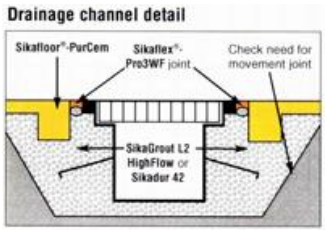
Construction

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

Sika Services AG
BU Contractors

Storage Place: R & D Info Centre
Key Words: Sikafloor PurCem, application,
Scope: Method Statement for the Application of the PU modified cementitious screed range.

Sikafloor®-19 PurCem®, Sikafloor®-20 PurCem®, Sikafloor®-21 PurCem®, Sikafloor®-22 PurCem®, Sikafloor®-24 PurCem®, Sikafloor®-29 PurCem®, Sikafloor®-31 PurCem® and Sikafloor®- PurCem® Colourpack.



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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 or 4 part reactive system composed water based polyol, an 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 in a “Colourpack” from a neutral part A is also available.

Sikafloor®-PurCem® is composed of the following systems.

In order to avoid problems, never combine in the same application “N” type and new reformulated 2013 version.

- Sikafloor®-19 PurCem®

Heavy duty, hand trowel grade, PU modified levelling screed. Smooth texture.

- Sikafloor®-20 PurCem®

Heavy duty, easy trowel grade, PU modified levelling screed. Textured, ideal for wet processes.

- Sikafloor®-21 PurCem®

Moderate to heavy duty, self levelling, PU modified smooth levelling screed, for dry processes.

- Sikafloor®-22 PurCem®

Moderate to heavy duty, self levelling, PU modified levelling screed with broadcast textured finish, ideal for high skid resistance in wet and grease containing processes.

- Sikafloor®-24 PurCem®

A light to moderate duty, very thin layer, PU modified self levelling screed for overall industrial use

- Sikafloor®-29 PurCem®

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

- Sikafloor®-31 PurCem®

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

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• Sikafloor®-PurCem® Colourpack
Separate polyole/pigment pouche to tint the Neutral coloured substrate version of the A component.

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® -19 and 20 PurCem® at 9 mm thick 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
- Selecting the 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 opening 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 CSE. This document shall serve as a basis for the training and development of local specialised contractors.

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2. Products

2.1. Available pack sizes

Sikafloor® -19 / -20 / -21 /-22 and -24 PurCem® share A parts and B.
Sikalfoor® -29 and -31 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.

	Pre-tinted 3-Part System		Colourpack 4-Part System	
Sikafloor-19 PurCem				
A component	3	kg	2,165	kg
B component	3	kg	3	kg
C component	28	kg	28	kg
D component			0,835	kg
total pack weight	34	kg	34	kg
Sikafloor-20 PurCem				
A component	3	kg	2,165	kg
B component	3	kg	3	kg
C component	26,5	kg	26,5	kg
D component			0,835	kg
total pack weight	32,5	kg	32,5	kg
Sikafloor-21 PurCem				
A component	3	kg	2,165	kg
B component	3	kg	3	kg
C component	15	kg	15	kg
D component			0,835	kg
total pack weight	21	kg	21	kg
Sikafloor-22 PurCem				
A component	3	kg	2,165	kg
B component	3	kg	3	kg
C component	17	kg	17	kg
D component			0,835	kg
total pack weight	23	kg	23	kg
Sikafloor-24 PurCem				
A component	3	kg	2,165	kg
B component	3	kg	3	kg
C component	14	kg	14	kg
D component			0,835	kg
total pack weight	20	kg	20	kg
Sikafloor-29 PurCem				
A component	1,5	kg		
B component	1,5	kg		
C component	19	kg	not available	
D component				
total pack weight	22	kg		
Sikafloor-31 PurCem				
A component	1,5	kg		
B component	1,5	kg		
C component	2,1	kg	not available	
D component				
total pack weight	5,1	kg		

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

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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.
The below mentioned colours are available in pre-tinted as well as in Colourpack version:

approx RAL 1001	Beige	
approx RAL 1006	Maize Yellow	
approx RAL 3009	Oxide Red	
approx RAL 5015	Sky Blue	
approx RAL 6010	Grass Green	
approx RAL 7032	Pebble Grey	
approx RAL 7035	Light Grey	
approx RAL 7037	Dusty Grey	
approx RAL 7038	Agate Grey	

Reference to RAL numbers is only indicative. No rights can be derived from colours not matching the RAL colour.

Custom colour matching is available upon request.
Minimum order quantities apply. Please consult the producer for required lead times.

Colour uniformity cannot be completely guaranteed from batch to batch . Do not mix batch numbers in a single area.

Custom colour matching might be 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.

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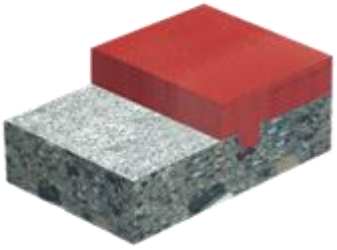
2.3. System Build - Ups

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®-19 PurCem® smooth texture
  Sikafloor®-20 PurCem® textured surfaces

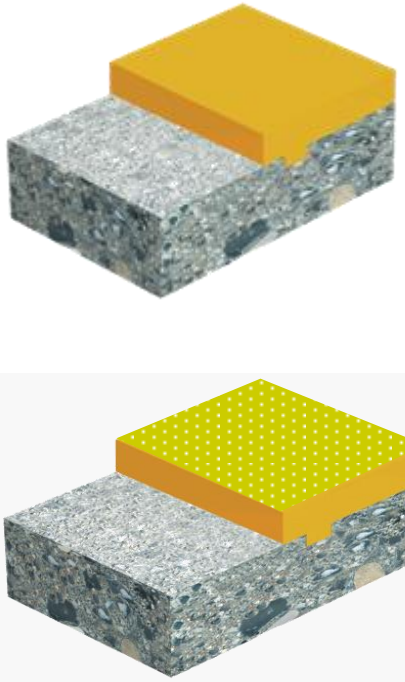


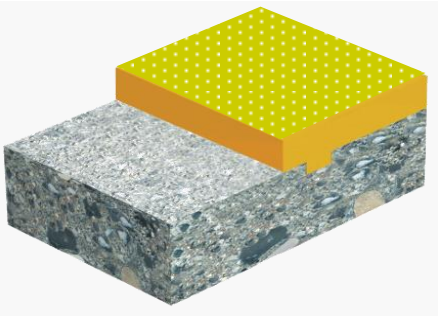
Medium to heavy duty screed

- Layer thickness:
  4.5 - 6 mm, including scratch coat
- ***Priming*** for Sikafloor®-21 PurCem®:
  Epoxy primer Sikafloor -156 / 161 lightly broadcast with quartz sand 0.4 – 0.7 mm,

or

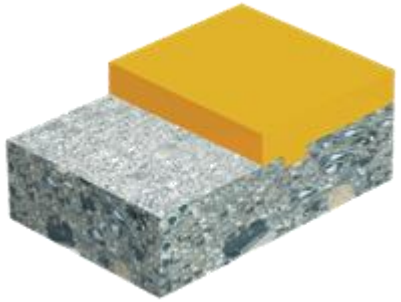
- ***Scratch coat***:
  A scratch coat 1.5 mm thick will seal the surface and fill irregularities and improve appearance of the final layer.
- Light textured screed:
  Sikafloor®-21 PurCem®
- or
- High slip resistance screed:
  Sikafloor®-22 PurCem® broadcast with coloured quartz sand unsealed or various types of aggregates such as natural quartz sand, silicon carbide or white fused alumina, in different grit sizes, sealed with 1 - 2 coats of Sikafloor®-31 PurCem® depending on the desired texture. (See build up Slip Resistance in Sikafloor®-22 PurCem® PDS)
  Sikafloor®-22 PurCem® does not normally require any priming.





Light to medium duty screed

- Layer thickness:
  3 - 5mm including scratch coat
- Priming for Sikafloor®-24 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.
- smooth screed:
  Sikafloor®-24 PurCem®



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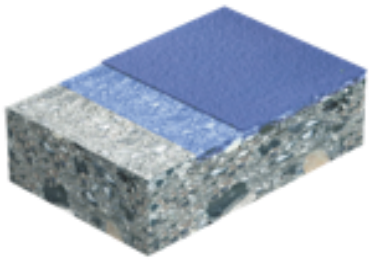
Coving and detailing

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

Seal Coat

- Base coat:
  Sikafloor-20 or Sikafloor-21, Sikafloor®-22,
  Sikafloor®-24 or Sikafloor®-29 PurCem®
- Seal Coat:
  1 x Sikafloor® -31 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.

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® -19 and 20 PurCem®** in 9mm thickness. **Sikafloor® -19 and -20 PurCem®** 's lightly textured surface makes it ideal to be used for wet processes with high mechanical and thermal shock resistance. It can withstand permanent service temperatures up to +160ºC, depending on the thickness, as well as the thermal shock from steam cleaning or boiling water discharge.

Sikafloor® -21 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 +140ºC, depending on the thickness, 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 specific or particular surface profile can be achieved with any of the Sikafloor® -PurCem® screeds, but generally with **Sikafloor® -22 PurCem®** with a broadcast texture of coloured quartz sand without seal coat or natural quartz sand or another, higher abrasion resistant aggregate such as aluminium oxide or corundum and then sealed with Sikafloor® -31 PurCem®.

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Sikafloor® -24 PurCem® is best suited for non-regulated applications, outside of the food industry, such as general industry warehouses or production areas.

Sikafloor® -29 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.

A prefabricated coving could also serve for this purpose. Please refer to the SikaKorte profiles, available from various Sika companies.

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

Finally, the possibility of providing high slip resistance with high abrasion resistance in very thin layer can be achieved with the “integral texture finish”, using Sikafloor® -31 PurCem® plus the addition of any one of three different grades of silicon carbide, applied by roller.

product selection criteria	chemical exposure	abrasion resistance	self levelling	slip resistance	coating	steam cleaning	detailling, covings,
Sikafloor®- 19 PurCem®	x	xx		x		xxx	
Sikafloor®- 20 PurCem®	x	xx	x	xx		xxx	
Sikafloor®- 21 PurCem®	x	x	xx				
Sikafloor®- 22 PurCem®	x	xx	xx	xxx			
Sikafloor®- 24 PurCem®	x	x	xxx				
Sikafloor®- 29 PurCem®	x	x				xxx	xxx
Sikafloor®- 31 PurCem®	x	x		xx*	xxx		

x	good
xx	excellent
xxx	superb
xx*	integral texture finish

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 coverages indicated in the PDS *exclude* wastage and practical considerations.

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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 application area.

2.4.5. Storage of material:

Parts A and B must be protected from frost and moisture.
Part C must be protected from moisture and rain and kept raised from the floor or lumps could develop in the Part C.

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.

If parts A and B have been subjected to freezing temperatures, they must be discarded, as the applied product will have reduced mechanical and application properties even after thawing and homogenisation. Ensure proper transportation measures when material is shipped during winter months.

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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 condition and/or install 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.

Do not remove any amount of component C from the mix to make it more resin rich and improve workability of the screed material, as this component is reactive and reducing the amount may cause the appearance of blisters or surface irregularities and pin holing.

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.

2.5. 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

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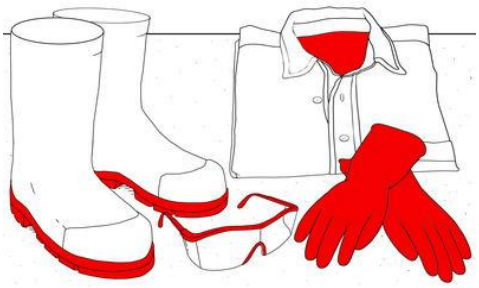
3. Safety Measures on Site

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® -PurCem® product range is water based and contains no solvents. The ventilation will prevent excessive moisture build-up .

