as indicated in their respective Product Data Sheets.
Substrate priming is normally not required under typical circumstances.
When necessary, use the systems indicated under "Substrate Priming".

Heavy duty screed
- Layer thickness:
  6 - 9 mm
- Screed:
  Sikafloor®-19N PurCem® or
  Sikafloor®-20N PurCem®



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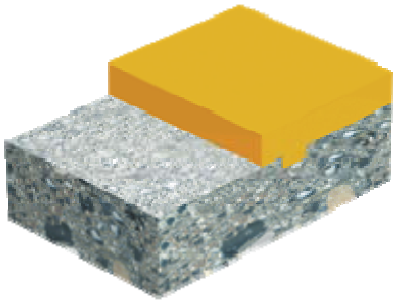
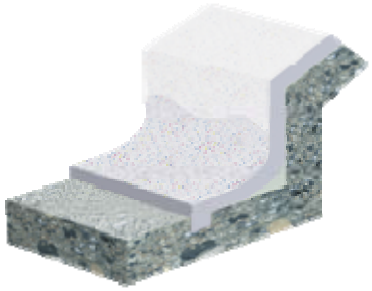
Medium to heavy duty screed

- Layer thickness:
  4.5 - 6 mm
- 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 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 1 - 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.



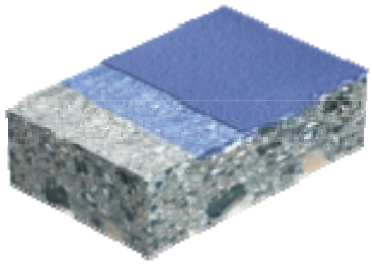
Coving and detailing

- Primer:
  Sikafloor®-10N PurCem® 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-22N or Sikafloor-29N PurCem
  Seal Coat:
  1 x Sikafloor® -31N PurCem®



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

2.3.1. Product Selection Criteria

Sikafloor®-PurCem® screeds are suitable for interior applications of industrial floors subject to extreme service conditions, whether due to high chemical exposure or hygienic requirements, extreme service temperatures, high compressive strength (> 50 MPa or 7225 psi) and high abrasion resistance (AR 0.5) are specified.
This range has been tested for use in contact with foodstuffs and conforms to the requirements from the Canadian, USDA, British and European authorities.

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When extreme hygienic conditions are required, which imply frequent and intense steam cleaning and high pressure hot water jetting, the recommended products are the heavy duty levelling screeds Sikafloor® -19N and 20N PurCem® in 9mm thickness. Smaller sites which do not require economies of scale can be done with Sikafloor® -20N PurCem® where its easy working consistency allows for reduced personnel on site, also because it comes supplied in pre-weighted packs.
Sikafloor® -20N PurCem®'s lightly textured surface makes it ideal to be used for wet processes with high mechanical and thermal shock resistance

Sikafloor® -21N PurCem® can solve problems on floors subject to chemical exposure, frequent and heavy traffic and which require a smooth level matt finish and are generally dry processes.
The product can withstand permanent service temperatures up to +120ºC, but is not suited for thermal shock exposure, greater than +70ºC, and must not be used for steam cleaning working conditions.

Less demanding conditions, but also wet processes, which require a ~~certain~~ controlled surface profile can be achieved with Sikafloor® -22N PurCem® with a broadcast texture of coloured quartz sand without seal coat or natural quartz sand and then sealed with Sikafloor® -31N PurCem®.

Sikafloor® -29N PurCem® is required for those all important detailing works which, when solved properly, will ensure the best performance of the floor as a whole, such as covings, fixture of drains and channels, etc. It is also possible to do small vertical rendering when the project so requires.

In order to provide additional sealing to Sikafloor® -29N PurCem® coves, details and renders, or for top coating of Sikafloor® -21N PurCem® or the natural broadcast surface of Sikafloor® -22N PurCem®, even providing chemical protection to concrete as stand alone coating, Sikafloor® -31N PurCem® is the product of choice.

Product selection criteria	Chemical exposure (*)	Abrasion resistance	Self levelling	Slip resistance	Coating	Steam cleaning	Details, covings and renders
SF -19N PurCem	x	xx		x		xx	
SF -20N PurCem	x	xx	x	x		xx	
SF -21N PurCem	x	x	xx				
SF -22N PurCem	x	xx	xx	x			
SF -29N PurCem	x	x				x	x
SF -31N PurCem	x	x			x		

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2.4. Preliminary Project Preparation

2.4.1. Substrate evaluation.

Evaluate the substrate for age, strength (compressive > 25 MPa or 3626 psi, cohesion > 1.5 MPa or 218 psi), moisture content and vapour pressure, porosity or absorption, required level and falls and presence of foreign substances.

Priming is generally not required, but if necessary, determine the best suited priming system, according to the conditions mentioned under “Substrate Priming”. These depend on the presence or not of a damp proof membrane, and the desired topping according to the working conditions required, such as type of building, (industrial / commercial), its use (storage / logistics) and type of traffic (light pedestrian / moderate / heavy industrial) and frequency (intensive, occasional) etc.

Measure the total area to be levelled in m^2.
Determine the thickness necessary to achieve desired level and performance requirements.
Calculate the amount of material necessary:
The ~~above~~ coverages indicated in the PDS *exclude* wastage and practical considerations.

Confirm the required slopes are compatible with those of the concrete substrate and take any remedial action necessary prior to starting the substrate preparation.

2.4.2. Water supply:

Water is not a required supply for the application of this range of products.

2.4.3. Power supply:

Verify the availability and distance of electrical power to drive the hand held mixer or the heavy duty machine. (See your equipment requirements).
If site power is unavailable, organise an adequate portable generator.

2.4.4. Access / transportation:

Verify the accessibility to the site for delivery of the materials. Check if the transport must be capable of unloading the pallets itself or it will be done by the main contractor or the owner. Organise a flat, dry covered storage area, preferably in or near the application area.
Have the means for transport of the material within the site available, in case stock is not placed in or very close to the application area.
For manual applications, have a cart for transportation of the mixed material to the placing area available and sufficient mixing capacity for a continuous supply to the placing area.

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2.4.5. Stocking of material:

Parts A and B must be protected from frost and moisture.
Part C must be kept raised from the floor, in case of rain or leaks that could damage the bags.
Store the products in a dry, covered area, protected from rain and direct sun, preferably between 15ºC to 25ºC.

2.4.6.Conditioning of materials

If applications are to take place in extreme temperatures (below 15ºC or above 25ºC) conditioning of the material to the intermediate temperature range is advisable in order to ensure sufficient working time, proper consistency and reduced potential for failures caused by application under inadequate conditions.

After transportation, allow the material to acclimatise to ambient temperature for at least 24 to 48 hours, as during transport they may be exposed to extreme (high or low) temperatures which will negatively impact the workability if used immediately.

Working at cold temperatures. (<below 15ºC)
At low temperatures, Sikafloor® -PurCem® products become less flowing (more viscous) and more difficult to apply.
In order to reduce the viscosity of the material and improve workability and ease of application, it is necessary to raise the temperature of the stocked material.
It is advisable to place the materials under a tent which can be heated using electrical radiators or hot air blowers. Do not use oil fired heaters as contamination of the material, application area or mixing equipment may occur and lead to failures.

Never remove any amount of component C from the mix to make it more resin rich and improve workability of the screed material, as it also takes part of the reaction and may cause the appearance of blisters or surface irregularities and pin holing. This action will void any guarantee over the product.

Working at hot temperatures (above 25ºC)
When working at hot temperatures, it is necessary to cool down the material prior to its application in order to increase the working time and open time, reducing the chance of blistering due to excessively fast skin formation.
This is particularly difficult when it comes to green field sites where there is a lack of means during the construction process.
In refurbishment jobs, storing the material in a climate controlled (air conditioned) chamber will allow to bring down the temperature prior to application.
Placing parts A and B in ice water will also bring its temperature down. Be careful not put in contact the part B with water as the product will react.

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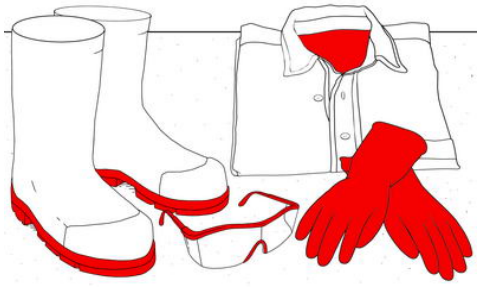
2.4.7.Preparation work

Among the activities that must be carried out on site, time and related cost must be taken into account for:
- the internal transport of the material from job site storage place to application place
- application of all the protection measures, tapes, plastic foil etc.
- time for installation of mixing station
- time for cleaning of mixing tools after the days work
- time for removal of empty pails and other waste
- time for removal of waste concrete from the groove formation.
- time and elements for protection to prevent damages of fresh layed floors

3. Safety Measures on Site

3.1. Labour Protection



Wear proper safety equipment (gloves, eye goggles, safety boots and protective clothes) during application
When kneeling, use protective knee-pads.

Ensure sufficient ventilation during application. Sikafloor® -N PurCem® product range is water based and contains no solvents. The ventilation will prevent excessive moisture build-up as the applied product reacts, which will accelerate the reaction of subsequent mixes and lead to blistering.

To avoid dusting when opening bags, place the mixing station in an open area, or set up an dust extraction system.

3.2. Cleaning, Recycling and Disposal

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.

3.3. Surface Preparation

3.3.1. Base substrate requirements

Adequate evaluation of the substrate conditions will determine the need for priming and allow taking preventive measures to reduce the risk of failures

If the concrete substrate is sound and strong, has low, homogeneous porosity and is free of defects and voids, then priming is generally not required. Adequate substrate preparation by mechanical means such as shotblasting or scarifying must always be done to ensure sufficient surface profile and roughness.

