

# Sikafloor®-22 PurCem®

Medium to heavy duty - textured self-levelling polyurethane screed with anti-slip properties

## Product Description

Sikafloor®-22 PurCem® is a three part, water dispersed high wear resistant polyurethane modified, cement and aggregate screed self-levelling properties.

It is broadcast with quartz and or Sika Broadcast aggregates to increase surface texture and slip resistance. It is typically installed at 4.5 to 9 mm thick.

## Uses

In areas of high loading, abrasion and high chemical exposure, to provide a 4.5 to 9 mm thick, textured, flat and decorative wearing surface, such as in:

- Food and beverage processing plants, in wet or dry process areas, freezers and coolers, thermal shock areas
- Chemical plants
- Laboratories
- Workshops
- Areas requiring resistance above that of other resin systems

## Characteristics / Advantages

- **Fast cure system.** Turn around times for project completion greatly reduced
- **Food grade approved - Non taint - (see approvals below)**
- **Able to be applied to green concrete** - on to 7 to 10 day old concrete with a moisture level of Max.10%, after adequate preparation and with a tensile bond strength in excess of 1.5 MPa (218 psi)
- **Low VOC** - (Cert. Available)
- **Excellent chemical resistance.** Resists a wide range of organic and inorganic acids, alkalis, amines, salts and solvents. Please refer to the Chemical Resistance Chart or consult your local Technical Dept
- **Thermal cycling resistant** - Similar coefficient of thermal expansion to concrete, allowing movement with the substrate through normal thermal cycling. It will perform and retain its physical characteristics through a wide temperature range from -40°C up to +120°C
- **Bond strength** in excess of the tensile strength of concrete. Concrete will fail first
- **High mechanical resistance.** Behaves plastically subject to impact. Will deform but will not crack or debond.
- **High abrasion resistance** Using Sika Broadcast Bauxite aggregates
- **Easily maintained**

Construction



## Tests

<b>Approval / Standards</b>	<p>Conforms to the requirements of EN 13813: 2002 as CT – C50 – F7 – AR 0,5</p> <p>Conforms to the requirements of EN 1504-2 for principles 5 (PR) and 6 (CR) as a Coating (C)</p> <p>Concerning contact with foodstuffs, it conforms to the requirements of:</p> <ul style="list-style-type: none"><li>- EN1186, EN 13130, and prCEN/TS 14234 standards, and the Decree on Consumer Goods, representing the conversion of directives 89/109/EEC, 90/128/EEC and 2002/72/EC for contact with food stuffs, according to test report by ISEGA, Registered N° 24549 U 07, dated May 18<sup>th</sup>, 2007. (Tests performed on Sikafloor®-20N/-21N and -31 PurCem®.)</li><li>- USDA. Acceptance for use in food plants in the US</li><li>- Canadian Food Inspection Agency acceptance for use in food plants in Canada.</li><li>- British Standards Specifications (BSS) acceptance for use in the UK. Campden and Chorleywood Food Research Association, Ref. S/REP/98152/5, dated March 30<sup>th</sup>, 2007</li></ul> <p>Test reports from Warrington Fire Research Centre for Sikafloor® -21N PurCem®: WFRC No. 163875, dated 7<sup>th</sup> of July, 2008 (BS EN ISO 11925-2:2002) and WFRC No. 163878, dated 7<sup>th</sup> of July, 2008 (BS EN ISO 9239-1:2002) for Fire rating</p> <p>Fire classification report according to EN 13501-1 from Warrington Fire Research Centre for Sikafloor®-21N PurCem®: WFRC No.174952, dated 11<sup>th</sup> of July, 2008.</p> <p>All other values indicated are internal test results.</p>
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## Product Data

<b>Colours</b>	<b>Standard colours:</b> Curtain Call Beige RAL 1001 Oxide Red RAL 3009 Pastel Blue RAL 5024 Dusty Grey RAL 7037 Maize Yellow RAL 1006	<b>*Available on request</b> *Traffic Grey RAL 7042 *Sky Blue RAL 5015 *Slate Grey RAL 7015 *Grass Green RAL 6010
<b>Packaging</b>	Sikafloor®-21 PurCem® Part A+B+C+Pigment: 20 kg (10.53L) ready to mix units Sikafloor®-31 PurCem® Part A+B+C+Pigment: 4.9kg (3.4L) ready to mix units	
<b>Storage Conditions / Shelf-Life</b>	Part A - 9 months Part B - 6 months Part C - 6 months Pigment - 9 months  If stored properly in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +10°C and +25°C.  Parts A and B: Must be protected from frost.  Part C: 6 Must be protected from humidity.	