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

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 (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® -19, -20, -21, -22 and -24 PurCem® .

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CSP 3-9 for Sikafloor® -29 PurCem® and CSP 3 for Sikafloor® -31 PurCem®.

I.C.R.I Guideline # 03732 CSP 3-6

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									

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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 normally not required under typical circumstances for screed applications with the heavy duty mortars Sikafloor® -19 PurCem® or Sikafloor® 20 PurCem®. For Sikafloor® 21PurCem® it is advisable either to prime with Sikafloor® -156 or Sikafloor® -161 lightly broadcasted with quartz sand or use a scratch coat of Sikafloor® -21 PurCem®.

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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.

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.

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Scarifying

Shot blasting

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

(*cigarette package 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..

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 Sikafloor® or Sikadur® 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®**.

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In order to prevent the reflection of cold / day 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. This scratch coat can be made with the unpigmented version, when using the Colourpack system.

Alternatively, a scratch coat of Sikafloor®-156 / -161 plus 0.3 - 0.8 mm of quartz sand in a 1:3 ratio by weight can be used to fill 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.**

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 movement will occur.

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

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

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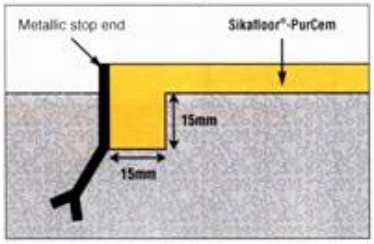
3.3.4. Edge terminations

All free edges and working day joints of Sikafloor® -19 / 20 / 21 / 22 / 24 and 29 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.

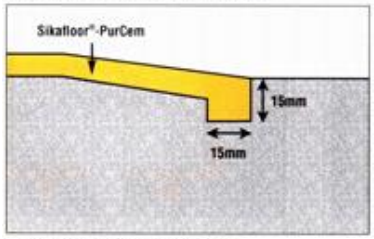
Never featheredge, always turn into an anchor groove.
On new sites, a metallic pre-formed stop end can be embedded in the concrete while fresh. It must be straight and level to ensure design thickness.

Sikafloor®-PurCem stop end



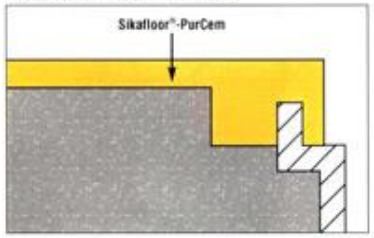
For refurbishment work, fix the metallic stop end with a high strength mortar of the SikaTop®, Sika® MonoTop® or Sikagrout® range. Make sure it's adequately sized for the type of traffic to be suffered. A chamfered metallic stop-end to prevent tripping for pedestrians is advisable. These profiles are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

Sikafloor®-PurCem edge detail



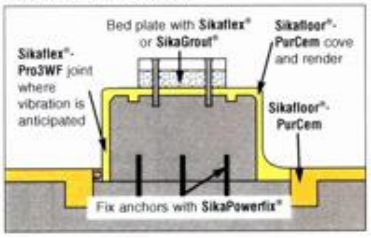
This reduced user risk edge-detail is less costly in material and labour as no stop-end and fixing mortar are necessary, with the added benefit of user safety as no tripping is possible.

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.

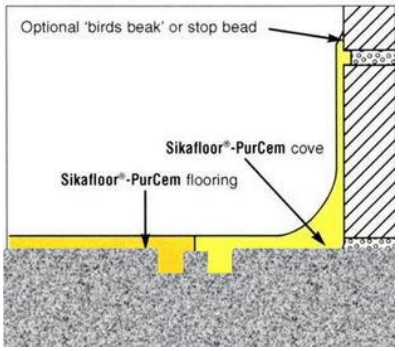
Machine plinth detail



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

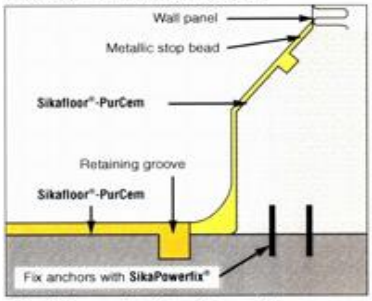
Construction

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

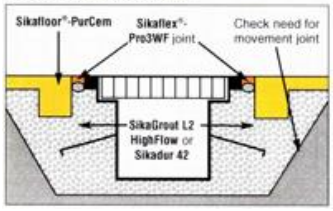
Sikafloor®-PurCem kerb detail



All rebates no less than 15mm x 15mm

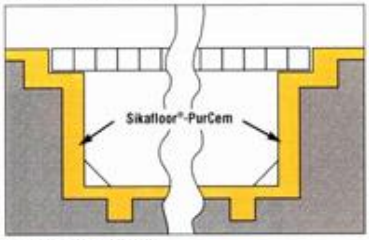
Kerb details must similarly be formed as indicated above, preferably also forming the double tie-chase or groove along the edge of the floor screed

Drainage channel detail



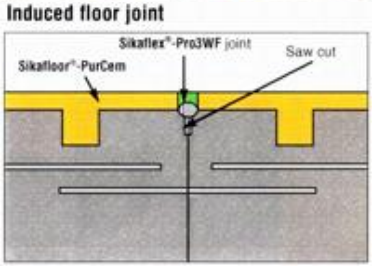
The drainage channel detail for prefabricated channels also allows for a joint sealer between the channel and the floor. This is important when differential expansion due to thermal stress is expected, unlike the picture above left where no joint sealer is used between the mortar and the drainage channel.

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.

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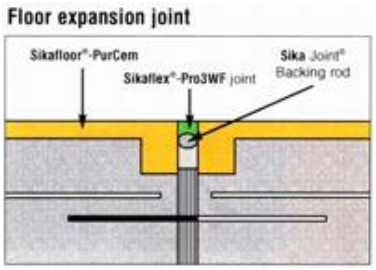

Another most important detail is the floor expansion joint, which must be formed according to the correct detail. Always make the joint size according to the expected movement calculated, in order to limit the movement to a maximum 25%.

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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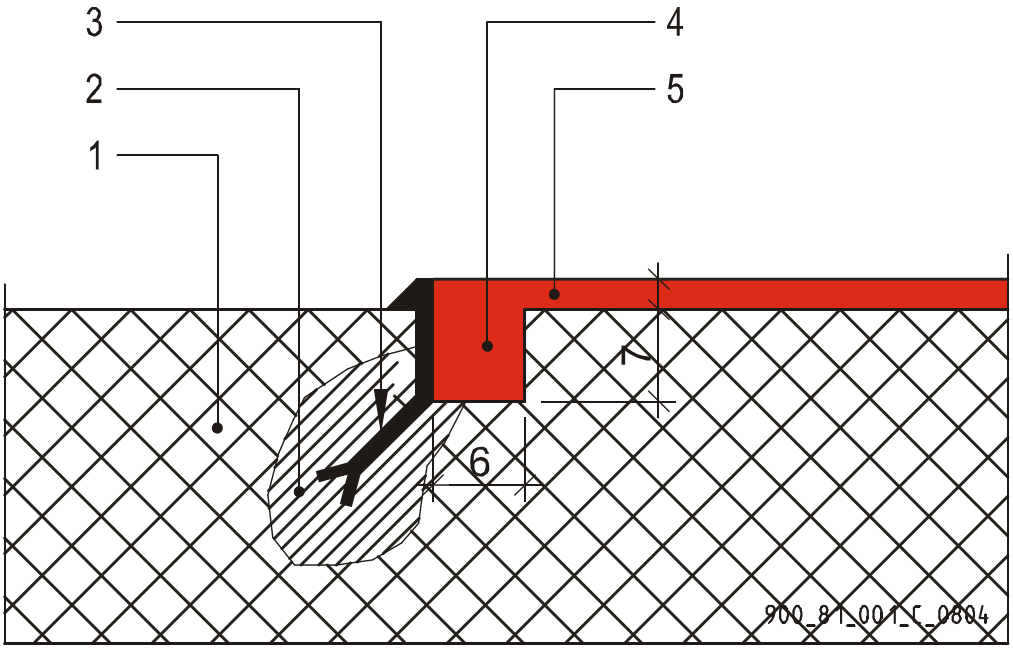
Construction

Sikafloor®-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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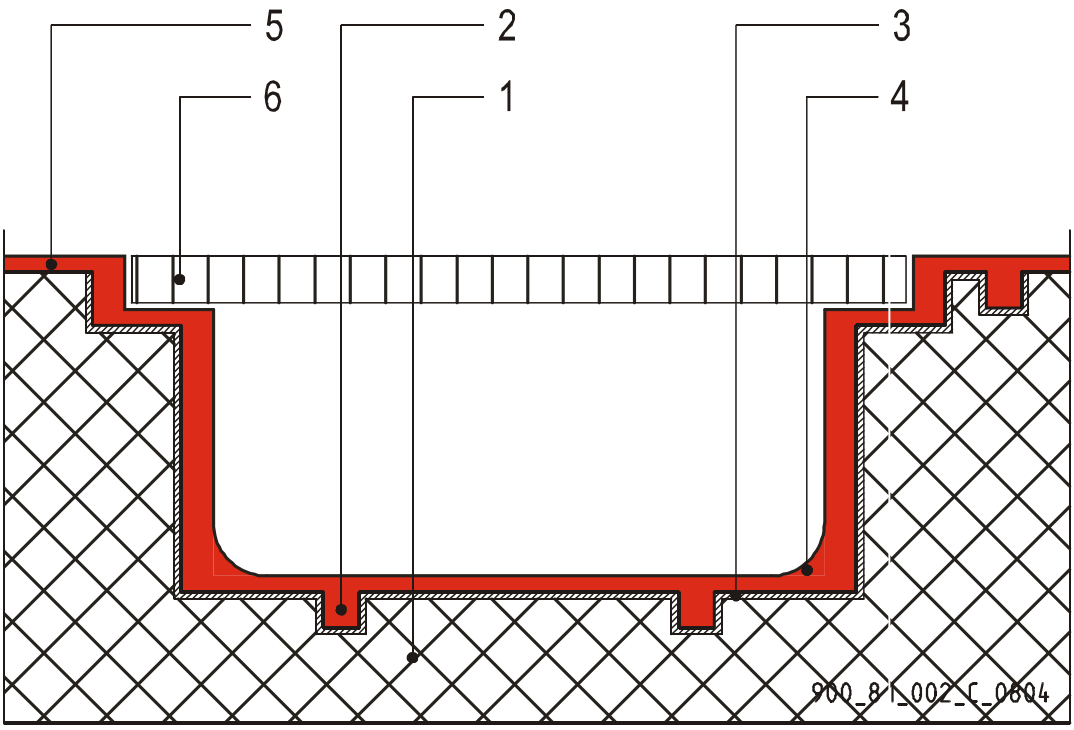
Construction

Sikafloor®-PurCem® Lined channel detail



1	Concrete slab
2	Cutting anchoring grooves
3	Sikafloor®-PurCem® suitable primer for coving and detailing mortar
4	Sikafloor®-29 PurCem® coving and detailing mortar
5	Sikafloor®-PurCem® screed layer
6	Steel channel grating