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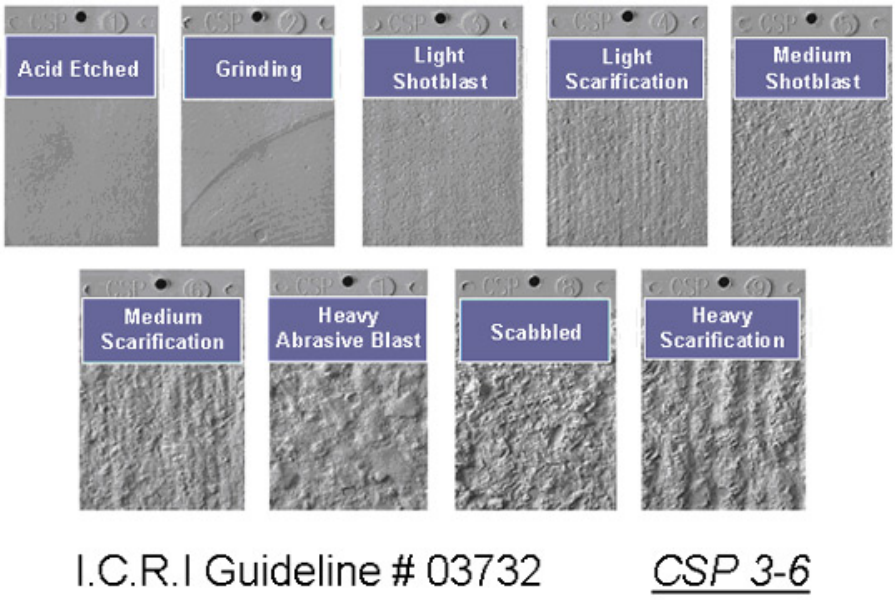
The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm^2 or 3626 psi) with a minimum cohesion (pull off strength) of 1.5 N/mm^2 or (218 psi).

The surface must be clean, dry or saturated surface dry and free of all contaminants, e.g. dirt, oils, grease, coatings and surface treatments, etc.

Sikafloor® PurCem® can be applied onto recent concrete over 7 to 10 days old or onto old damp concrete (~~up to 10%~~ saturated surface dry or SSD) without having to prime first, as long as the substrate fulfils the above requirements.

3.3.2. Surface treatment

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 for Sikafloor® -19N, -20N, -21N and -22N PurCem®.
CSP 3-9 for Sikafloor® -29N PurCem® and CSP 3 for Sikafloor® -31N PurCem®.



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PREPARATION METHODS	CONCRETE SURFACE PROFILE								
	CSP 1	CSP 2	CSP 3	CSP 4	CSP 5	CSP 6	CSP 7	CSP 8	CSP 9
Detergent scrubbing									
Low-pressure water cleaning									
Acid etching									
Grinding									
Abrasive (sand) blasting									
Steel shotblasing									
Scarifying									
Needle scaling									
High/ultra high-pressure water jetting									
Scabbling									
Flame blasting									
Milling/rotomilling									

FLOORING TYPE	CONCRETE SURFACE PROFILE								
	CSP 1	CSP 2	CPS 3	CSP 4	CSP 5	CSP 6	CSP 7	CSP 8	CSP 9
Sealer < 150 µm									
Thin Film 150-300 µm									
High Build 300-1000 µm									
Self Smoothing 2-3 mm									
Screed Overlays 3-6 mm									

Substrate priming is <u>normally</u> not required under typical circumstances for screed applications with the heavy duty mortars Sikafloor® -19N PurCem® or Sikafloor® 20N PurCem®. For Sikafloor® 21NPurCem® it is advisable either to prime with Sikafloor® -156 or Sikafloor® -161 or use a scratch coat of Sikafloor® -21N PurCem®. 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, de-bonding, pinholes and other aesthetic variations.

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Weak concrete must be removed, whether manually or mechanically and surface defects such as blow holes and voids fully exposed.

Opening up the cracks for filling in with the screed mortar will increase the bond strength of the screed to the substrate.

Mechanical removal can be done using a power hammer or a grinding machine.

Scarifying

Shot blasting

On the left of the picture, a shotblast surface can be seen, while on the right side the surface has *also* been scarified.

(The cigarette pack is provided for scale.)

Surface defects like the cracks seen on the left, must be patched well before or during priming as there is risk of screed material flowing into them and producing air bubbles or reflective cracks in the surface in case of substrate movement.

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Repairs to the substrate, filling of blow holes and voids must be carried out (fully exposed and repaired) normally with the same Sikafloor®–PurCem® product that will later be used as the screeding material, or by using appropriate products from the ~~Sika Top, Sika Monotop~~, Sikafloor®, Sikadur® or the Sikagard® range of materials.

Open up the crack in “v” shape twice the nominal **Sikafloor® -PurCem®** thickness.

Remove dust with industrial vacuum cleaner.

Fill with the same type of **Sikafloor® -PurCem®**.

In order to prevent the reflection of cold joints to the surface of the screed, these must be sealed and prepared as indicated above.

A scratch coat of the Sikafloor® -PurCem® mortar to be used can be applied to fill in the cracks prior to laying the screed material.

Alternatively, like in this example, a scratch coat of Sikafloor®-156 / -161 plus 0.3 - 0.8 mm of quartz sand in a 1:3 ratio by weight was used to fill in the joints.

Any expansion joints (or joints were movement is to be expected) must be respected and reflected on the surface of the screed.

All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum. **If in doubt apply a test area first.**

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3.3.3. Groove opening

See item below for further details.

Retaining grooves must be opened to prevent curling of the screed during hardening and curing.
Open grooves twice as wide and twice as deep as the screed thickness. Use a suitable double blade saw with connection to an industrial vacuum cleaner.

Retaining groves must be located in the perimeter of the application area, around columns, plinths, drains or any singular element that represents a discontinuity in the screed. Concrete joints represent such discontinuity and are not to be overlayed if movement is to be expected or the area will be subject to thermal shock, in which case movements will occur.

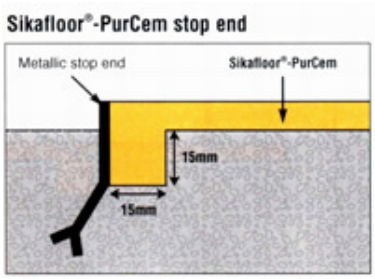
They must also be done as day joints at the end of each application.

The distance from the finished screed should be between 5 cm to 10 cm.

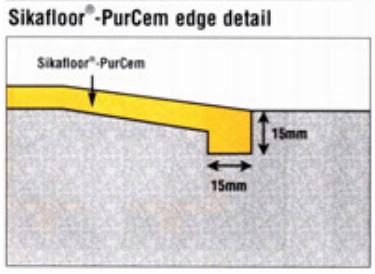
3.3.4. Edge terminations

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 included below in this document. If necessary, protect all free edges with mechanically attached metal strips.

Never featheredge, always turn into an anchor groove.
On new sites, the stop end is embedded in the concrete while fresh, must be straight and level to ensure design thickness.



For refurbishment work, fix the metallic stop end with a high strength mortar of the SikaTop®, Sika® MonoTop® or Sikagrout® range. Make sure it's adequately sized for the type of traffic to be suffered. A chamfered metallic stop-end to prevent tripping for pedestrians is advisable. These profiles are commercially available from specialist suppliers.



This reduced user risk edge-detail is less costly in material and labour as no stop-end and fixing mortar are necessary, with the added benefit of user safety as no tripping is possible.

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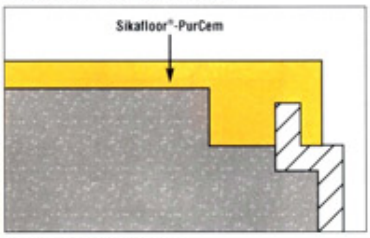
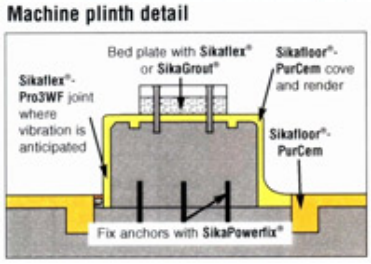
Edge detail to glazed drain



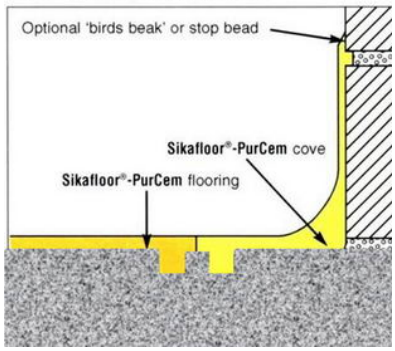
Fixing to glazed drains, just like the detail on the left, requires workmanship. Chamfer of the edge is also advisable for better aesthetics and reduced damages due to use.

Machine plinth detail



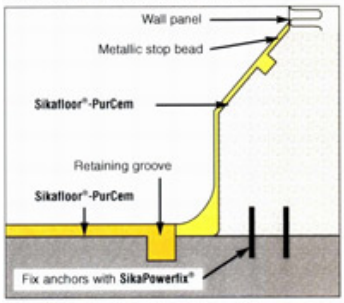
Coating of machine plinths to prevent spillages and chemical attack. Use a flexible joint sealer, such as Sikaflex® –Pro 3 WF or Sika Loadflex, if vibrations are expected. Covings must be anchored.