## Technical Data

<b>Density</b>	Sikafloor®-21 PurCem® - Part A+B+C+Pigment mixed: 1.90 kg/l ± 0.03 (at +20°C) Sikafloor®-31 PurCem® - Part A+B+C+Pigment Mixed: 1.43kg/l +- 0.03 (at +20°C)	
<b>Layer Thickness</b>	4.5 mm min. / 9 mm max.	
<b>Thermal Expansion Coefficient</b>	$\alpha \approx 1.6 \times 10^{-5}$ per °C (temperature range: -20°C to +60°C)	(ASTM E 381, ASTM D-696, ISO 11359)
<b>Water Absorption</b>	0.10%	(ASTM C 413)
<b>Permeability</b>	To Water Vapour: 0.260 g/h/m <sup>2</sup> (1.2 mm)	(ASTM E-96)
<b>Fire Rating</b>	Class B <sub>(fi)</sub> S1	(BS EN 13501-1)

<b>Service Temperature</b>	The product is suitable for use when exposed to continuous temperatures, wet or dry, of up to +120°C. The minimum service temperature is -40°C.									
<b>Mechanical / Physical Properties</b>										
<b>Compressive Strength</b>	> 45 MPa after 28 days at +23°C / 50% r.h. > 50 N/mm <sup>2</sup> after 28 days at +23°C / 50% r.h.	(ASTM C 579) (BS EN 13892-2)								
<b>Flexural Strength</b>	> 14.7 MPa after 28 days at +23°C / 50% r.h. >10 N/mm <sup>2</sup> after 28 days at +23°C / 50% r.h.	(ASTM C 580) (BS EN 13892-2)								
<b>Tensile Strength</b>	> 6.5 N/mm <sup>2</sup> after 28 days at +23°C / 50% r.h.	(ASTM C 307)								
<b>Bond Strength</b>	> 1.75 N/mm <sup>2</sup> (failure in concrete) (1.5 N/mm <sup>2</sup> is the minimum pull off strength of the recommended concrete substrate)	(EN 1542)								
<b>Shore D Hardness</b>	80 - 85	(ASTM D 2240)								
<b>Flexural Modulus</b>	3900 MPa	(ASTM C 580)								
<b>Coefficient of Friction</b>	Steel: 0.3 Rubber: 0.5	(ASTM D 1894-61T)								
<b>Slip Resistance</b>	Slip Resistance Values	(BS 8204 Part 2)								
	<table border="1"> <thead> <tr> <th>System</th> <th>Slip rating</th> </tr> </thead> <tbody> <tr> <td>Sikafloor®-21 PurCem® - 80 mesh silica carbide 5% by vol. mixed integrally into 1 seal coat of Sikafloor®-31 PurCem®</td> <td>R11</td> </tr> <tr> <td>Sikafloor®-21 PurCem® - Texture with Sika Broadcast B1.4 aggregate 1-2 seal coat of Sikafloor®-31 PurCem Sikafloor®-21 PurCem® Base - 60 mesh Silica carbide 5%by vol. mixed integrally into 1 seal coat of Sikafloor®-31 PurCem®</td> <td>R12</td> </tr> <tr> <td>Sikafloor®-21 PurCem® Texture with Sika Broadcast B1.4 aggregate. 1-2 seal coats of Sikafloor®-31 PurCem® Sikafloor®-21 PurCem Base 45 mesh Silica carbide 5% by vol. Mixed integrally into 1 seal coat of Sikafloor®-31 PurCem® Very Heavy texture for extreme conditions; Texture with Sikafloor Broadcast B3 aggregate</td> <td>R13</td> </tr> </tbody> </table>	System	Slip rating	Sikafloor®-21 PurCem® - 80 mesh silica carbide 5% by vol. mixed integrally into 1 seal coat of Sikafloor®-31 PurCem®	R11	Sikafloor®-21 PurCem® - Texture with Sika Broadcast B1.4 aggregate 1-2 seal coat of Sikafloor®-31 PurCem Sikafloor®-21 PurCem® Base - 60 mesh Silica carbide 5%by vol. mixed integrally into 1 seal coat of Sikafloor®-31 PurCem®	R12	Sikafloor®-21 PurCem® Texture with Sika Broadcast B1.4 aggregate. 1-2 seal coats of Sikafloor®-31 PurCem® Sikafloor®-21 PurCem Base 45 mesh Silica carbide 5% by vol. Mixed integrally into 1 seal coat of Sikafloor®-31 PurCem® Very Heavy texture for extreme conditions; Texture with Sikafloor Broadcast B3 aggregate	R13	
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	Tested as per - AS4586:1999									
<b>Abrasion Resistance</b>	Class "Special" Severe abrasion resistance AR 0.5 (Less than 0.05 mm wear depth)  2.260 mg Taber Abrader H-22 wheel / 1000 gr / 1000 cycles	(BS 8204 Part 2) (EN 13892-4)  (ASTM D 4060-01)								
<b>Indentation</b>	≈ 0%	(MIL – PFR 24613)								
<b>Impact Resistance</b>	Class A (Less than 1 mm indentation depth)  6.81 joules (5.02 ft-lb) at 3 mm (1/8 <sup>th</sup> in) of thickness	(BS 8204 Part 1)  (ASTM D 2794)								
<b>Resistance</b>										
<b>Chemical Resistance</b>	Resistant to many chemicals. Please ask for a detailed chemical resistance chart.									
<b>Thermal Resistance</b>	The product is not designed to withstand thermal shock. Hot steam cleaning is not recommended. Use Sikafloor®-20N PurCem®.  Sikafloor® -22 PurCem® can be subject to thermal shock up to 120°C at 6 mm									
<b>Resistance to Thermal</b>	Pass	(ASTM C 884)								