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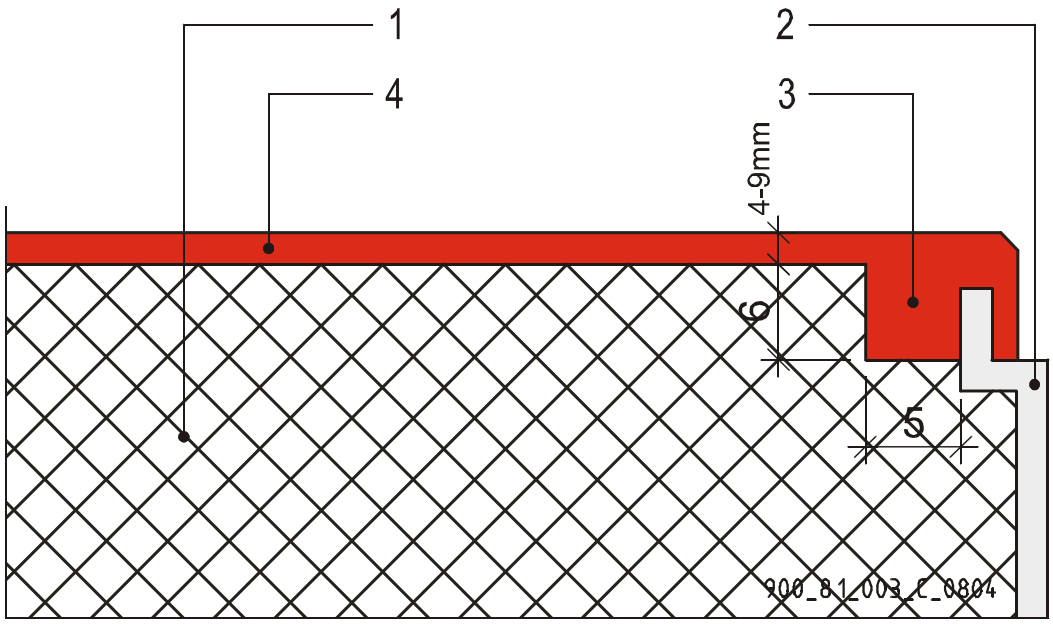
Construction

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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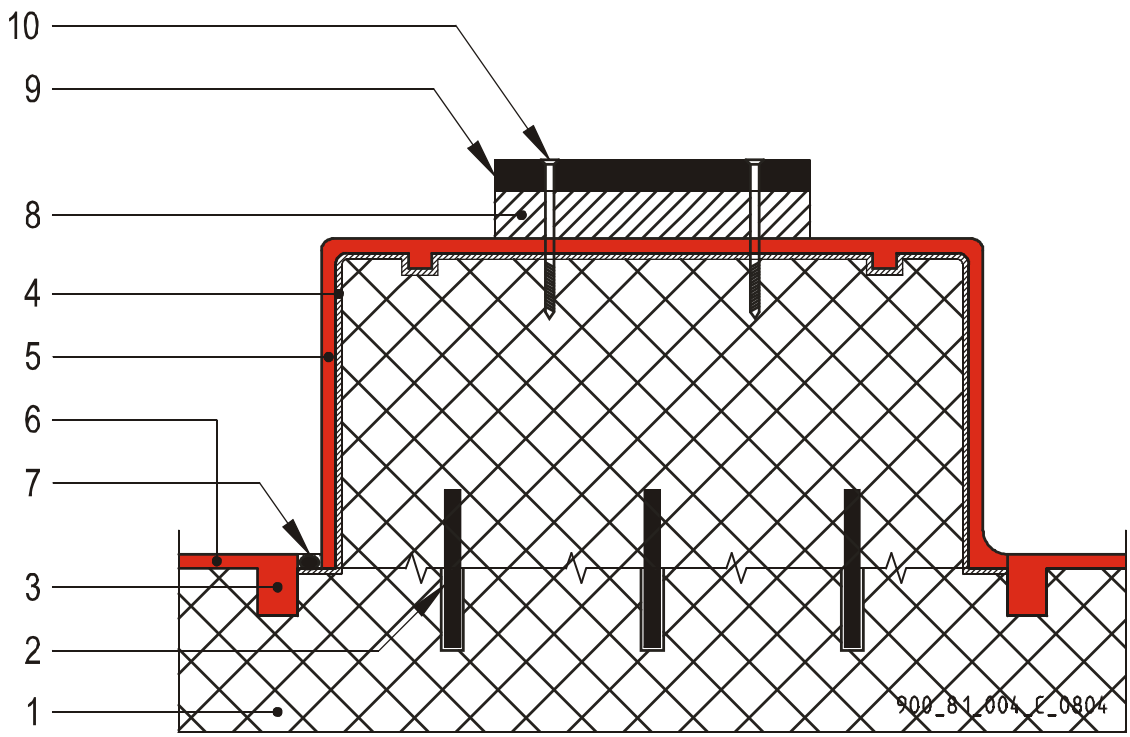
Sikafloor®-PurCem® Machine plinth detail



1	Concrete slab
2	Fix anchorage with SikaPowerfix®
3	Cutting anchoring grooves
4	Sikafloor®-PurCem® suitable primer for coving and detailing mortar
5	Sikafloor®- 29 PurCem® coving and detailing mortar
6	Sikafloor®-PurCem® screed layer
7	Sikaflex®–Pro3WF joint with backing profile where vibrations are anticipated
8	Filling with Sikadur® or SikaGrout®
9	Metallic bed plate
10	Cover bolts in blind holes

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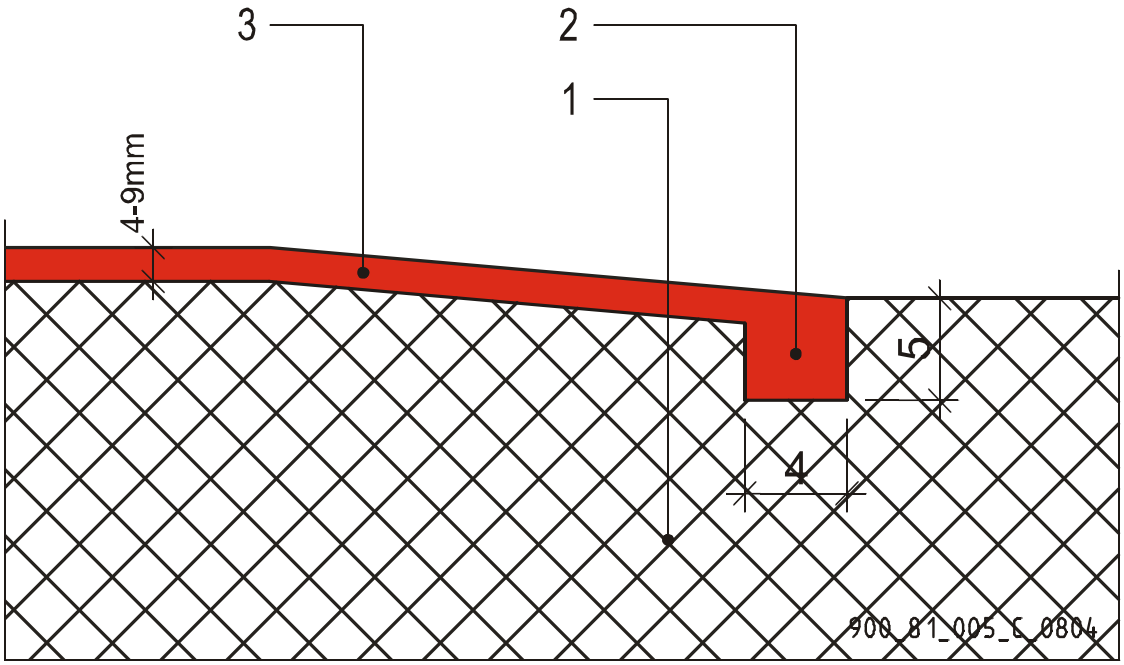
Construction

Sikafloor®-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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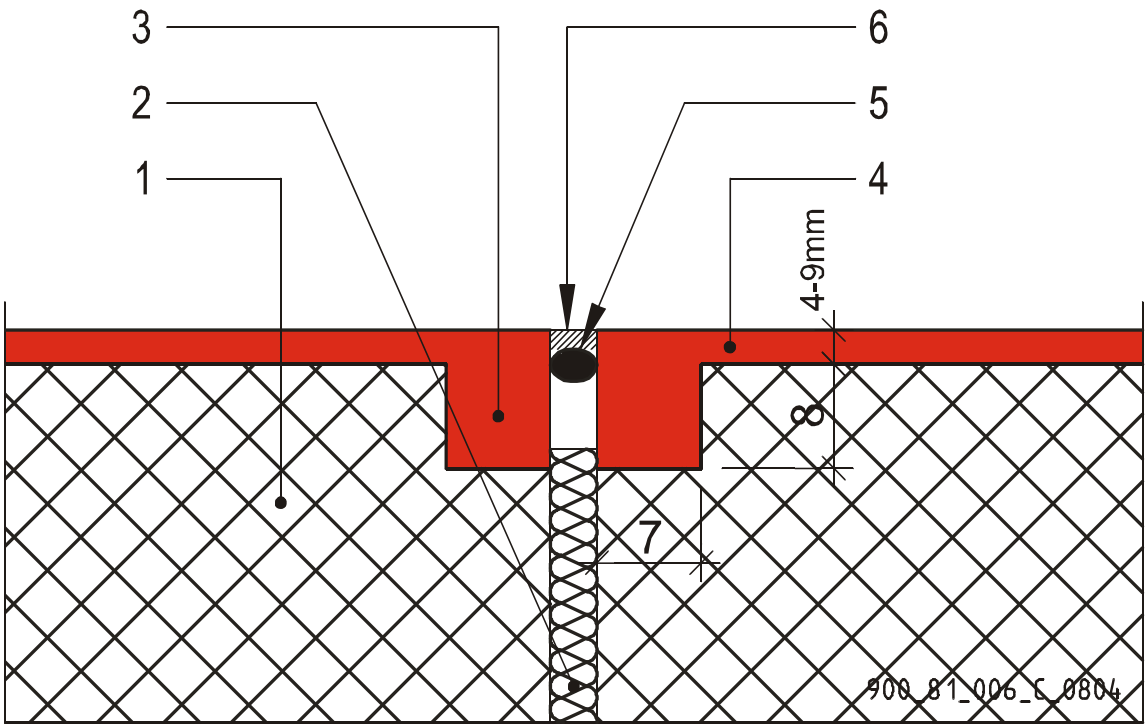
Sikafloor®-PurCem® Floor expansion joint



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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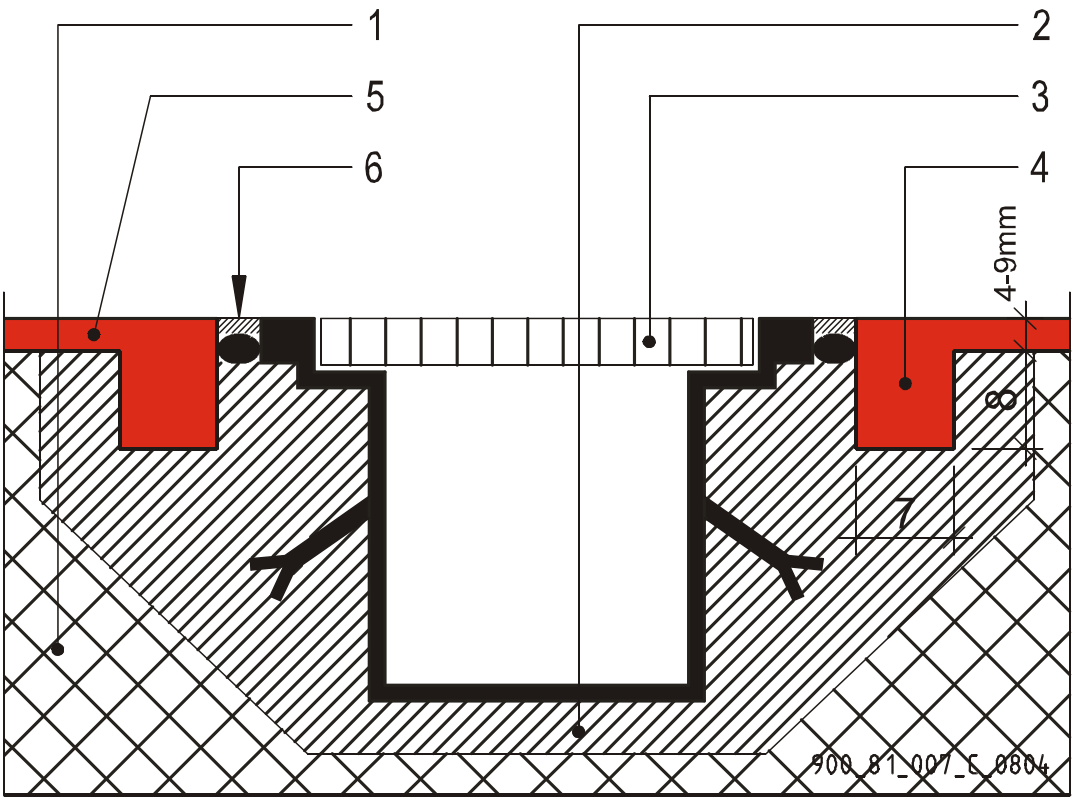
Sikafloor®-PurCem® Drainage channel detail