Floor to wall joint with cove



The floor to wall joint cove is probably the most critical detail for successful and problem free applications.
A double groove to fix the screed and the detailing mortar must be performed for consecutive applications of the mortars. Use a suitable trowel for perfectly forming the cove shape.
Normally, when working with a trowel grade screed, it is best to do the coving first and then have the floor join up to the coving, but if it is a self levelling screed, it is possible to lay the screed first against a tape edge of the required thickness, remove the tape edge and then use the screed edge to trowel on the coving.
For vertical rendering, see item 3.3.6.3

Sikafloor®-PurCem kerb detail

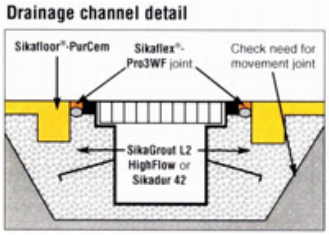


All rebates no less than 15mm x 15mm

Kerb details must similarly be formed as indicated above, preferably also forming the double tie-chase or groove along the edge of the floor screed

The drainage channel detail for prefabricated channels also allows for a joint sealer between the channel and the floor. This is important when differential expansion due to thermal stress is expected, unlike the picture above left where no joint sealer is used between the mortar and the drainage channel.

Drainage channel detail



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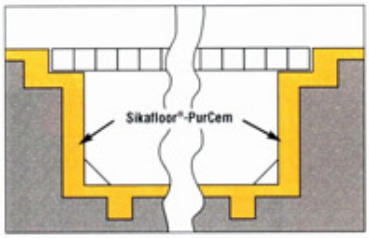
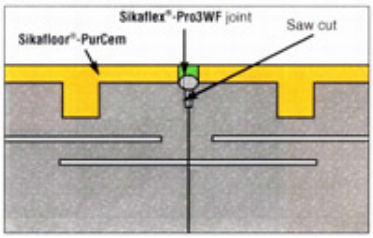
Lined channel detail



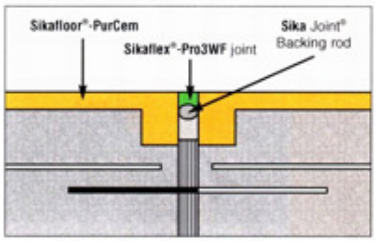
This lined channel detail is an on-site formed and coated channel

Induced floor joint



Detail picture on the right of the double groove for the induced floor joint shown on the left. Similar details can also be created for day joints or coinciding with substrate cold joints.

Floor expansion joint



Another most important detail is the floor expansion joint, which must be formed according to the detail at right. Always make the joint size according to the expected movement calculated, in order to limit the movement to a maximum 25%.

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 included in this document.

3.3.5. Detail drawings

In the following pages the recommended execution of various details is described. These details are available in the Sika Intranet for download and translation of the texts into your local language.
The drawings are also available in CAD format too for insertion into projects.

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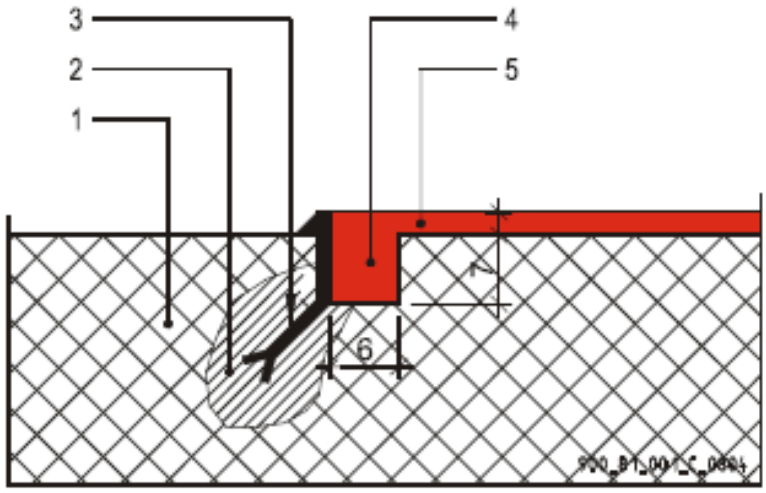
Sikafloor®-PurCem®

Floor PurCem® stop end



1	Concrete slab
2	Sikagrout® or Sikadur® 42 anchorage mortar
3	Metallic stop end with steel anchor
4	Cutting edge anchoring grooves
5	Sikafloor®-PurCem® screed layer
6	Width 8 – 18 mm; 2 x screed thickness
7	Depth 8 – 18 mm; 2 x screed thickness

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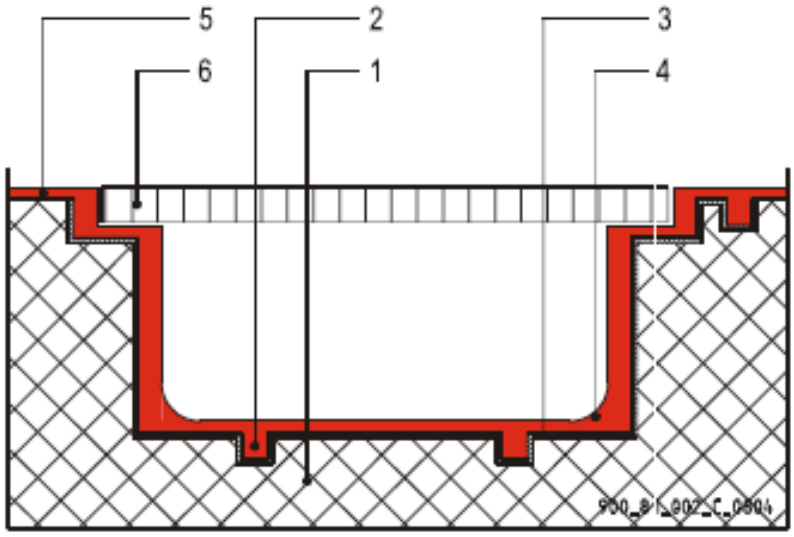
Construction

Industrial flooring; 8.1 Resin Floors and Coatings

N° 900_81_002_C_appl_0804
Author: Heini Aeppli
Date: 10/2006; Edition 001;

Sikafloor®-PurCem®

Lined channel detail



1 Concrete slab
2 Cutting anchoring grooves
3 Sikafloor®-PurCem® suitable primer for coving and detailing mortar
4 Sikafloor®-PurCem® coving and detailing mortar
5 Sikafloor®-PurCem® screed layer
6 Steel channel grating

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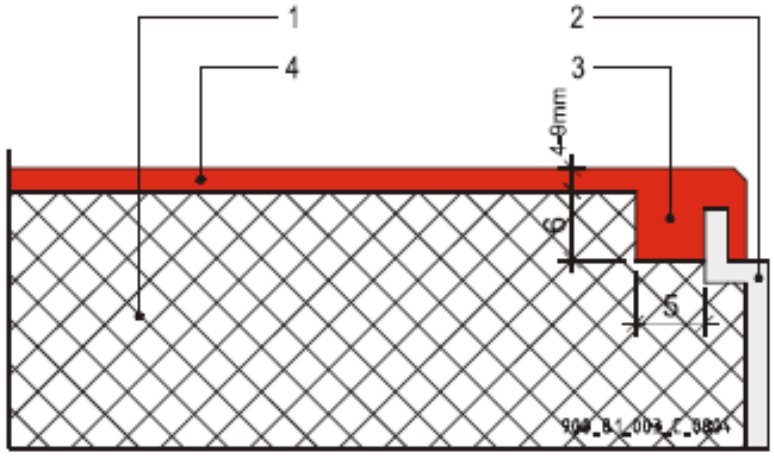
Industrial flooring; 8.1 Resin Floors and Coatings

N° 900_81_003_C_appl_0804
Author: Heini Aeppli
Date: 10/2008; Edition 001;

Sikafloor®-PurCem®

Edge detail to glazed drain



1	Concrete slab
2	Stainless steel drain
3	Cutting anchoring grooves
4	Sikafloor®-PurCem® screed layer
5	Width: 8 – 18 mm (2x screed thickness)
6	Depth: 8 – 18 mm (2x screed thickness)

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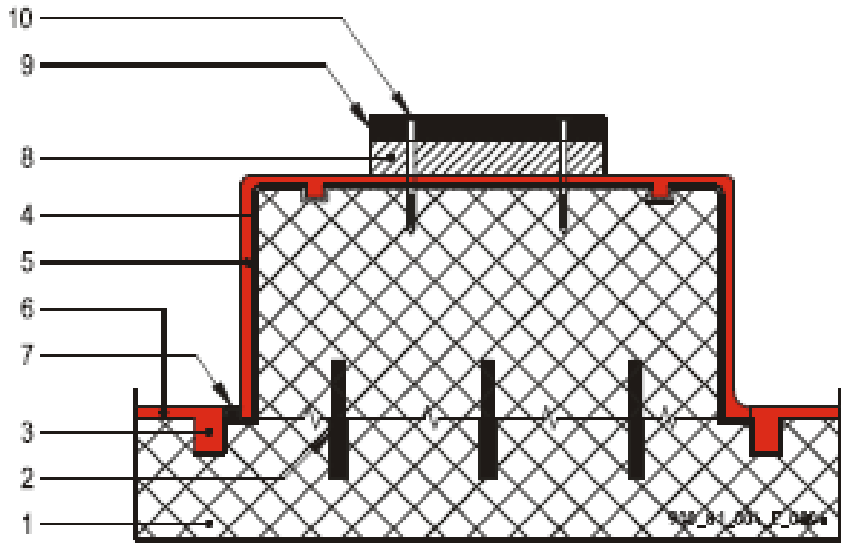
Machine plinth detail



1	Concrete slab
2	Fix anchorage with SikaPowerfix®
3	Cutting anchoring grooves
4	Sikafloor®-PurCem® suitable primer for coving and detailing mortar
5	Sikafloor®-PurCem® coving and detailing mortar
6	Sikafloor®-PurCem® screed layer
7	Sikaflex®-Pro3WF joint with backing profile where vibrations are anticipated
8	Grouting with Sikadur® or SikaGrout®
9	Metallic bed plate
10	Cover bolts in blind holes