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**Shock**

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**Softening Point** 130°C

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## System Information

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### System Structure

Use the products mentioned below as indicated in their respective Product Data Sheets.

#### Substrate Priming Systems

Substrate priming is normally not required under typical circumstances. (See Substrate Quality). When necessary use the systems indicated below.

*System 1: moisture control on green concrete:*

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

*System2: Inadequate substrate and moisture content below 4%*

- Primer:  
Sikafloor®-160 or Sikafloor®-161  
either of which must be fully blinded with quartz sand 0.4 - 0.7 mm

#### Medium to heavy duty screed:

- **Layer thickness: 4.5 - 6 mm**

##### Option one:

- Sikafloor®-21 PurCem® base -3-4 mm
- Fully broadcast to excess
- Finish coat Sikafloor®-31 PurCem®

The broadcasting of the aggregate will increase the final thickness of the application by about 50%. (i.e. 4.5 mm will be about 6 mm and an initial layer of 6 mm will be about 8 - 9 mm)

##### Option two:

- Sikafloor®-21 PurCem® base 3 - 4 mm
- Finish coat Sikafloor®-31 PurCem® applied incorporating Silica carbide @5%

#### Heavy duty screed

- **Layer thickness: 9 mm**
- Sikafloor®-21PurCem® base 7.5 mm
- Extend 21PurCem with the addition of 5kg of Sika Broadcast B1.4 or B3
- The yield will increase by 2 litres per kit
- Fully broadcast to excess
- Finish coat - Sikafloor®-31 PurCem®

#### Scratch coat / levelling of substrate

A scratch coat 1.5 mm thick, lightly broadcast with quartz sand 0.4 – 0.7 mm will seal the surface and fill irregularities and improve appearance of the final layer.

- Isolated substrate imperfections can be in filled with Sikafloor®-21 PurCem®
- The base system can be applied subsequently as soon as the in fill
- Material has commenced initial cure - appox 20-40 min

#### Coving and detailing and vertical applications:

- Primer:  
Sikafloor®-160 / -161  
Re-prime if no longer tacky.
  - Coving Mortar:  
Sikafloor®- 29N PurCem®
  - Seal coat:  
1-2 x Sikafloor®- 31 PurCem®
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## Application Details

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

**Scratch coat:**

Typically not required.

**Self-levelling screed 4.5 - 9 mm:**

Sikafloor®-21 PurCem® 1.9 kg/m<sup>2</sup> / mm layer thickness.

**Broadcast aggregate:**

Fresh surface must be broadcast to refusal ~ 2 - 4 kg/m<sup>2</sup>

**Seal coat on broadcast profile:**

Sikafloor®-31 PurCem® 1.2 – 1.4 m<sup>2</sup>/kg (1.7 – 2m<sup>2</sup> per L)

**Seal coat on smooth Sikafloor®-21 PurCem® :**

Sikafloor®-31 PurCem® 2.4 – 2.8 m<sup>2</sup>/kg (3.5 -4m<sup>2</sup> per L)

This figure is theoretical depending on gradation selection of non slip aggregate.