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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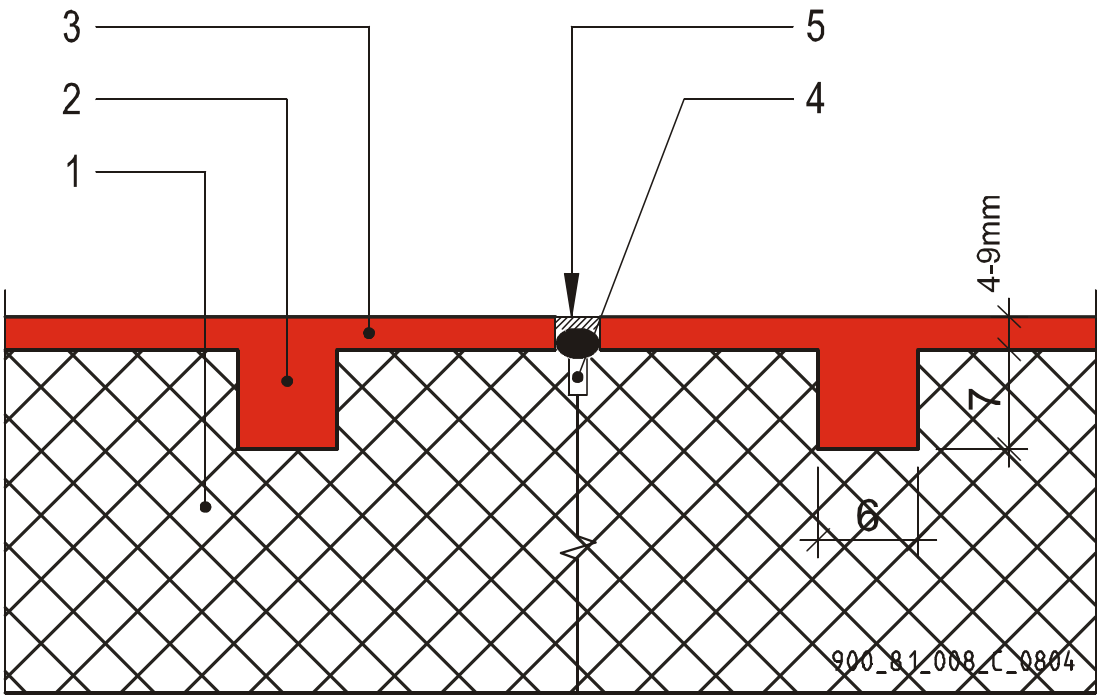
Sikafloor®-PurCem® Induced floor joint



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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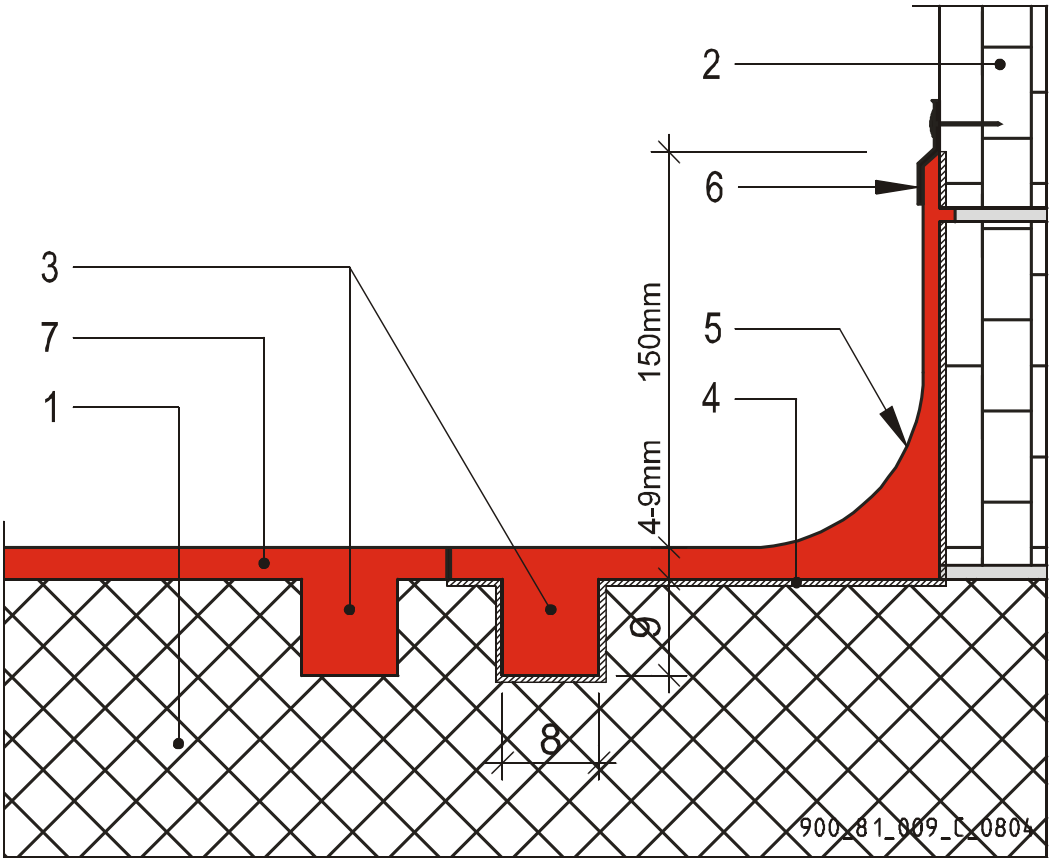
Construction

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®- 29 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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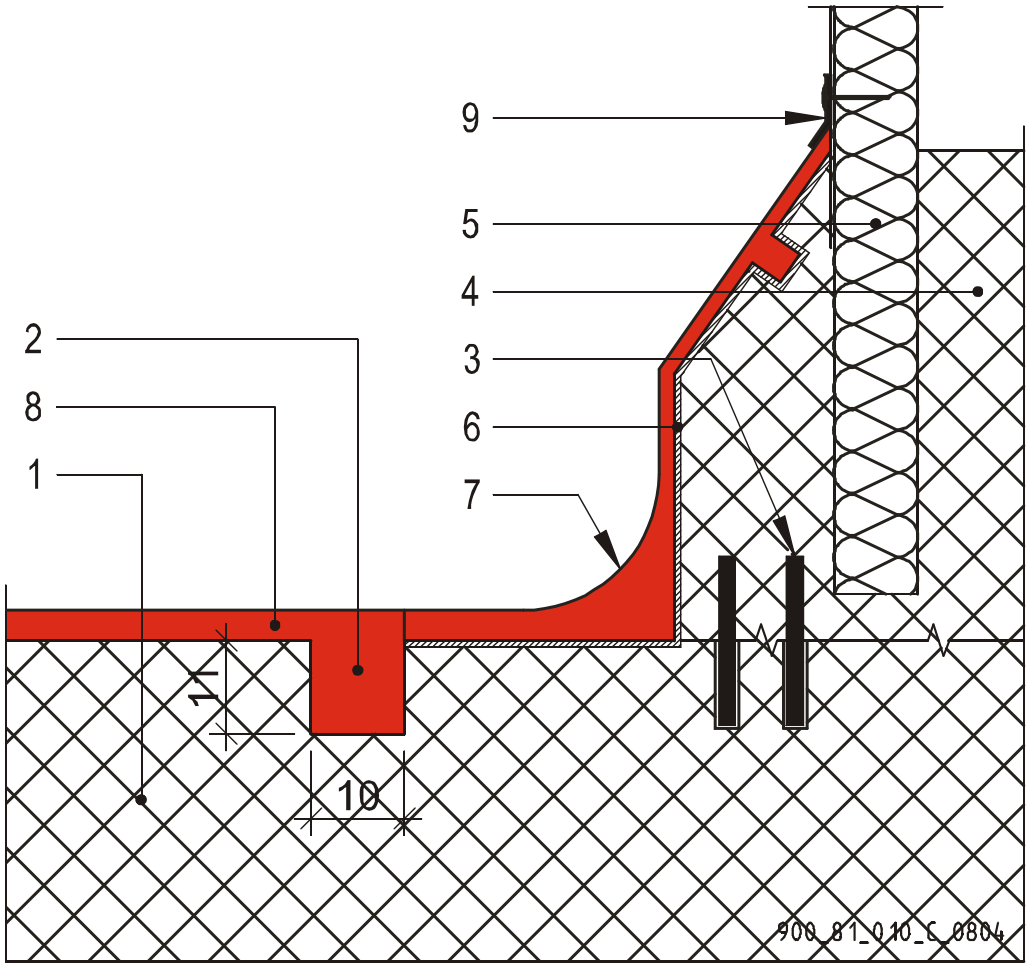
Construction

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®- 29 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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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 Sikafloor®-19 or -20 PurCem® screed applications.

When application is to be applied on green concrete (48 hours to 7 or 10 days) apply a scratch coat of Sikafloor® -21 PurCem®, 1.5 mm thick and lightly broadcast with quartz sand 0.4 mm – 0.7 mm. This scratch coat can be made with the un-pigmented version, when using the Colourpack system.

System 1: moisture control on green concrete:
- **Scratch coat** of Sikafloor®-21 PurCem® 1.5 mm thick

System 2: Inadequate substrate and/or 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®-19 / 20 PurCem®.

System 3: Inadequate substrate and/or moisture content below 4%
- **Primers**:
  Sikafloor®-155W N, Sikafloor®-156 or Sikafloor®-161
  any of which must be fully blinded with quartz sand 0.4 – 0.7 mm for the subsequent application of Sikafloor®-19 / 20 PurCem®.

3.3.6.2. Priming of details, covings and renders

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

The recommended primer of the system is Sikafloor®-156 Primer.

First the substrate must be primed with Sikafloor® -156 (with 2% Extender T for the vertical parts) 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 Sikafloor® -156 / 161 and subsequently apply the Sikafloor® -29 PurCem® onto the tacky surface.
Re-apply Sikafloor® -156 if the surface loses its tackiness.

Always apply Sikafloor®-29 PurCem® onto the **tacky** Sikafloor®-156 primer. If the primer loses tackiness, remove surface contaminates, and recoat before proceeding.