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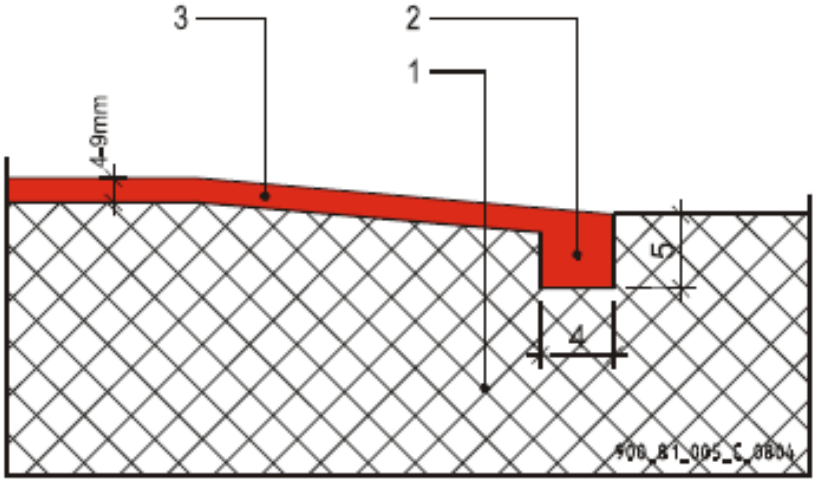
Author: Heini Aeppli
Date: 10/2008; Edition 001;

Sikafloor®-PurCem®

Floor PurCem® edge detail



1 Concrete slab
2 Cutting anchoring grooves
3 Sikafloor®-PurCem® screed layer
4 Width: 8 – 18 mm (2x screed thickness)
5 Depth: 8 – 18 mm (2x screed thickness)

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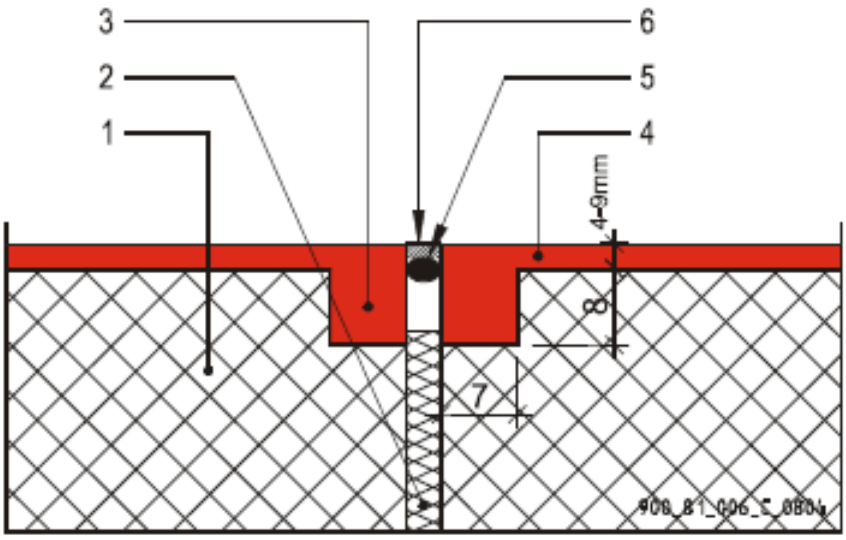
Author: Heini Aeppli
Date: 10/2008; Edition 001;

Sikafloor®-PurCem®

Floor expansion joint



1 Concrete slab
2 Separation joint filled with polystyrene material
3 Cutting anchoring grooves
4 Sikafloor®-PurCem® screed layer
5 Sika® Joint Backing profile
6 Sikaflex®-Pro3WF joint
7 Width: 8 – 18 mm (2x screed thickness)
8 Depth: 8 – 18 mm (2x screed thickness)

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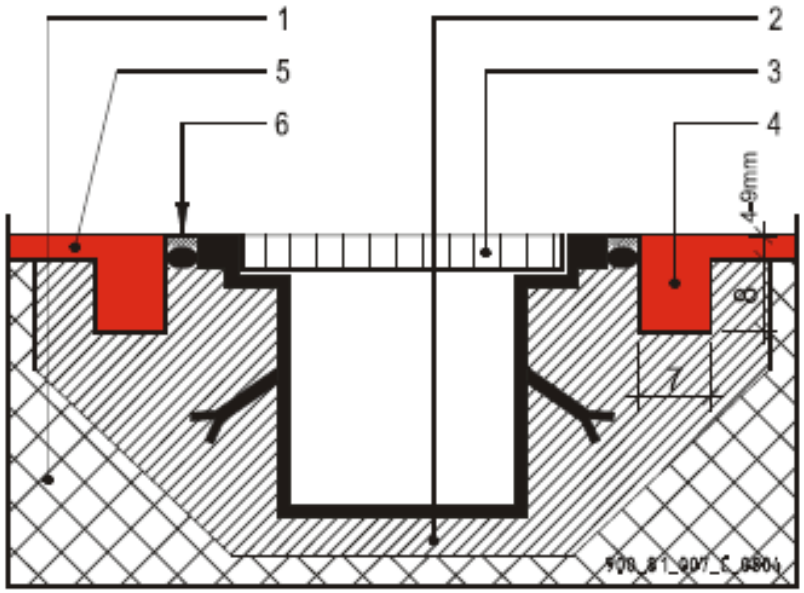
Construction

Sikafloor®-PurCem®

Drainage channel detail



1	Concrete slab
2	Sikagrout® or Sikadur® 42 anchorage mortar
3	Steel channel grating
4	Edge anchoring grooves with Sikafloor®-PurCem®
5	Sikafloor®-PurCem® screed layer
6	Sikaflex®-Pro3WF joint with backing profile
7	Width 8 – 18 mm; 2 x screed thickness
8	Depth 8 – 18 mm; 2 x screed thickness

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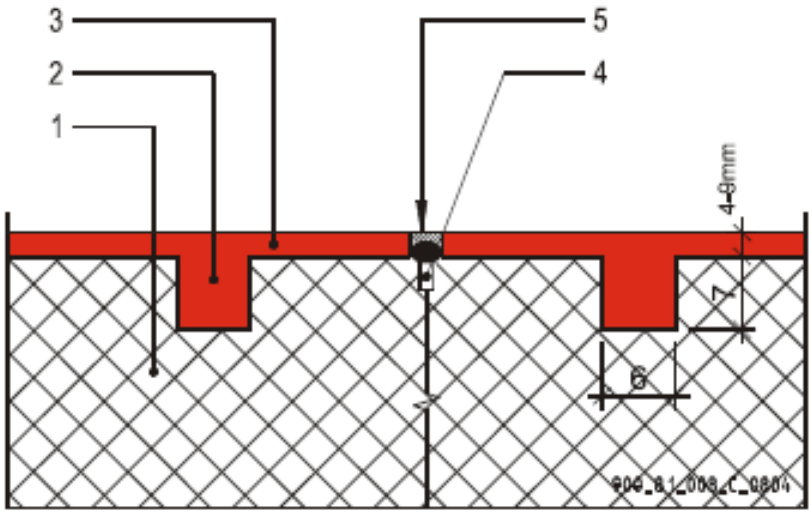
Sikafloor®-PurCem®

Induced floor joint



1 Concrete slab
2 Cutting anchoring grooves
3 Sikafloor®-PurCem® screed layer
4 Saw cut in structural concrete
5 Sikaflex®–Pro3WF joint with backing profile
6 Width 8 – 18 mm; 2 x screed thickness
7 Depth 8 – 18 mm; 2 x screed thickness

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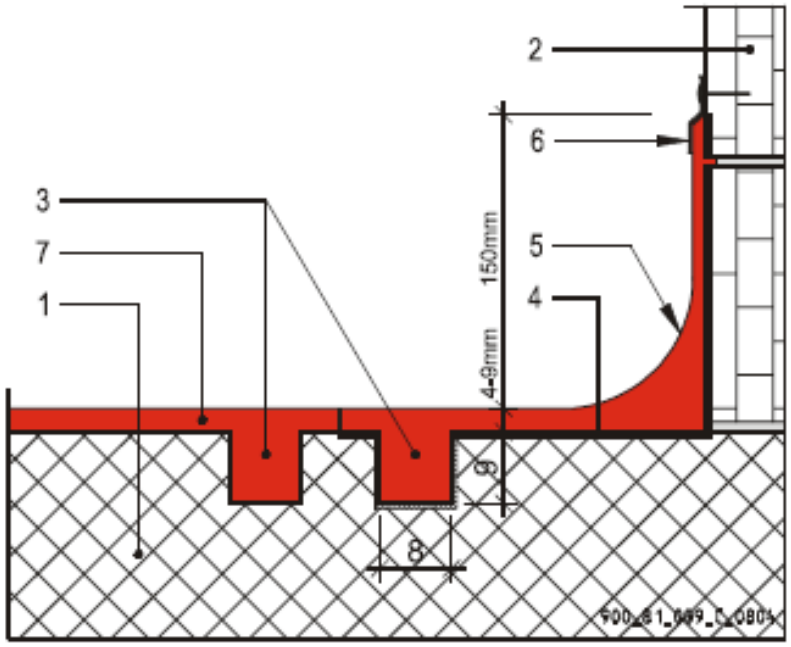
Construction

Industrial flooring; 8.1 Resin Floors and Coatings

N° 900_81_009_C_appl_0804
Author: Heini Aeppli
Date: 11/2008; Edition 001;

Sikafloor®-PurCem®

Floor to wall joint with cove



1	Concrete slab
2	Brickwork wall or concrete
3	Cutting anchoring grooves
4	Sikafloor®-PurCem® suitable primer for coving mortar
5	Sikafloor®-PurCem® coving and detailing mortar
6	Optional "bird beak" or "stop bead" with metal flashing and sealant fillet
7	Sikafloor®-PurCem® screed layer
8	Width 8 – 18 mm; 2 x screed thickness
9	Depth 8 – 18 mm; 2 x screed thickness