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**Accelerator**

**21 PurCem**

Addition rate	0.5% by weight	0.7 % by weight
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**Temp. 21°C**

Surface Dry	30 min	
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Hard Dry	60 min	
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**Temp 6°C**

Surface Dry	90 min	60 min
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Hard Dry	3 Hours	2 Hours
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**31 PurCem**

Addition rate	0.3% by weight	0.5% by weight
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**Temp 21°C**

Surface dry	3 hours	90 min
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Hard Dry	6 Hours	3 hours
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**Temp 6°C**

Surface Dry	5 hours	3 hours
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Hard Dry	8 hours	6 hours
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**Substrate Quality**

The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm<sup>2</sup>) with a minimum pull off strength of 1.5 N/mm<sup>2</sup>.

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

If in doubt, apply a test area first.

Substrate priming is normally not required under typical circumstances. However due to variations in concrete quality, surface conditions, surface preparation and ambient conditions, reference test areas are recommended to determine whether priming is required to prevent the possibility of blisters, debonding pinholes and other aesthetic variations.

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

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**Substrate Preparation**

Concrete substrates must be prepared mechanically using abrasive blast cleaning or scarifying equipment to remove cement laitance and achieve an open textured surface to achieve CSP 3-6 according to the International Concrete Repair Institute.

Weak concrete must be removed and surface defects such as blow holes and voids must be fully exposed.

High spots can be removed by grinding.

All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum.

Substrate imperfections.

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Can be filled

**Edge terminations.**

All free edges and working day joints of Sikafloor®-22 PurCem® whether at the perimeter, along gutters or at drains require extra anchorage to distribute mechanical and thermal stresses. This is best achieved by forming or cutting grooves in the concrete. Grooves must have a depth and width of twice the thickness of the Sikafloor®-PurCem®. Refer to the edge details provided in the Method Statement. If necessary, protect all free edges with mechanically attached metal strips. Never featheredge, always turn into an anchor groove.

**Expansion joints.**

Expansion joints must be provided in the substrates at the intersection of dissimilar materials. Isolate areas subject to thermal stresses, vibration movements or around load-bearing columns and at vessels sealing rings. Refer to the edge details provided in the Method Statement.

Expansion joints already existing in the substrate must be mirrored in the PurCem system. These joints are to be re cut and filled using Sikaflex Tank. Polyurethane sealant

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**Application  
Conditions/Limitations**

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

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**Optimum Ambient Temperature** +10°C min. / +30°C max. \*note - product can be installed down+2 degrees C however cure times will be significantly slower

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**Substrate Humidity** The substrate can be dry or damp with no free standing water (saturated surface dry or SSD).  
  
If any moisture is detectable according to ASTM D 4263 (Polyethylene sheet test) for the thin screeds (-21, -22) and the coating (-31), additional tests must be done to quantify actual relative moisture content amount or vapour drive.  
  
Refer to System Structure and options for substrate priming.

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**Relative Air Humidity** 85% max.

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**Dew Point** Beware of condensation!  
  
The substrate and uncured floor must be at least 3°C above dew point to reduce the risk of condensation or blooming on the floor finish.

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**Application  
Instructions**

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**Mixing Time** Prior to mixing, add pigment to part A. Stir Part A well and empty into a clean mixing drum. Add the pigment and Part B and mix both liquid parts thoroughly with a low speed electric stirrer for one (1) minute until a uniform mix has been achieved.  
  
Then gradually add Part C (aggregate) to the mixed resin parts and mix for a further one (1) minute, until a uniform moist mix is obtained.

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**Mixing Tools** Use a low speed electric stirrer (300-400 rpm) for mixing parts A and B. For preparation of the mortar mix use a pan type revolving mixer.

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**Application Method / Tools** Prior to application, confirm substrate moisture content, r.h. and dew point.  
  
**Priming:**  
Neither priming or applying a scratch coat are usually necessary. (See Substrate Quality)  
  
**Body coat.**  
Pour the mixed Sikafloor®-21 PurCem® onto the substrate and work with a trowel or pin screed to the desired thickness, achieving a flat surface. Take care to spread newly placed materials across the transition of previously applied mixes before the surface begins to set. Remove air with a spike roller immediately (less than two minutes).  
Sikafloor®-21 PurCem® requires aggregate broadcast onto the wet surface. Broadcast selected aggregates onto the wet surface to excess.  
  