Construction

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

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® -29 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® -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 Sikafloor® -156 / 161 and subsequently apply the Sikafloor® -29 PurCem® onto the tacky surface.
Re-apply Sikafloor® -156 if the surface loses its tackiness.
Once the surface has been rendered, seal with one or two coats of Sikafloor® -31 PurCem®.

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
< 6% pbw if priming with Sikafloor®-155WN or Sikafloor®-161

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

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3.3.7.2. For Sikafloor®- PurCem® application

Prior to the application of any of the Sikafloor®-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 (-21, -24, -22) and the coating (-31), additional tests must be done to quantify actual relative moisture content amount or vapour drive.

Sikafloor®- PurCem® screeds (-19, -20) and detailing mortar (29) 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.

For the application of the scratch coat of the self levelling screeds - Sikafloor®- 21/ 24PurCem® a slight dampening of the substrate by using a low pressure spray unit, can help to reduce the air release from the substrate which could cause bubbles and pin-holes.
On the other hand, the application onto a dry substrate will ensure the best penetration of the resin component and improve the bond strength of the screed.
The scratch coat can be made with the un-pigmented version, when using the Colourpack system.

3.3.8. Application of the primer (if necessary)

Priming with Sikafloor®-156 / -161

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

Priming with Sikafloor®-155 WN

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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 primed surface for the trowel application of the heavy duty trowel grade screeds when not using the screed box, i.e. Sikafloor®-19 and -20 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.

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.

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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 +40ºC 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.

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.

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.

Construction

3.5. Mixing

All products in the Sikafloor® –PurCem® range follow the same basic mixing process, except for Sikafloor® -31 PurCem®, whether it is the pre-tinted or colourpack version.

3.5.1. Mixing time and temperature

Material and ambient temperature will affect the mixing process.

If necessary, condition the materials for best use to 15ºC – 21ºC.

Fully mix part A with a low speed electric stirrer and then add part B and premix part A and B separately for 30 seconds. Make sure all pigment is uniformly distributed.

For the colourpack version, homogenise part Aneutral with a low speed electric stirrer and add part D to it. Mix until a uniform colour is achieved. Ad part B and mix A neutral, D and B separately for 30 seconds. Make sure all pigment is uniformly distributed.

Use a double paddle (axis) mixer for best results and 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.

Lower temperatures increase the viscosity of the components and require greater energy input to achieve homogeneous a mix. Likewise, at higher temperatures the lower viscosity makes mixing easier, but also increases the speed of the reaction.
If necessary, for the standard version, condition the materials for best use to between 15ºC to 21ºC. (see item 2.4.6 "conditioning of materials")

It is advisable to open the packaging in advance and when working with the Colourpack version, the A en D components can be pre-mixed in order to ensure constant supply to the mixing station(s).

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Construction

To avoid the risk of colour shade variations, the mixing mixing time and method must be kept constant when conditions are stable.
The picture on the right shows different shades caused by different mixing times of the same batch material, from 1.5 minutes, 2 , 3 and 4.5 minutes respectively.
A significant change in ambient temperature will require an adjustment of the mixing time.

Always mix the same amount of units. Make sure enough resources are available to mix and apply the mixed units.

3.5.2. Mixing procedure pre-tinted 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 tools and equipment” for the necessary information relative to that subject

The Sikafloor®-PurCem® product range is supplied in pre-weighed sets, ready for mixing. Whereas Sika production plants endeavour to ensure precise weighing of all components, particularly powder parts, as is required by the factory production control and the quality assurance systems implemented in each plant, it is good practice by most professional contractors to double check that all components are of adequate weight to avoid variations in application properties.

For every Sikafloor®-PurCem® product, fully mix 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.

Construction

For every Sikafloor® - PurCem® product, after fully mixing, pour the resin and hardener and blend for 30 seconds. The reaction has begun!!

Gradually add part C (aggregate) to the mixed resin and hardener 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.

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.

3.5.3. Mixing procedure for Colourpack version

The Colourpack version of Sikafloor® -PurCem® is an identical formulation of the pre-tinted version, where the pigment part is supplied separately from the substrate part A neutral

Part A neutral is a light beige liquid and is supplied in pre-weighed 2.615 kg plastic drums or in bulk, i.e. 220 lt steel drums, with a nominal content of about 208 kg.

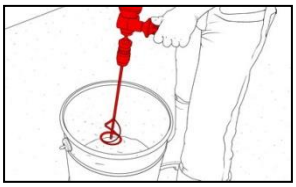
Please note that there are no pre-weighed units of part A neutral for Sikafloor® -29 /-31 PurCem®. To use the Colourpack system with these two products, mix 2 part Cs per each 0.385 kg pouch, and the corresponding 2.615 kg part Aneutral and 3.0 kg part B of the Sikafloor®-19,-20,-22,-24 A and B in order to maintain the proper mix ratios.

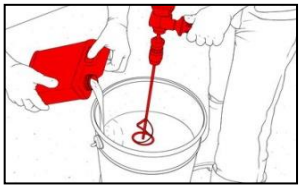
Do Not use partial dosage of the pigment as it will lead to colour variations between mixes. Make sure enough resources are available for mixing and placing the material in the prevailing conditions on site.

After transport, the A neutral, especially the drum format, must be mechanically stirred to homogenise its content, in order to ensure no settling has occurred.

Construction

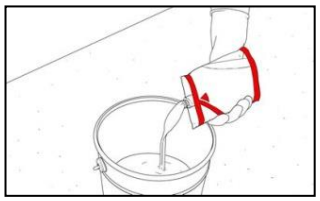
After stirring to homogenise the drum, pre-weigh into a clean container 2.615 kg of part A neutral or use a pre-weighed Aneutral drum.

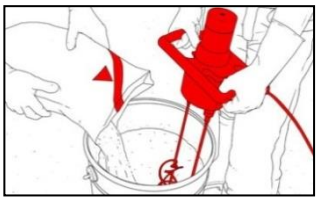


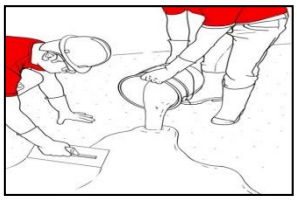


Thoroughly shake or homogenise by hand the Colourpack pouch before opening, then add all contents, 0.385 kg into the premixed Aneutral and stir for about 20 seconds.
This process can be done in advance on the jobsite to prepare premix A+D.

Then Add 3 kg of part B and thoroughly mix for about 20-30 seconds these 3 parts until a consistent colour is achieved before adding the corresponding part C.
Once Part B has been added, the reaction starts.



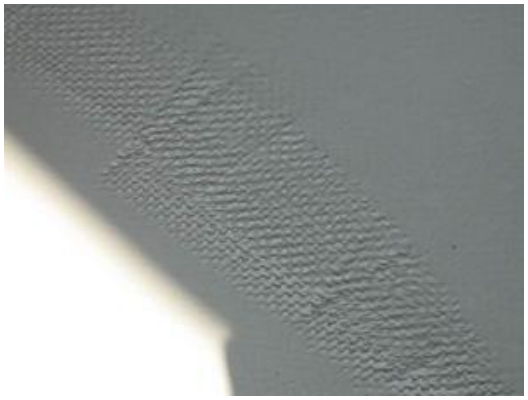




In order to obtain the maximum possible pot life on site, it is advised to immediately pour and spread the mixe onto the floor. This will reduce the speed of the exothermic reaction by increasing the surface to volume ratio of the mix.

3.5.4. Pot life

The concept of pot life, as used in the product data sheets, is defined as the time when the mixed product is no longer applicable in a way that it achieves the desired final surface appearance.



This means for example that a self-levelling product no longer heals itself or that it leaves no roller marks when the spike roller is used. In the case of the heavy duty screeds, the trowel marks don't disappear when the short pile roller is used.

OPEN TIME TEST

This is tested in the lab following this method:
In it, a mark is made periodically until the product is judged not the self-heal. The previous mark, when the product returned to a homogeneous surface is determined as the pot life.
This method can also be used on site as an indicative method for the prevailing conditions, such as ambient and surface temperature.

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In order to obtain the maximum possible pot life on site, it is advised to immediately pour and spread the mixe onto the floor. This will reduce the speed of the exothermic reaction by increasing the surface to volume ratio of the mix.

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 described in the PDS.

Always keep quality assurance records of the substrate preparation, application conditions, including substrate and ambient temperatures, relative humidity and dew 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.

Working step	**Personnel**
Mixing station No. 1, equipped with one twin paddle mixer	2 labourers
Mixing station No. 2, equipped with one twin paddle mixer (optional)	2 labourers
Material supply:	1 labourer
Application of Sikafloor-XX PurCem using screed box or special toothed trowel, coving trowel or short pile roller, depending on the product	2 labourers
Surface smoothing using short pile roller (Sikafloor -19/20 PurCem): De-airing using a steel spike roller (Sikafloor -21/24/ PurCem):	1 labourer
Total:	**6 - 8 labourers**

This is the required team composition in order to be able to apply an area of approx. 100 m²properly. For larger areas the team composition has to be adjusted accordingly.

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

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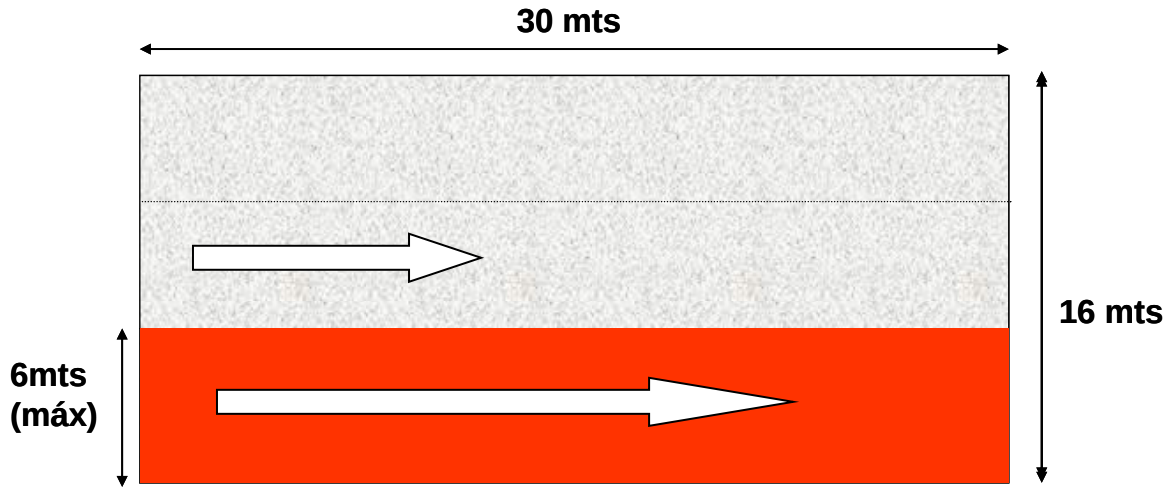

The joint between strips is visible but only in the fresh state

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®-19 / -20 PurCem®

For placing the heavy duty screed mortars, Sikafloor®-19 / 20 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 or adjustable spreader

This is most suitable for the easy trowel grade screed Sikafloor®-20 PurCem®, although it can also be used with Sikafloor®-19 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 when spread with the pin-rake or spreader, 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®-19 PurCem®, or thanks to its greater workability, in the standing position for the Sikafloor®-20 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® -19 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® -19 PurCem®, right behind the screed box.

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

Sikafloor® -20 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.

Use a short pile roller to prevent a greater amount of resin to be “pulled-up” to the surface, and thus reducing the designed surface texture, as well as increasing the risk of pinholes.

Construction

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Construction

4.1.2. Application of medium to heavy duty self-levelling screeds Sikafloor® -21 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® -21 / -24 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.
This scratch coat can be made with the un-pigmented version, when using the Colourpack system.