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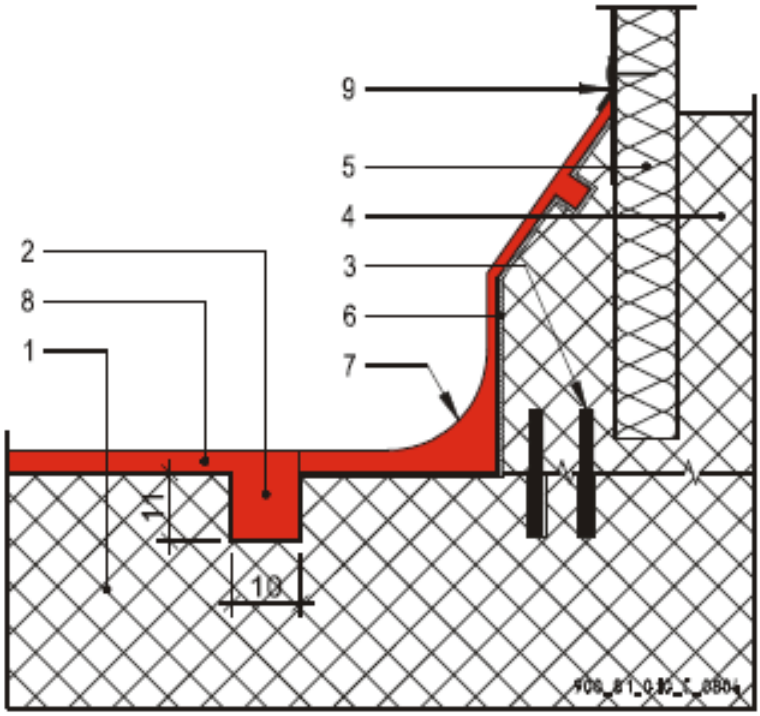
Sikafloor®-PurCem®

Floor to wall joint with cove and kerb detail



1	Concrete slab
2	Cutting anchoring grooves
3	Fix anchorage with SikaPowerfix®
4	Concrete element kerb
5	Wall panel
6	Sikafloor®-PurCem® suitable primer for coving and detailing mortar
7	Sikafloor®-PurCem® coving and detailing mortar
8	Sikafloor®-PurCem® screed layer
9	Optional "bird beak" or "stop bead" with metal flashing and sealant fillet
10	Width 8 – 18 mm; 2 x screed thickness
11	Depth 8 – 18 mm; 2 x screed thickness

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Construction

3.3.6.Substrate priming

3.3.6.1. General surface (if necessary)

Priming of concrete substrates is not usually required under typical circumstances. However, due to variations in concrete quality, surface conditions, surface preparation and ambient conditions, application of reference test areas are recommended to determine whether priming is required to prevent the possibility of blisters, de-bonding, pinholes and other aesthetic variations.

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

When application is to be done en green concrete (48 hours to 7 or 10 days) apply a scratch coat of Sikafloor® -21N PurCem®, 1.5 mm thick and lightly broadcast with quartz sand 0.4 mm – 0.7 mm.

System 1: moisture control on green concrete:

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

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

- Primers:
  Sikafloor-155W N
  fully blinded with quartz sand 0.4 - 0.7 mm for the subsequent application of Sikafloor-19N / 20N PurCem.

System 3: Inadequate substrate and moisture content below 4%

- 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.

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Construction

3.3.6.2.Priming of details, covings and renders

The priming of all applications of Sikafloor®-29N PurCem® for details, covings and vertical renders is **imperative** in every case.

The recommended primer of the system is Sikafloor®-10N PurCem® Primer, a 100% solids, moisture tolerant, fast reacting tacky primer.

Apply the primer using a brush or roller, over a properly prepared substrate at a sufficient coverage rate to ensure full coating of the surface and enough material left on the surface for a proper tacky texture.

Always apply Sikafloor®-29N PurCem® onto a tacky primer. If the primer becomes glossy and loses tackiness, remove surface contaminates, then recoat with additional Sikafloor®-10N PurCem® Primer and proceed.

As an alternative, Sikadur® 32N or Sikafloor® -156 / 161 can also be used for this purpose. The same conditions as indicated above are applicable.

By broadcasting quartz sand onto the primer, the requirement of tackiness is less relevant and this allows to prime the whole perimeter of the coving and then apply the full mix of the mortar, thereby increasing productivity

3.3.6.3. Vertical rendering

Under certain circumstances, some jobs may require extending the coving onto the vertical wall up to about 1 mt high, in order to provide chemical and thermal shock resistance for cleaning purposes.
Sikafloor® -29N PurCem® is capable of being used for these applications, in thicknesses between 5 mm to 10 mm, provided suitable preparation and priming of the substrate is carried out.
First the substrate must be primed with Sikafloor® -10N PurCem® Primer or with Sikafloor® -156 with 2% Extender T in order to prevent the material sagging down the wall or with Sikafloor® -161. On to it, fully broadcast the surface with quartz sand (0.4 – 0.7 mm) to provide mechanical grip to the render, and allow the resin to harden for 24 hours at 20ºC.
Then apply a fresh coat of Sikafloor® -10N PurCem® Primer or Sikafloor® -156 / 161 and subsequently apply the Sikafloor® -29N PurCem® onto the tacky surface.
Re-apply Sikafloor® -156 if the surface looses its tackiness.
Once the surface has been rendered, seal with one or two coats of Sikafloor® -31N PurCem®.

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3.3.7.Substrate humidity

3.3.7.1.For primer application (if necessary)

Before applying the primer to the substrate, verify if the humidity content of the substrate is the adequate for the selected primer, either by means of the Sika-Tramex meter (pictured at left) or CM measurement.

There must be no rising moisture according to ASTM D 4263 (Polyethylene sheet test).

< 4% pbw if priming with Sikafloor®-156 / -161 / -157
< 6% pbw if priming with Sikafloor®-155WN

Prior verification of the suitability of the application conditions prevents problems.

3.3.7.2.For Sikafloor®-N PurCem® application

Prior to the application of any of the Sikafloor®-N PurCem® products, verify there is no presence of water in liquid form nor rising dampness on the substrate and it is dry or in a saturated surface dry or SSD condition.

Test method: Sika-Tramex meter (<6%), CM - measurement or Oven-dry-method.

No rising moisture according to ASTM D 4263 (Polyethylene sheet test).
If any moisture is detectable according to ASTM D 4263 (Polyethylene sheet test) for the thin screeds (-21N, -22N) and the coating (-31N), additional tests must be done to quantify actual relative moisture content amount or vapour drive.

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.

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3.3.8.Application of the primer (if necessary)

Prime the substrate using the appropriate primer (see system structure table).

Priming with Sikafloor®-156 / -161

Priming with Sikafloor®-155 WN

If broadcasting quartz sand, ensure full blinding of the wet primer, without any bald spots.

The purpose of broadcasting is to provide sufficient grip to the surface for the trowel application of the heavy duty trowel grade screeds when not using the screed box, i.e. Sikafloor®-19N PurCem®.

All of the following types of sand have been used in multiple jobs and different field test applications all over the world.

Quartz sand 0.4 - 0.7 or 0.3 - 0.8 or 0.6 - 1.2 or
Sikadur-510 Quartz sand 0.4 - 1.0 mm.

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Bald spots as can be seen above can cause lack of bonding of the screed, and possibly the appearance of cracks or debonding as a consequence.

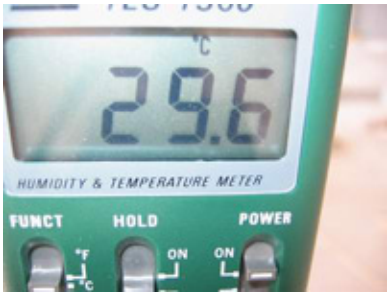
Remove any excess or loose sand from the surface when cured.

This ideally is done by sweeping and vacuuming.

3.4. Application condition requirements

3.4.1. Ambient and Surface temperature:

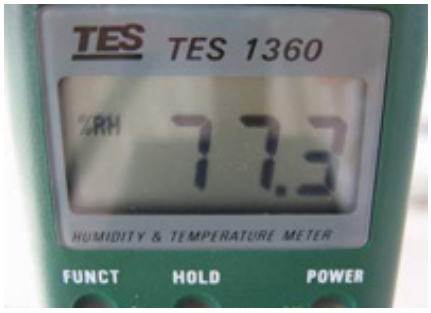
Surface temperature > 10ºC



Ambient temperature below 30ºC

Substrate and ambient temperature +10ºC minimum and +30ºC maximum

At high ambient and surface temperature, the reaction speed increases and reduces the working time or pot life.
At low ambient and surface temperatures, the reaction speed decreases and the working time or pot life are consequently increased.



Maximum relative air humidity is 85%

At a high relative humidity, the speed of the reaction is also increased.

At low relative humidity (below 30%), the speed of the reaction is reduced.

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Beware of condensation!
The substrate and uncured primer floor must be at least 3°C above dew point to reduce the risk of condensation or blooming on the floor finish.
This is also applicable to the primer application, not for aesthetic reasons but because the bonding of the screed may be hindered.

3.4.2. Relative ambient humidity

The relative ambient humidity plays an extremely important role in the reaction of all PU modified screeds and PurCem is no less.

The higher the ambient moisture, the quicker the reaction is at a given temperature. The lower the ambient moisture is, the slower the reaction. Environments with low relative humidity will delay the reaction and increases tack free times, and thus greater risk of staining or delayed placement into service.

3.5. Applications onto oil saturated substrates

In case the application is to take place onto oil contaminated substrates, the removal of the oil is mandatory to ensure proper bonding of the screed, absence of fish-eyes and stains appearing on the applied screed.