Remove excess broadcast aggregate by broom then vacuum. This can be carried out as soon as the base is cured sufficiently - approx 4-6 hours depending on

substrate and ambient temperatures

**Finish Coat.**

Apply Sikafloor®-31 PurCem® by pouring out then squeegee or steel trowel the product into the aggregate profile. Excess product can be immediately removed by roller to give the required finish surface profile.

**Important notes ;**

Discard mixing buckets every 2-4 mixes depending on ambient temp.

Product must be placed on the floor immediately after mixing

Subsequent mixes must be placed in a continuous fashion to ensure the joining of the wet edge is timely.

Failure to apply Sikafloor®-31 PurCem® in a timely and continuous process will result in uneven texture, gloss level and colour.

**Cleaning of Tools**

Clean all tools and application equipment with Thinner C immediately after use. Hardened / cured material can only be mechanically removed.

**Pot life**

Refer to individual TDS for Sikafloor® 21 PurCem and Sikafloor®-31 PurCem®

**Waiting Time / Overcoating**

**Top coat application - Sikafloor®-31 PurCem® to Sikafloor®-21 PurCem®**

Degrees	Time – Approx.
15	6-7 hours
20	5-6 hours
25	4-5 hours
30	3-4 hours

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

**Notes on Application / Limitations**

Construction joints require pre-treatment with a scratch coat to verify and seal loss of material through the joint.

It is advisable to perform a groove along the perimeter of the application area particularly if there are columns or gullies in the floor surface, as indicated in the application details of the Method Statement for Application, to prevent curling during curing. Large areas do require perimeter groove. Width and depth must be twice the thickness of the floor finish.

Do not featheredge.

Do not apply to PCC (polymer modified cement mortars) that may expand when sealed with an impervious resin."

Do not apply to water soaked, glistening wet concrete substrates.

Do not apply to porous surfaces where significant moisture vapour transmission (out-gassing) will occur during application.

Sika® Thinner C is flammable. NO NAKED FLAMES.

Always ensure good ventilation when using Sikafloor®-22 PurCem® in a confined space, to prevent excessive ambient humidity.

After application, Sikafloor®-22 PurCem® must be protected from damp, condensation and direct water contact (rain) for 24 hours.

Hot steam cleaning may lead to delamination due to thermal shock.

Do not apply to un-reinforced sand cement screeds, asphaltic or bituminous substrate, glazed tile or non-porous brick, tile and magnesite, copper, aluminium, soft wood or urethane composition, elastomeric membrane and fibre reinforced polyester (FRP) composites.

Do not apply to wet or green concrete or polymer modified patches if the moisture content is above 10%.

Do not apply to concrete if the air or substrate temperature is within 3°C of the dew point.

Protect the substrate during application from condensation from pipes or any overhead leaks.

Do not mix Sikafloor®-PurCem® products by hand. Use only mechanical means.

Do not apply to cracked or unsound substrates.

Colour uniformity can not be completely guaranteed from batch to batch (numbered). Take care when using Sikafloor®-PurCem® products to draw from inventory in batch number sequence. Do not mix batch numbers in a single floor area.

Products of the Sikafloor®-PurCem® product range are subject to yellowing when exposed to UV radiation. There are no measurable losses of other properties when this occurs and it is a purely aesthetic matter. Products can be used outside provided the change in appearance is acceptable by the customer.

Good towelling and levelling prior to broadcast will result better surface appearance (reduced waviness) and more homogeneous aspect of the seal coat.

## Curing Details

### Applied Product ready for use

Substrate temperature	Foot traffic	Light traffic	Heavy Traffic
+10°C	~ 10 hours	~ 24 hours	~ 4 days
+20°C	~ 8 hours	~ 15 hours	~ 2 days
+30°C	~ 5 hours	~ 10 hours	~ 1 days

Note: Times are approximate and will be affected by changing ambient and substrate conditions.

## Cleaning / Maintenance

### Methods

To maintain the appearance of the floor after application, Sikafloor®-22 PurCem® must have all spillages removed immediately and must be regularly cleaned using rotary brushes, mechanical scrubbers, scrubber dryers, high pressure washers, wash and vacuum techniques, etc., using suitable detergents and waxes.

## Value Base

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

## Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the Australian version of the Product Data Sheet for the product concerned, copies of which will be supplied on request.



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