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 ~RAL 1001 Beige. 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.

For the best finish, after application of the Sikafloor®-21, and also -24PurCem, use a plastic spike roller (spike length 3 x screed thickness) to remove all trowel, pinrake, spreader-marks and finish with a metal spike roller.

Construction

4.1.3. Application of medium to heavy duty defined texture screed Sikafloor® -22 PurCem®

For the application of Sikafloor® -22 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 sealed with one or two coats of Sikafloor®-31 PurCem® depending on the desired texture.

For the application of the body coat of Sikafloor®-21, -22 or -24 PurCem® a toothed or serrated trowel allows for better control of the consumption and application thickness.

The broadcasting of the aggregate in the Sikafloor®-22 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.

It is also possible to use a non-pigmented A neutral + B resin part, in a 2.615 kg : 3 kg mix ratio to have a more cost competitive system to receive the broadcast aggregate, prior to sealing with Sikafloor® -31 PurCem®.

Construction

4.1.4. Application of self-levelling very thin layer screed for non-regulated general industrial use Sikafloor® -24 PurCem®

In those areas there are low level requirements, whether mechanical, chemical, hygienic or thermal, and only a basic levelling of the surface is necessary, the very thin layer self-levelling screed Sikafloor® -24 PurCem® can be used to provide a smooth, traffickable surface in a minimum thickness.

Due to the small thickness, the substrate preparation now becomes more relevant in order to obtain the best results possible, as any surface defects in the substrate will be easily detectable through the screed.
The same recommendations indicated above for Sikafloor® -21 PurCem® would be applicable, except for the need of much better surface preparation for levelness as the application is done in a thinner layer with a slightly more fluid material which may easily transfer any substrate defect and reflect those on to the surface.

4.1.5. Detailing work with Sikafloor®-29 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®-156 Primer or other suitable primer (please refer to PDS or item 3.3.6 “Substrate Priming” above), even for horizontal detail work, as the Sikafloor® -29 PurCem® does not fully “wet” the substrate.

The primer must be tacky during the application of Sikafloor®-29 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 contaminates, then recoat with additional material.

As indicated in item 3.3.6.23.3.6.2 “Priming of details, covings and renders”, it is adviced 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® -29 PurCem® in a continuous way, without interruptions for re-priming.

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Construction

Use adequate tools for shaping Sikafloor® -29 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® -31 PurCem® to seal the surface with one or two coats.

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Construction

4.1.6. Application of top coats with Sikafloor®-31 PurCem®

The main purpose of top coating with Sikafloor®-31 PurCem® is to provide maximum hygienic sealing for Sikafloor®-29 PurCem® and one single coat is generally sufficient if the same resin colour is used. It is also used to seal the aggregate on the surface of Sikafloor®-22 PurCem® broadcast screed (or any other Sikafloor®-PurCem® screed used for broadcasting) and one single coat is generally sufficient to achieve the desired slip resistant effect.

A second application of the sealer on top of the broadcast system is optional, but keep in mind that the surface texture of the floor 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®-31 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.

Application as seal coat on smooth screeds or stand-alone coating.
Apply the mixed Sikafloor®-31 PurCem® onto the substrate using a short or medium nap roller directly from a paint tray. 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.

Application as seal coat onto broadcast screeds
The most efficient way to apply the seal coat(s) onto broadcast screeds is to pour the material and spread it using a squeegee and then back-roll the excess using a medium knap roller.
Application can also be done with long knap rollers (20 mm).
A slip resistant texture can also be attained by seeding the first coat of Sikafloor®-31 PurCem® with selected mineral aggregates and then sealing with a second coat.

Please refer to the corresponding PDS or the system data sheet for the “DTS” for further information on the resulting slip resistance.

4.1.7. Integral finish top coats with Sikafloor®-31 PurCem®

	Very thin layer (integral texture)		
Fine texture	**Build-up**	**Thickness**	**Consum**
	SR -21 PurCem	3 mm - 4mm	6 -8 kg/m2
	SR-31 PurCem@5% addition ***45 mesh*** *silicon carbide*		0,25-0,35 kg/m2

	Very thin layer (integral texture)		
Mid texture	**Build-up**	**Thickness**	**Consum**
	SR -21 PurCem	3 mm - 4mm	6 -8 kg/m2
	SR-31 PurCem@5% addition ***60 mesh*** *silicon carbide*		0,2-0,3 kg/m2

	Very thin layer (integral texture)		
Coarse texture	**Build-up**	**Thickness**	**Consum**
	SR -21 PurCem	3 mm - 4mm	6 -8 kg/m2
	SR-31 PurCem@5% addition ***80 mesh*** *silicon carbide*		0,15-0,25 kg/m2

In order to achieve a combined high abrasion resistance and slip resistance in a thin coating layer, the addition of 5% by weight of one of any three grades of Silicon Carbide (SiC) into a set of Sikafloor -31 PurCem will provide the necessary effect.

A 45 mesh (355 microns) will produce a very fine texture. A 60 mesh (250 microns) will result in a mid-grade texture and the use of an 80 mesh (180 microns) will produce a slightly rougher texture.

When mixing the integral finish system, add the corresponding Silicon Carbide in 5% by weight of the full set after the rest of the components have been mixed to a

homogeneous consistency, and mix for an additional 10 seconds. Decant the mix into a separate container to avoid settling of the aggregate.

The laying rates above are indicative and will vary with the substrate porosity and roughness.

In order to improve the adhesion of the integral texture finish, a grinding or sanding of the Sikafloor® - PurCem® levelling screed is recommended, so to achieve a mechanical "key" effect between the layers in addition to the chemical bond between the layers when done within the recommended open time.

Application of the integral texture finish.
Decant the mix into a tray and apply with a roller from there. Do not pour directly onto the floor as the shadow of the pour will remain. Keep agitating the material in the tray with the roller to avoid settling of the aggregate.

4.2. Application Method, mechanically

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

4.3. Hot weather applications

Due to the inherent characteristics of the PU modified screed technology, the pot life of the products in 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 "Stocking of materials" and 2.4.6 "Conditioning of materials" above.

4.4. 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

4.5. 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.

Construction

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)

4.6. 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

4.7. Applications onto non concrete substrates

4.7.1. Anti-Acid tiles

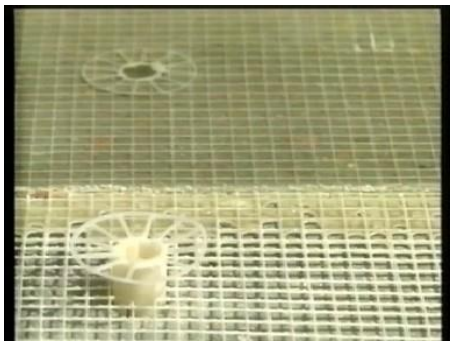
For application onto non-concrete substrates, for example old anti-acid tiles, it is advised always to remove the tiles.
Remember :“Burying problem is not the same as finding a solution”.
The criteria indicated in the PDS of a strong, sound substrate, with pull off strength >1.5 N/mm^2 must always be 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 it is not possible to be 100% sure how good the bond 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.

Construction

If tiles are well bonded and in a reasonable condition, 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® - 156/161 and a plastic anchor or bolt,

Then applying two coats of Sikafloor® - 156/161 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.

4.7.2. 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 bituminous or asphalt substrates, the compressive strength of the PurCem screed is much higher than the asphalt or bituminous screed. Also, there is concern 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.

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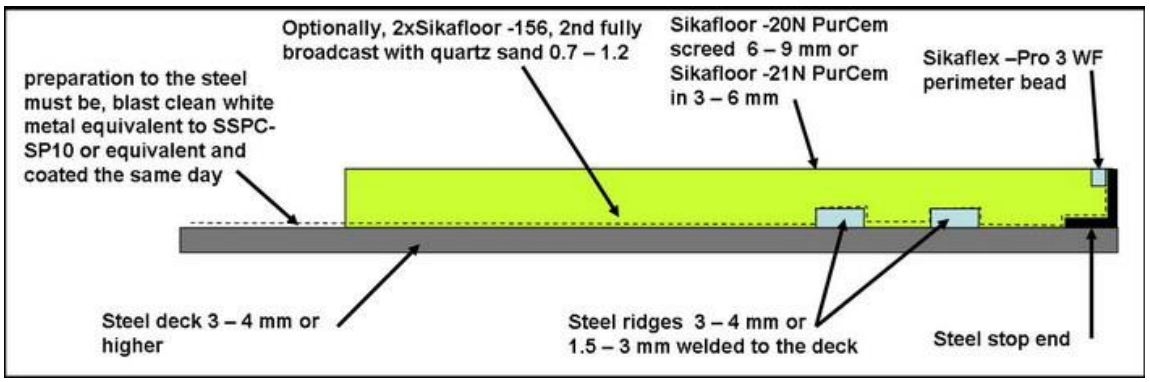
4.7.3. Application onto steel surfaces

For application of Sikafloor® –PurCem® onto steel surfaces, it is imperative that the steel is blast clean to a near white metal finish (“Society for Protective Coatings” SSPC – SP10) that is:

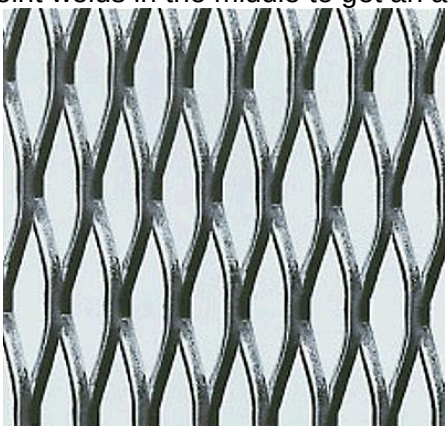
> *When viewed without magnification shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products and other foreign matter of at least 95% of each unit area. Staining shall be limited to no more than 5 percent of each unit area, and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coatings. Unit area shall be approximately 3 in. x 3 in. (9 sq. in.).*
> *http://www.sspc.org/sspc-sp-10-nace-no-2-near-white-blast-cleaning.html/*

or equivalent, and coated on the same day.
The Sikafloor® –PurCem® layer will bond perfectly well to the steel when applied directly, but if the intention is to provide specific protection to the steel, then priming of the steel is a wise precaution. The best option would then be to apply one neat coat of an epoxy primer such as Sikafloor® -156 / -161 for protection and then one more onto which broadcasting the quartz aggregate to act as the bond layer. See item 3.3.8 .

Welding steel strips of 3 – 4 mm high to act as grooves will help to prevent any possible curling.



Alternatively to the steel ridges, a steel waffle structure can be pointwelded around the perimeter and some point welds in the middle to get an anchor.



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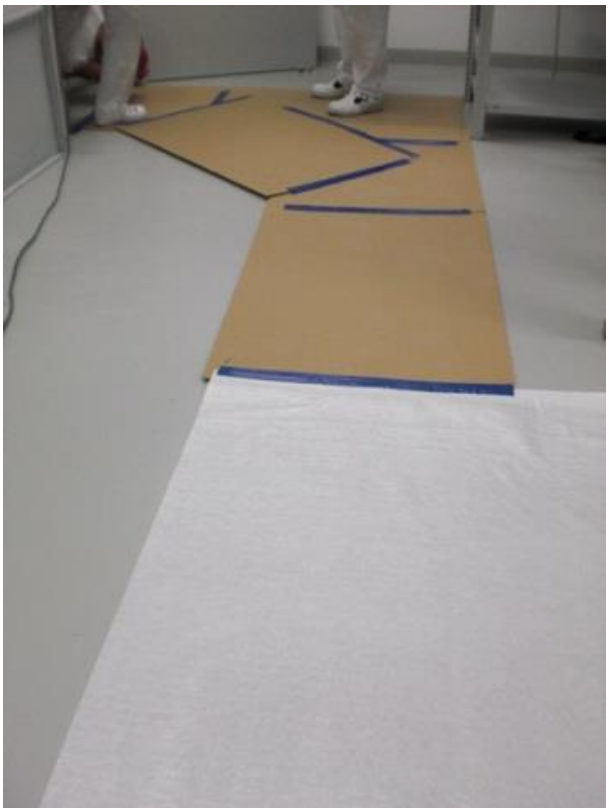
4.8. Additional works

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.