- Use a neutral detergent and scrub onto the stained concrete. Do not use solvents as they carry the oil deeper into the concrete. Use proprietary cleaners.
- Evaluate if any more oil is leaching up to the surface and if so repeat as necessary.

It is always recommended to do an on-site test patch to confirm compatibility, method of preparation and acceptable final test results

3.6. Applications onto blood drenched concrete substrates

The presence of blood, or other organic material, represents a risk of failure in the bond line due to the possible growth of bacterial growth supported by the moisture present in the substrate.
For the refurbishment of abattoirs where the substrate is contaminated by blood, fat and similar contaminants of organic origin, the concrete must be thoroughly cleaned and scarified prior to the application of the screed.
The process is as follows:

a) Wash the floor with sodium hydroxide diluted 1:3 in water at ambient temperature.
b) Neutralise with hydrochloric acid 1:3 to 1:5 parts in water. It will saponify. (As an alternative citric acid can be used instead)
c) Rinse with water at ambient temperature the following day, to remove the salts which will form. (in my opinion a wet method will dilute the salts again)
d) Dry well until achieving the necessary moisture to apply the PurCem floor (which in our case is a saturated surface dry.) In my opinion I would scarify and then let the concrete dry.
e) Scarify well.

This must be done until reasonably sure the contamination has been eliminated. (There is no way of being absolutely certain, due to the porous nature of concrete)

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3.7. Applications onto existing PU modified screeds

Applications onto previously existing PU modified cementitious screeds will depend on proper evaluation of the state of the screed and its surface. If the existing product surface is not degraded due to chemical attack, and it is stable, properly prepared and fulfils the requirements indicated in the PDS (pull-out strength, compressive strength),there will be no problem in application of Sikafloor®-PurCem® onto it.
It is always recommended to do an on-site test patch to confirm compatibility, method of preparation and acceptable final test results

3.8. Applications onto non concrete substrates

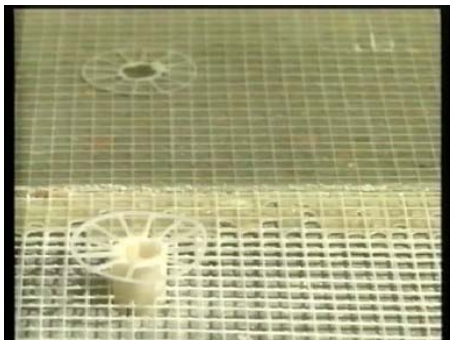
3.8.1.Anti-Acid tiles

For application onto non-concrete substrates, for example old anti-acid tiles, it is advised always to remove the tiles.
Remember :“Burying problem is not the same as finding a solution”.
The criteria indicated in the PDS of a strong, sound substrate, with pull off strength >1.5 N/mm^2 must always be fulfilled.

Generally customers want to "renew" the surface because the tiles are damaged or the bedding mortar is weak, or damaged because of penetration of chemicals, fat, into the joints, etc., so our recommendation is to remove the tiles.

Since we can not be 100% sure how good the bonding between the tiles and the substrate is, we generally recommend removing completely if the substrate (tiles in this case) is in bad condition. (this is why the application is being done in the first place!). It may be more labour intensive, and may take a little longer but results will be much better in the long run.
It is always recommended to do an on-site test patch to confirm compatibility, method of preparation and acceptable final test results

If tiles are well bonded and in a fair state, and a joint-free surface is desired, mechanical grinding of the surface of the tiles is necessary in order to increase the surface roughness and then the use of the Sika® Resiplot® system for creating a "new" substrate.
Please refer to the corresponding Product Data Sheet for additional information.



Sika® Resiplot® consists of a fibreglass mesh anchored to the floor by drilling 12 mm holes through the mesh every 500 mm and filling them with Sikafloor® -156 and a plastic anchor or bolt,

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Then applying two coats of Sikafloor® -156 over the whole surface and fully broadcasting the second one with quartz sand.

For further information about the Sika® Resiplot® system, please contact Sika Ltd.

3.8.2. Asphalt concrete

Application onto bituminous or asphalt concrete is not advised and removal of the bituminous or asphaltic surface is required and subsequent decontamination of the substrate must be carried out.
The reasons for this are that normally, asphalt concrete is less porous than cement concrete and the hydrocarbon molecules acts as a bond breaker, compromising the bonding capacity of PurCem® . Secondly, when considering bitumenous or asphalt substrates, the compressive strength of the PurCem screed is much higher than the asphalt or bituminous screed. Also, we should be concerned with its working temperature.
At high temperatures the asphaltic binder tends to soften which results in having a very strong screed placed over a soft substrate, which could lead to “flowing” or “creeping” of the substrate and subsequent cracking of the PurCem screed when subjected to loading.

3.9. Mixing

3.9.1. Mixing procedure standard version

Material and ambient temperature will affect the mixing process.
If necessary, condition the materials for best use to between 15ºC to 21ºC. (see item 2.4.6 “conditioning of materials” above.
Please refer to the particular instructions for mixing which appear in each product’s data sheet.

Please refer to the item below “7.2 Mixing equipment and tools” for the necessary information relative to that subject

The Sikafloor®-PurCem® product range is supplied in pre-weighed sets, ready for mixing.

For every Sikafloor®-PurCem product®, homogenise part A and B separately. Make sure all pigment is uniformly distributed with a low speed electric stirrer. If this is not done in a consistent manner, there will be hue differences between the different mixes.

For every Sikafloor® - PurCem® product, after homogenisation, pour the resin and hardener and blend for 30 seconds.
Gradually add part C (aggregate) to the mixed resin and hardener parts over a period of 15 seconds. DON’T DUMP!

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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.

It is important that the final mixing of all three components is done at slow speeds to avoid the entrapment of air and the risk of random blistering, which is increased when using higher mixing speeds.

Mix full units only.

Proceed with placement of the material to facilitate the release of entrapped air from the mix and CO_2 from the reaction. Do so in every batch mixed in a consistent manner in order to avoid colour differences due to increased temperatures in the reaction.

3.9.2.Mixing procedure colourpack version

This item with the recommendations for the mixing procedure of the colour pack version of Sikafloor® –PurCem® will only be finalised once this version is officially released.
At present it is in the Field test stage in Sika Canada.

4. Application / Installation

Each of the products in the range requires a slightly different technique for application. Described below are the techniques which increase the security of achieving an adequate and satisfactory floor for the end – user.

Substrate and ambient requirements must be as outlined above.

Always keep quality assurance records of the substrate preparation, application conditions, including substrate and ambient temperatures, relative humidity and due point, batch numbers of applied material, personnel and responsibilities.

Have sufficient, large enough clean containers to allow mixing of material for a continuous supply to the “wet-edge” within the pot life corresponding to the actual site conditions.. Start application far from the mixing station and work towards it.

Read the Product Data Sheet carefully, particularly the Notes on Applications / Limitations for further information on how to prevent application mistakes.

4.1. Application Method, manually

The products in the Sikafloor® -PurCem® range are only applied manually.

Keeping a continuous supply of mixed material and placing it efficiently will allow maintaining a “wet edge” to reduce the unavoidable differences between batches and between fresh mixes and material already starting to dry and set.

In the example below, in ideal conditions at 20ºC and 50% r.h.

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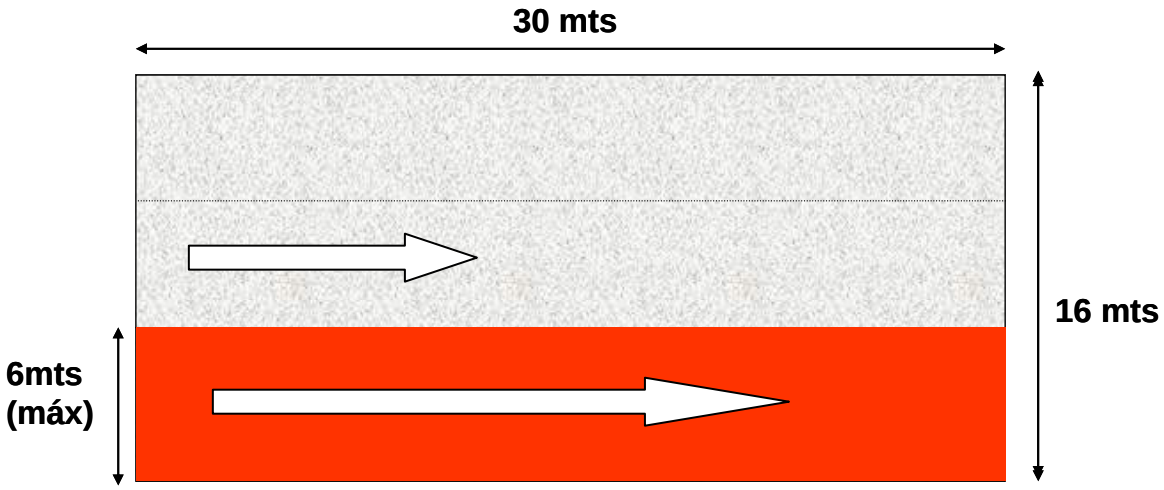

The joint between strips is visible but only in the fresh state

The edge for placing of the strip is advised to coincide with a concrete joint
Ambient and substrate conditions will limit the extent of the wet edge

Under warmer conditions, the width of the strip shall be shorter in order to maintain the wet edge during application. It can be made wider at lower ambient temperatures.

4.1.1.Application of heavy duty screeds - Sikafloor®-19N / -20N PurCem®

For placing the heavy duty screed mortars, Sikafloor®-19N / 20N PurCem®, the most convenient method is by using a screed box which allows spreading and controlling the applied thickness in a single action.

A variety of models and sizes are available from different suppliers.