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4.8.1. Applications at greater thickness than defined

4.8.1.1. Heavy duty screeds

The recommended application thickness for Sikafloor®-19/20 PurCem® is between 6 to 9 mm.
Should it become necessary for achieving the required levels, to apply a **total thickness** of between 12 – 30 mm, it is advised to prepare the mix by adding additional aggregate, at a rate of 9 kg of clean dry quartz sand 2 – 3 mm maximum aggregate size (30% by weight of full set of Sikafloor® -20 PurCem®) and apply this layer at between 6 mm to 21 mm.
Over this layer, the normal heavy duty screed in 6 mm to 9 mm is applied within the recommended overcoat time for the pure product between 8 hours to a maximum 48 hours, in order to achieve the 12 mm (6 +6) to 30 mm (21 + 9) total thickness.
For thicknesses between 9 mm to 12 mm, the contractor can either apply two 6 mm layers of the pure product or if the service conditions allow, to apply Sikafloor® -19/20 PurCem® in a single layer up to 12 mm.

Although the additional aggregate added will not shrink, it is advised to still make the anchoring grooves on the substrate about 2 to 2.5 times the application thickness.
There is no need to perform grooves on the added aggregate screed prior to application of the “pure” product screed, as the chemical bonding between the layers will prevent the curling of the top layer due to shrinkage, as long as the application is carried out within the recommended overcoat times indicated in the corresponding Product Data Sheets.
We have very limited experience with this solution and should be considered as a Field Test.

4.8.1.2. Self levelling screeds

For the application of increased layer thickness screeds, the recommendation is similar to the one indicated above.

4.8.2. Interlayer Bonding

Application of subsequent layers of Sikafloor®-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®-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 4.6 “Applications onto existing PU modified screeds” above.

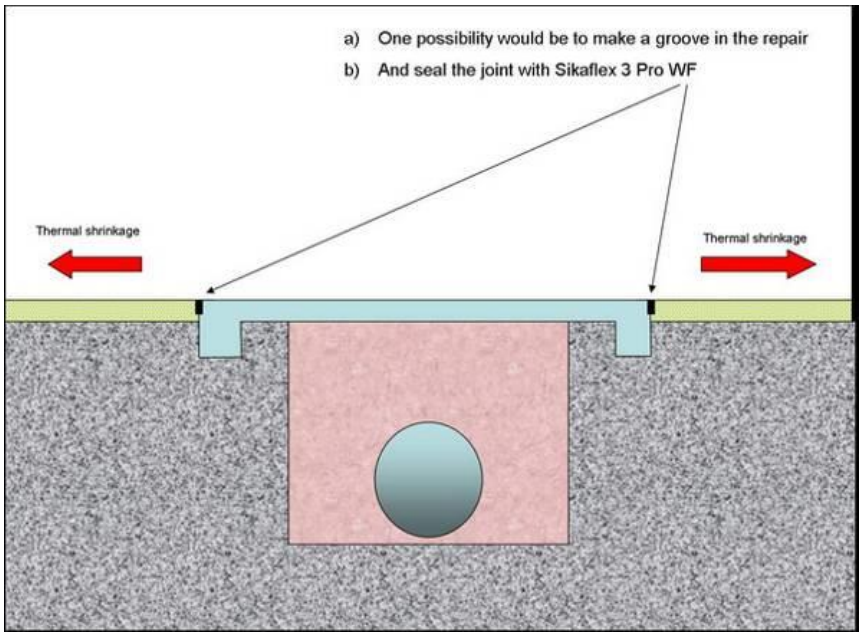
Never apply epoxy coatings onto PU modified cementitious screeds, as it can result in bond failure.

Construction

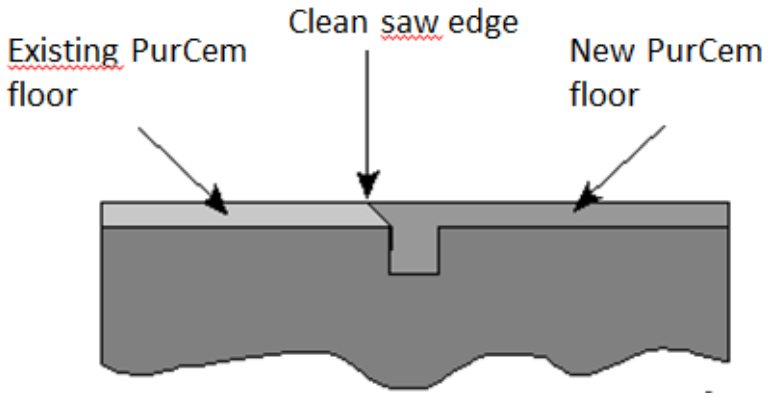
4.8.3. Patches and repairs of Sikafloor® –PurCem® floors.

4.8.3.1. Surface repairs or patches

In case a repair has to be done to a Sikafloor® -PurCem® floor, it will be necessary to also create a groove for the repair as it must be anchored too. Depending on the exposure scenario, (presence of thermal stress) it may be necessary to seal the joint with Sikafloor® –Pro3 WF /SL



The procedure would be as follows:



a) Cut out the area subject to repair by means of a disk saw and chisel out the screed. Make cuts at a 90º angle with the surface.
b) Create the necessary anchoring grooves for the repair to hold on to.
c) Analyse the substrate and make sure it fulfils the strength, cleanliness and texture requirements indicated above under “substrate evaluation”, and remove all loose materials and dust.
d) Protect the surrounding screed by means of plastic sheeting fixed by masking tape to prevent further staining during the repair works.
e) Depending on the substrate conditions it might be necessary to apply a primer or scratch coat.

f) Place the screed into the patch.
g) Allow the screed to harden between 1 or 2 hours (depending on the conditions) and remove the protection.

In the case of minor scratches, the application of a top coat of Sikafloor -31 PurCem will return the surface to a homogeneous appearance.

Please note that given the chemical characteristics of the raw materials, there will be a slight colour difference between the old material (UV exposed) and the newly laid patch due to aging of the former.

4.8.3.2. Repair of cracked screeds

Various options are available from best (and most expensive) to less advisable:

A) eliminate down to the concrete and re-apply the screed. Ensure the crack is not existing in the concrete itself.

B) Open the cracks with a rotating disc if they are sufficiently straight, prime the edges of the cut with Sika® Primer or Sika® Primer 3 N and seal with Sikaflex® Pro 3 WF / SL

C) fill the cracks with Sikafloor®-31 PurCem® as if it were a putty but this is extremely labour intensive and difficult to provide a good end result.

Construction

5. Inspection, Sampling, Quality Control

5.1. Inspection of the job site prior to the application

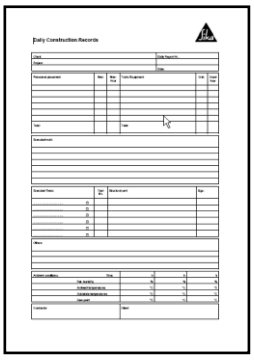
Prior to starting the work, and ideally prior to providing a quotation to the main contractor or owner, the flooring contractor must visit the area(s) to be treated in order to inspect the working area and ensure the following, jointly with the main contractor or customer. The list may include among others:

- Which areas are to be treated and what is the precise build-up for each
- Actual size of the areas.
  A tape measure or laser gauge and a site plan are necessary to determine the actual size of the areas and the amount of materials required.
- State of the substrate. (soundness, moisture level, need of remedial treatment prior to application, etc.)
  Among the various evaluations that can take place are:
  - Mechanical strength (Schmidt hammer, pull out – cohesion test)
  - Porosity (water droplet)
  - Dusting (wire brush)
  - Roughness (before but preferably after mechanical surface treatment)
  - Flatness / slopes
  - Etc.
- Location of cracks (number and size)
- Location of joints (number and state)
- Need or not of covings and upstands – required height. Total length and size.
- Location degree of slopes and channels or drains
- Retaining grooves. Length and size

Prior to application, the location of each joint between application interruptions or breaks and day joints must be carefully assessed.
The width and length of the application area will vary depending on the following:

- Ambient and substrate temperature
- Mixing equipment and man power available.
- Existing joints on the substrate.

Too high ambient and substrate tempertures and/or too little mixing capacity or man power available will mean shorter widths will be possible.
Lower temperatures or greater mixing and laying means, will allow application of longer strips crosswise.
Access of other trades prior, during and after the application must be forbidden by the main contractor to avoid contamination of the work area, and to ensure proper hardening of the applied floor.



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5.2. Inspection of the job site during application

The accurate maintenance of quality assurance “QA” records, or “Daily Construction records”, during the application is a key success factor for the more experienced contractors.
This allows them to ensure adequate traceability of material and personnel and also to prevent problems arising for sloppy management at the site.

The QA records must include among other information the following:

- Client
- Project-name
- Date
- Personnel placement
- Man-power
- Man-hour
- Tools /Equipment
- Batch numbers of materials used.
- Executed work (What areas have been applied on a given day and by whom)
- Executed Tests
- Rel. humidity
- Ambient temperatures
- Substrate temperatures
- Dew point
- Signed by the client and the contractor

Some Sika companies, particularly for larger jobs, do not accept claims unless the above information is provided beforehand.

5.2.1. On-site testing for thickness control

To ensure adequate thickness of the applications, and consequently the correct consumption according to the calculated material, the width of each strip corresponding to each mix (whether one, two or more kits) can be marked on the edges of each bay, by means of an indelible marker or chalk.

5.2.2. On-site testing for workability / pot life

To ensure adequate workability of the material as mixing is finalised, measuring the temperature of the material gives a good indication that the material is suited for application and that no over-mixing or material with flash setting is delivered to the application front. An increase of less than 3ºC when mixing is adequate between start and finish.

Construction

5.3. Inspection of the job site after application

Once the application has concluded, adequate measures must be taken to avoid access to the fresh application while the products are hardening.

After the recommended time has passed, for the existing conditions, prior to opening to pedestrian traffic, care must be taken to avoid staining or leaving marks on the surface, using a shoe covers.

Any pre-design cuts to reflect existing joints on the substrate must be cut between 24 hr to 48 hr after application and the adequate joint sealer applied. (i.e. Sikaflex –Pro 3)

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.
On the right you can see one of such vessels for cooling of the components A and B.

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7. Equipment – Tools

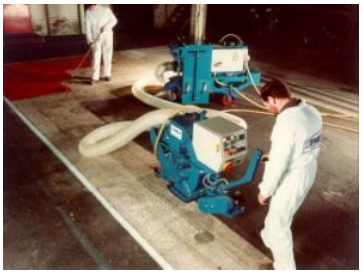
7.1. Tools and equipment required for substrate preparation

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.

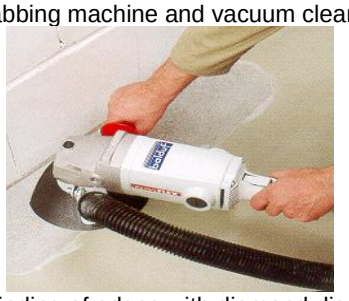
Grinding machine

Scabbing machine

Scabbing machine and vacuum cleaner



Shot blasting machine



Grinding of edges with diamond discs

A double disc rotary saw for grooving

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

Industrial vacuum cleaner to remove dust on the surface

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7.2. Mixing Tools and Equipment

For mixing parts A and B a low speed single paddle electric stirrer (300 - 400 rpm) with adequate mixing blades can be used.