Another very practical way of spreading the material and controlling its thickness is using a pin-rake.

This is most suitable for the easy trowel grade screed Sikafloor®-20N PurCem®, although it can also be used with Sikafloor®-19N PurCem®.

After the material has been placed onto the surface, simply smooth over the joints that appear between each pass of the screed box or between the pours of the material spread with the pin-rake using a steel trowel.

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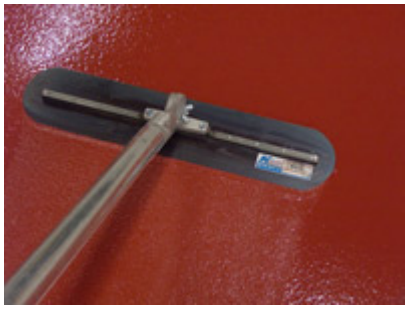
This can be done in the traditional kneeling position (left) for the thicker trowel grade mortar Sikafloor®-19N PurCem® , or thanks to its greater workability, in the standing position for the Sikafloor®-20N PurCem® (right) by using a “Fresno” trowel (below).

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.



Sikafloor® -19N PurCem® can also be finished using a very low speed power trowel to provide a flat smooth finish. It must be done very shortly after the material has been placed

Power trowelling with low speed pneumatic equipment on Sikafloor® -19N PurCem®, right behind the screed box.

After which the short pile roller is passed to remove any trowel marks as indicated below.

Sikafloor® -20N PurCem® does not require power trowel finish as its easy trowel grade consistency will level out by itself, and the aggregate surface texture will provide its designed slip resistance properties.

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!**

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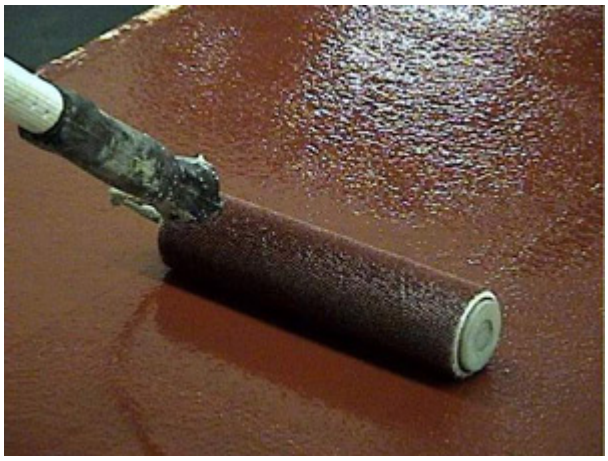
Excessive backrolling or trowelling will bring up more resin to the surface, reducing the desired anti-lip surface texture which characterises this product.

If a long pile roller is used, a greater amount of resin will be “pull-up” to the surface, and thus reducing the designed surface texture, as well as increasing the risk of pinholes.



4.1.2.Application of medium to heavy duty self levelling screeds Sikafloor® -21N / -22N PurCem®

For application of the self levelling screeds, the mixing process is similar to the one outlined above. For placing, the screed box is not normally used as the fluidity of these mortars is too high for adequate use. The screed is normally poured out of the mixing container.
For enhanced worker health and safety and better control of the quantity of applied material, a Sikafloor® trolley can be used.

For consistent results it is advised to always use the scratch coat prior to placing Sikafloor® -21N PurCem® on any substrate. A scratch coat 1.5 mm thick will seal the surface and fill irregularities and improve appearance of the final layer.
This is best done with a straight edge trowel.

If the substrate is very good and has reduced porosity and the application thickness is 5 or 6 mm, at the contractor’s own responsibility concerning final smoothness and pore free surface, it is possible to apply directly onto the substrate .

The use of a toothed trowel to get correct thickness may generate some surface appearance irregularities. The toothed trowel can leave traces of sweep marks, which maybe more noticeable on light colours like 1001.However this problem is largely overcome if the applicator uses a long flat edge trowel to smooth the finish.

For applicators who need to use toothed trowel to get thickness we advise to finish by smoothing with flat edge of trowel to remove any sweep marks left by toothed trowel. Better results are achieved using flat edge trowel.

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For the application of Sikafloor® -22N PurCem® the scratch coat is typically not required as the surface finish obtained with the broadcast aggregate is not showing any pores and will normally consist of coloured quartz sand or of natural quartz sand ~~be~~ sealed with one or two coats of Sikafloor®-31N PurCem® depending on the desired texture.

For the application of the body coat of Sikafloor®-21N PurCem® or Sikafloor®-22N PurCem® a toothed or serrated trowel allows for better control of the consumption and application thickness.

The broadcasting of the aggregate for Sikafloor®-22N PurCem® must be done within the recommended open time to prevent too much aggregate sinking into the screed if it is too fresh or having the aggregate not penetrating into the material if broadcast once the surface skin has formed

4.1.3.Detailing work with Sikafloor®-29N PurCem®

Good workmanship in the detailing work will prolong the service life of the floor, as these are the most critical elements in the floor.

It is extremely important for the contractor to follow the recommended details as described in previously in the item 3.3.4 “Edge Terminations”. Always form an anchor groove to fix the material into and prevent curling of the application.

Never featheredge!

Always prime the substrate with Sikafloor®-10 N PurCem® Primer or other suitable primer (please refer to PDS or item “Priming” above), even for horizontal detail work, as the Sikafloor® -29N PurCem® does not fully “wet” the substrate.

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 looses tackiness, remove any surface contaminates, then recoat with additional material.

As indicated in item 3.3.5.2 “Priming of details, covings and renders”, it is also possible to broadcast the primed coving for better grip of the vertical render, in which case this can be done the previous day to allow for the hardening of the broadcasted primer, and thus being able to apply the Sikafloor® -29N PurCem® in a continuous way, without interruptions for re-priming.

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Use adequate tools for shaping Sikafloor® -29N PurCem® in covings and similar details. Press the mortar hard to compact it properly and then smooth the surface over with the trowel.
For vertical surface rendering, properly press the material from the bottom upwards into the tacky primer.
If required, use Sikafloor® -31N PurCem® to seal the surface with one or two coats.

4.1.4. Application of top coats with Sikafloor®-31N PurCem®

The main purpose of top coating with Sikafloor®-31N PurCem® is to provide maximum hygienic sealing for Sikafloor®-29N PurCem® and to seal the aggregate on the surface of Sikafloor®-22N PurCem® broadcast screed and one single coat is sufficient for either case, if the same resin colour is used.

A second application is optional but keep in mind that the surface texture of Sikafloor®-22N PurCem® will be reduced compared to a single coat and in both cases the time for light traffic will be delayed for up to 24 - 36 hours. Sikafloor®-31N PurCem® can perform as a chemical protection for cementitious or concrete surface as a stand alone coating, in which case a two coat application is mandatory.

The product is easily applied using a short or medium pile or nap roller. Push the resin well into the surface, making sure that the coating fully wets the surface, and then pulling back lightly with the roller to the required thickness.

4.2. Application Method, mechanically

Mechanical (pump) application is not possible with Sikafloor® –PurCem® or other PU modified cementitious screeds.

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4.3. Hot weather applications

Due to the inherent characteristics of the PU modified screed technology, the pot lives of the system are short and more so at high ambient temperatures.
In case of application in high ambient temperatures or high humidity, do not mix more material than can be placed with the available resources within the pot life indicated in the PDS.
If necessary, provide additional resources for material placing.
Always work with a falling temperature, and ensure the material stock is kept away from direct sun exposure.
If possible, provide shade and / or cooling to the working area.
Allow the materials to acclimatise after transportation prior to use.
Conditioning of the components to temperatures between 15º to 21ºC will allow for adequate application. See items 2.4.5 and 2.4.6 above.

4.4. Additional works

Among the necessary precautions to take when doing applications of Sikafloor® – PurCem® products is to prevent contamination of the working area with dust originating at the mixing station.
It is advisable to install an air extraction system, a simple industrial vacuum cleaner will suffice to absorb any airborne dust from the opening of the part C bags.

The installation of a paper or plastic trail along which the transport of material from the mixing station to the application area is also advisable in order to avoid any drops of mixed material falling to the ground where later the material will be applied.

4.4.1. Interlayer Bonding

Application of subsequent layers of Sikafloor®-N PurCem® range products must always be carried out within the recommended overcoat times indicated in the PDS for the prevailing conditions on the site.
In case an additional or a new coat is required on an existing Sikafloor®-N PurCem® floor, or the recommended overcoat time indicated has elapsed, lightly grind or sand the surface and remove all the dust prior to application of the topping.
For old existing PU modified screeds which have been already in service, please see item 3.6 “Applications onto existing PU modified screeds” above.

Never apply epoxy coatings onto PU modified cementitious screeds, as it can result in bond failure.

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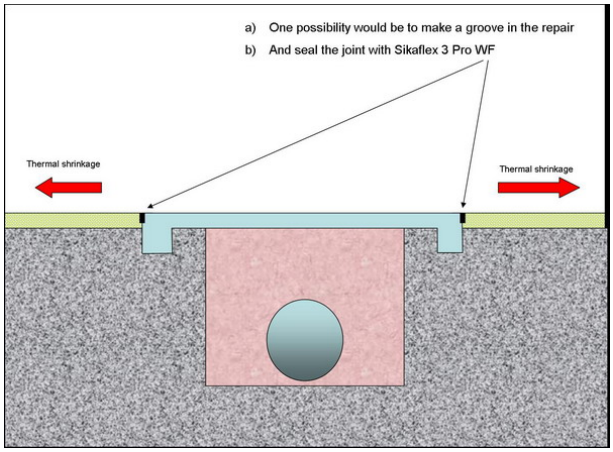
4.4.2.Patches and repairs of Sikafloor® –PurCem® floors.



In case a repair has to be done to a Sikafloor® –N PurCem® floor, it will be necessary to also create a groove for the repair must be anchored to, and seal the joint with Sikafloor –Pro3 WF

5. Inspection, Sampling, Quality Control *

e.g. Site Inspection (before, during and after application), In-situ testing during application (consumption), Sampling and Testing (during and after application)

6. Ancillary / Accessories

When working in environments where extreme application temperatures may occur, it is advised to use ancillary heating or cooling means in order to bring the application (and the storage area) to a moderate temperature to favour the best conditions for the application.

7. Equipment – Tools

7.1. Tools and equipment required for substrate preparation

Surface preparation tools and machinery can be equipment such as shown here: grinders, scabbler, sand or shot blasting etc., coupled to an industrial vacuum cleaner.


Grinding machine


Scabbing machine

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Scabbing machine and vacuum cleaner

Shot blasting machine

A double disc rotary saw for grooving

A single disc saw can do the job, but results are not as good

7.2. Mixing Tools and Equipment

Use a low speed electric stirrer (300 - 400 rpm) for mixing parts A and B with adequate mixing blades.
Many mixers are widely available but power should be at least 700 W.
Adequate mixers are: Beba, Collomix, Bosch, etc., and many others available worldwide.
The preparation of the mortar mix requires heavy duty mixers, particularly for the trowel grade mortars Sikafloor-19N / -20N PurCem.

For preparation of the mortar mix use a pan type revolving mixer such as a Cretangle heavy duty pan type mixer - Model L. http://www.creteangle.com/ModelL.htm.

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Also, other forced action mixers can be used, such as the Collomatic 65/2K-3 from Collomix. http://www.collomix.de/html_gb/cons_prod.htm

Other types of mixers, also particularly suitable for heavier consistency mortars such as Sikafloor® -19N PurCem® and Sikafloor® -20N PurCem® are rotary drum mixers, where the drum containing part A is placed on an tilted rotating platform and the rest of the components are added. Two or three mixes can be prepared at the same time.

Below, a steel drum tilted rotary mixer can be seen and here the material is poured into another vessel (wheel barrow) to transport from the mixing station to the placing area.

Organise the site with all necessary material for the day's work. Set up a mixing station separate from the application area, but with convenient transport to the placing area, for better efficiency.
Do not set up the tool cleaning area near the mixing station due to risk of contamination of new batches with the cleaner which would affect the colour of the screed.
Use adequate measures to avoid any damage that could be caused by an accidental spill of the cleaner on to the floor. Use sepiolite or saw-dust to absorb the spill.

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Depending on the mixer type, a several containers can be used for mixing and transport, or a separate wheel barrow used exclusively for the transportation process.

7.3. Tools for Application

A measuring tape is necessary for the preliminary work of surveying the necessary quantities of materials.
Among the required tools for application are: an ambient and surface thermometer, to check for dew point or shortened pot life conditions, a moisture meter and brushes or rollers for priming, stop watch for homogeneous mixing times.

Spatulas or trowels for emptying mixing containers, neoprene sponge / brush, pin spiked roller, cleaning tools and cloths, safety equipment - gloves, goggles, safety boots, spike shoes, etc.

7.3.1. Cleaning of tools

Clean all tools and application equipment with Thinner C immediately after use.
Hardened / cured material can only be mechanically removed.
Please note that Thinner C is solvented and consequently it is flammable.
NO NAKED FLAMES.

8. Cleaning and Maintenance

To maintain the appearance of the floor after application, Sikafloor® -PurCem® products must have all spillages removed immediately and must be regularly cleaned using rotary brushes, mechanical scrubbers, scrubber driers, high pressure washers, wash and vacuum techniques, etc., using suitable detergents and waxes.
Please refer to the relevant document in the flooring intranet site.

9. Application Mistakes and Surface Defects

Probable causes and how to prevent and repair them.
Here is a brief review of some of the defects which can be found and easily prevented through attention to the recommendations in the Product Data Sheet, thorough training of the workers and adequate preparation of the substrate.
They are graded as Critical, Important, Minor, or Irrelevant.

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Problem: Curling of the applied screed

Cause: Absence of grooves on the substrate during preparation

Graded: Critical

How to repair it: Remove, open grooves and replace screed.

How to prevent it:
Follow the Application details and open perimeter grooves and around details prior to floor laying.

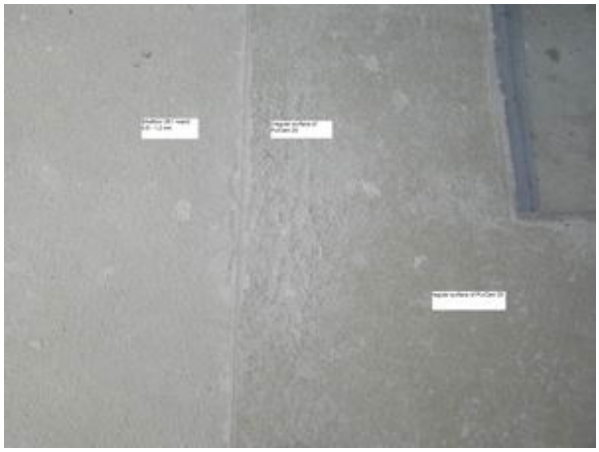
Problem: Lack of surface texture in Sikafloor®-19N / 20N PurCem®

Cause: Excessive back-rolling or trowelling of the screed.

Graded: Important to minor, depending on the service requirements

How to repair it: If slip resistance is a major service requirement, consider Sikafloor®-31N PurCem® broadcast to enhance surface texture

How to prevent it:
Only do one or two passes of the roller after trowelling.



Problem: Irregular surface texture in Sikafloor®-19N / 20N PurCem®

Cause: Not homogeneous back-rolling or trowelling of the screed.

Graded: Important to minor, depending on the service requirements

How to repair it: No good solution available, as repair will always be visible. Grinding and application of Sikafloor®-31N PurCem® broadcast to simulate surface texture.
Preferably removal and re application. A patch will be visible

How to prevent it:
Good workmanship.

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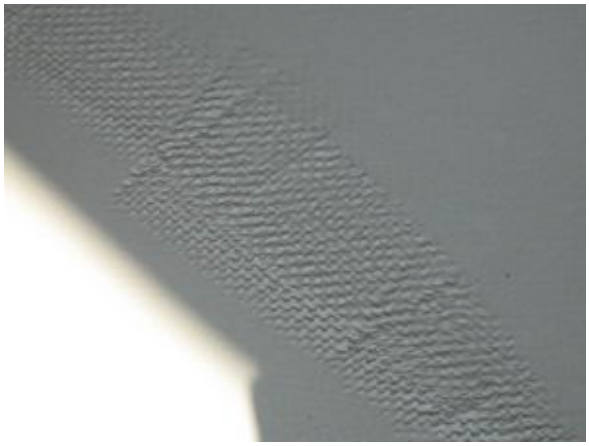
Problem: Debonding of an epoxy primed Sikafloor®-PurCem®, exposed to high service temperatures.

Cause: Destruction of the epoxy links above 60ºC

Graded: Important

How to prevent it:
Proper system selection, without epoxy primer exposed to > 60ºC.

How to repair it: Consider a primerless application of the screed, or if the substrate is poor, use a scratch coat as primer.



Problem: Roller marks in Sikafloor® -21N PurCem®.

Cause: Using the pin roller when product has begun to stiffen.

Graded: Important

How to repair it: Depending on the severity, may be possible to grind it and re-seal with Sikafloor® -31N PurCem®. Alternatively removal and a new application would be required is surface flatness is critical.

How to prevent it:
Evaluate site and ambient conditions to determine the maximum pot life / workability time available for de-airing.

Problem: RANDOM blistering of Sikafloor® -21N PurCem® .
(Dead flies don't qualify as problem)

Cause: Several factors are contributing to this situation although no definitive cause has been yet determined.
It is seasonal, generally appearing in summer, and thus related to temperature, but other factors could be also involved. Also, overcoating sooner than 24 hours increases the chance for occurrence

Graded: Depending on the frequency and size, from important to minor.

How to repair it: Removal of the localised area and re-application.

How to prevent it:
Condition the materials prior to application.

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Problem: Generalised blistering of Sikafloor® -PurCem® .

Cause:
A) When blistering is evident throughout the whole surface of a Sikafloor® –PurCem® application, the most probable cause is the use of part C past its shelf life or if within shelf life, part C which has been partially hydrated and is less reactive than it should be.

Graded: Critical

How to prevent it: Make sure the material is within its shelf life and has been properly stored.

How to repair it: There is no other option but to remove and re-apply.

10.Certificates

The products in the Sikafloor® –PurCem® product range have been tested to multiple requisites and according to the most relevant standards both internally and externally.

Food industry approvals according to:

- USDA - US
- CFIA – Canada
- EN/UK Campden food taint
- EN ISEGA - Food contact
- Excell - Food contact

The products conform to the requirements of EN 13813: 2002 and EN 1504 - 2. Please refer to the relevant product data sheet for specific information.

Test reports from Warrington Fire Research Centre for Sikafloor® -20N 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® -20N PurCem®: WFRC No.174965, dated 11th of July, 2008

Slip resistance tests have also been performed according several standards, among which are:
TRRL Pendulum, Rapra 4S Slider according to BS 8204 Part 2
According to DIN 51130, performed at the Material Prüfinstitute Hellberg GmbH or according to XP 05-010, performed at the CSTB.

Abrasion and impact resistance tests from Aston Services in the UK are available.

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Capillary absorption and permeability to water report from Taylor Woodrow Construction

11.Disclaimer and address of Sika Company

At present, the companies below are producing parts A, B and C
Canada, UK, Argentina, China, Indonesia and South Africa.
Other countries already producing or currently adapting production of part C are:
Turkey, Spain, France, Austria, Brazil, Colombia, Mexico, Australia,.

These are their locations.

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