For mixing the self levelling grades, a double paddle (axis) electric stirrer is imperative.
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 heavy duty mortar mix requires heavy duty mixers, particularly for the trowel grade mortars Sikafloor®-19 / -20 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® -19 PurCem® and Sikafloor® -20 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.

This may present the risk of hardened material being poured into newly placed floor causing surface defects.

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.

Use	Type	Description	Images
Shot blasting equipment	Blastrac range	Equipment that projects steel shot onto the substrate and then separates the shot from the substrate debris, coupled with a vacuum cleaner. Suitable for removal of coatings and substrate preparation from 0 - 2 mm approximately.	 
Grinding of edges	Blastrac range	Diamond discs mounted on heavy or light equipment rotating in a vertical axis for edges and corners.	
Groover	Hilti DC-SE 20 Slitting Tool	Double circular blades, with adjustable width and depth in order to cut out grooves into concrete and screeds.	 
Vacuum cleaner	Various	Dust and sand removal by vacuuming is much more efficient and reliable than just sweeping, and is essential to ensure a perfect bond of the screed or coating on to the substrate.	 

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Weighing by weight	Bizerba, Sanyo, various	A balance for dosing components by weight. Measuerement accuracy: 0.1 g	
Twin paddle Mixer	Colomix, Flex, Beba, others	Drill type agitators with suitable double helix blades for proper homogenisation of the materials.	
Dissolver mixers	Berg Tools, Bosch	High speed vertical doubble mixer in order to stirr the A and B components. A suitable drilling machine is mandatory, such as a BOSCH GSB 90-20 E.	 
Mixing pails	Sika, others	In order to mix all components properly suitable mixing pails out of steel or plastic must be provided. Volume: > 28 ltr.	
Screed box or resin floor spreader	Polyplan, Ted Baugh, Kam Tools, Borum and others	48 – 60 cm wide box with height regulator for placing and levelling in a single pass, allows control of consumption and faster rate of application of heavy-duty screeds	 
Short pile roller or loop roller	Various	Levels out the joints from the screed box and trowel marks in heavy duty screeds	 

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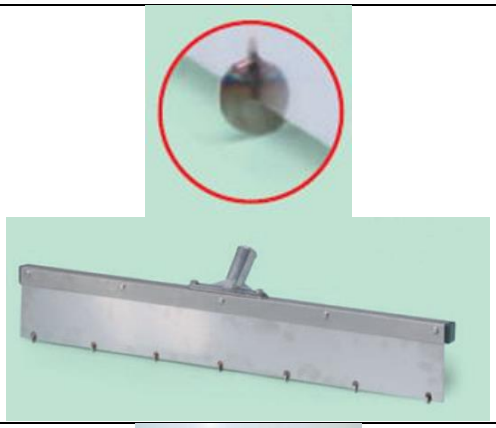
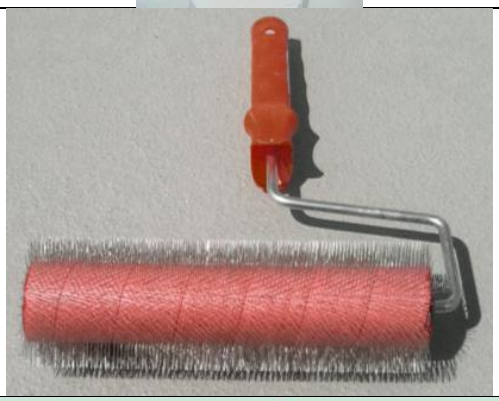
Doubble Blade Smoothing trowel	Haro, Kaupp, Pajarito, others	Double blade flat straight edge trowel for smoothing surfaces and corners. Particularly suitable for the application of the scratch coats.	
Toothed trowel	Polyplan	Notched trowels which allow spreading flowable flooring materials at a controlled thickness. Advantage of the Layer-Thickness-Blades against normal toothed blades, is that it doesn't matter in which angle the trowel will be held to the ground.	
One part hand pump	Gardena, Gloria and others	Industrial grade hand pump sprayer for the spray application of water in order to pre-wet the concrete before the application of the scratch coat self-levelling screed scratch coats.	
Spike rollers	Techno, Polyplan. Pajarito, others	Rollers formed with loose or interlocking discs with spikes of varying lengths and separations depending on the material to be de aired. The length of the spikes must be at least 3 times the depth of material applied. The viscosity of the material also has to be taken into account concerning the number of spikes per line and their separation.	
Spike shoes	Techno, Polyplan. Pajarito, others	Nail fitted shoes to work inside the application area for minimal disturbance of the products being applied.	

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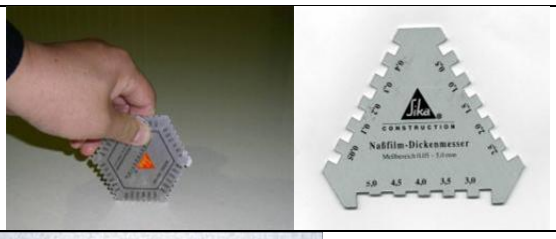
Tramex meter	Sika / Tramex	Non-destructive equipment consisting of 4 pairs of electrodes, and analogue scale which records the impedance of a low frequency signal transmitted into the substrate, which varies depending on the moisture content. Scale measures from 0% to 6% moisture content	
Tool for measuring thickness	Sika	Various depth gauges for measuring wet film thickness of SR-25 PurCem ECF.	
Hygrother mometer / Hygrother mograph	Testo, Freundl, others	Combination of surface thermometer and moisture meter, allows determination of the dew point using a separate table. The analogue meter on the right incorporates a table readout. The Hygrothermograph allows to record the variations in ambient moisture and temperature over a period of time.	

7.4. 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.

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9. Application Mistakes and Surface Defects

Probable causes for failures 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.

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®-19 / 20 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®-31 PurCem® broadcast to enhance surface texture

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

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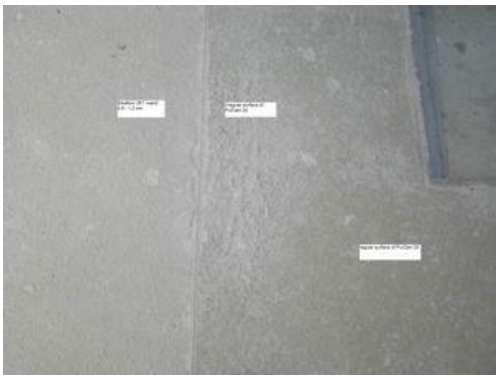

How to prevent it:
Good workmanship.

Problem: Irregular surface texture in Sikafloor®-19 / 20 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®-31 PurCem® broadcast to simulate surface texture.
Preferably removal and re application. A patch will be visible

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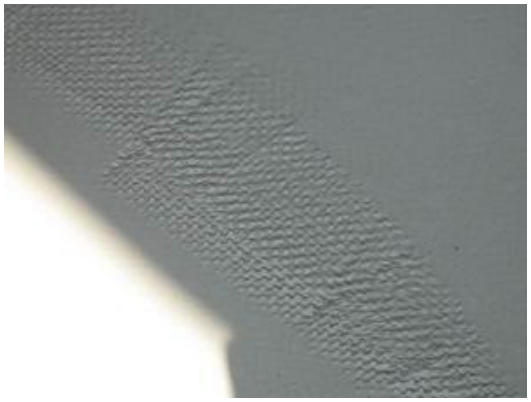
Problem: Debonding of an epoxy primed Sikafloor®-PurCem®, exposed to high service temperatures.

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: Spike roller marks in Sikafloor® -21 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® -31 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. Spike roll immediate after application.
Ensure continuous feed to the application front to ensure the wet edge.

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Problem: RANDOM blistering/cracking of Sikafloor® -21 PurCem® .

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.

Problem: Generalised blistering of Sikafloor® -PurCem® .

Cause:
Several causes can be addressed:

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.
B) Excessive mixing causing air entrapment in the mix
C) To Hot temperatures
D) Extreme porous substrate leading to outgassing.

How to prevent it: Make sure the material is within its shelf life and has been properly stored.
Allow adequate ventilation.
Do not over mix
Prime the substrate to close the pores.

Graded: Critical

How to repair it:
Grind the surface to open the bubbles, apply a scratchcoat an re-apply the screed.

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Problem: Cracked Sikafloor® -PurCem® screed.

Cause:
A) Application over an existing live concrete joint or crack.
B) Excessive thickness over insufficiently textured substrate

Graded: Critical to important depending on environment

How to repair it: See item 4.8.3 above**.**

How to prevent it: Make sure the all existing joints in the substrate are reflected and cut into the new screed

---

Problem: Colour changes indoors (no UV exposure)

Cause: Aggressive chemical cleaning

Graded: Minor to important. Depending on the precise chemicals involved it could not affect other characteristics apart from aesthetics or could represent accelerated aggression leading to shortened service life.

How to repair it: First a change of the cleaning regime is required to use not so aggressive chemicals. Subsequent grinding and top coating with SR -31 PurCem in case of cold service conditions or removal and resurfacing in case of thermal shock (water or steam)

How to prevent it: Select with the owner, the adequate cleaning regime to fulfil their requirements without damaging the colour

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Bad coating end finishes

Bad day joint connection

Problem: Not straight finishes between areas or day joint connections

Cause: Poor workmanship or means

Graded: Minor to important

How to repair it: Cut out the existing connection and replace them by new connection. Cutting a straight line and smoothing the cut by grinding at the end of the product application, the edges could be formed into a nice straight finish.

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How to prevent it: Adequate training of labourers with suitable means, such as tapes and forms

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Problem: Cracking of the screed, reflecting joints in the concrete substrate below.

Cause: Not reflecting the substrate joints in the finished surface. Overlayment of active joints.

Graded: Minor to important, depending on the service conditions.

How to repair it:
a) by creating a new joint along the crack if it is reasonably straight or
b) removal, sealing of the substrate, creating a new screed with a new joint.

How to prevent it: Cut joints over existing one between 24 hr to 48 hr after laying the screed.

Problem: Thermal stress cracking

Cause:

Graded: Minor to important

How to repair it:

How to prevent it: Ensure adequate product and in the correct thickness is used.

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Problem: Chemical stress

Cause: .

Graded: Minor to important

How to repair it:

How to prevent it: Make sure all variables are known before advising a solution.

Problem: Roller marks in the heavy duty Sikafloor® -20 PurCem® application.

Cause: Too late use of the roller

Graded: Minor to relevant

How to repair it:

How to prevent it: Check the available open time to use the roller for the prevailing conditions

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Other common mistakes:

- The shot blast preparation fails to remove laitance / surface contaminants from the surface.
- Constant dust in the air from preparation falling on both surfaces to be laid and just laid, the latter of course sticking to the wet screed.
- Insufficient vacuum cleaning, especially retaining grooves, before any application.
- Mixing of the comp A +B to take place immediately prior to comp C not 2 - 3 minutes before as this reduces working time of the product.
- There must be communication between the laying team and mixing team to avoid over / under delivery of product.
- Keep clean throughout mixing to reduce old curing material accelerating the fresh thus reducing working time.
- Don’t over work the material, once laid and to required thickness no need to keep trowelling over and over.
- Rollers must be changed on a performance basis, when the get sticky/heavy or pull the material. Never wet the roller out with cellulose prior to use to prolong its life, this will cause problems.

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