

## **Sikafloor®-31 PurCem®**

### Solvent free polyurethane coating

#### **Product Description**

Sikafloor®-31 PurCem® is a multi-component, solvent free, high build, coloured, matt finish, polyurethane modified, cement and aggregate coating with excellent chemical resistance and very good resistance to abrasion and mechanical damage.  
Typically applied in two coats for a total of 0.2 - 0.25 mm.

#### **Uses**

Sikafloor®-31 PurCem® is designed to be used as:

- Stand alone, high build coating or as a seal coat for coverings and details performed with Sikafloor®-29 PurCem® or other products in the Sikafloor®- PurCem® range
- To provide an improved aesthetic finish to the products in the broadcast texture range of Sikafloor®-PurCem®
- Suitable for concrete protection providing physical resistance (Principle 5, method 5.1 of EN 1504-9)
- Suitable for concrete protection providing chemical resistance (Principle 6, method 6.1 of EN 1504-9)

As a chemical resistant concrete coating in places such as:

- Food processing plants, in wet or dry process areas, freezers and coolers
- Pharmaceutical plants
- Containment areas
- Chemical process areas

#### **Characteristics / Advantages**

- Excellent chemical resistance. Resists a wide range of organic and inorganic acids, alkalis, amines, salts and solvents.
- Allows use of severe cleaning regimes in the Food and Beverage industry. Please refer to the Chemical Resistance Chart or consult your local Technical Dept.
- Very low VOC emissions
- Water based Odourless formulation .
- Excellent long term wear resistance from a two coat application
- Rapid one step application. Normally, no concrete primer required
- Economical and easy to apply
- Good hiding power
- Can be applied on to 7 to 10 day old concrete after adequate preparation and with a tensile bond strength in excess of 1.5 MPa (218 psi)
- Bio-static surface. Does not contribute to the growth and development of bacteria or fungi.
- Wide range of application temperatures +10 °C - +40 °C

## Environmental Information

### Specific Approval/Standards

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

**Sikafloor®-31 PurCem**, is VOC free for the ready to use product.

**USGBC LEED® Rating** Conforms Section EQ (Indoor Environmental Quality), Credit 4.2 Low-Emitting Materials Paints and Coatings  
Calculated VOC content ≤ 50 g / l

### Tests

#### Approval / Standards

Polyurethane screed for concrete protection according to the requirements of EN 1504-2 for principles 5 (PR) and 6 (CR) as a Coating (C) and Conforms to the requirements of EN 13813: 2002, DoP 02 08 02 02 004 0 000001 1088, certified by Factory Production Control Body, 0086, certificate 541325, and provided with the CE-mark.

Concerning contact with foodstuffs, it conforms to the requirements of:

- EN1186, EN 13130, and prCEN/TS 14234 standards, and the Decree on Consumer Goods, representing the conversion of directives 89/109/EEC, 90/128/EEC and 2002/72/EC for contact with food stuffs, according to test report by ISEGA, Registered N° 32758 U11 and 32759 U11, both dated December 6<sup>th</sup>, 2011. (Tests performed on Sikafloor® -20/21/22/29 and 31 PurCem® in standard and LP versions)
- Compliant with USDA flooring requirements
- Canadian Food Inspection Agency acceptance for use in food plants in Canada.
- British Standards Specifications (BSS) acceptance for use in the UK. Campden and Chorleywood Food Research Association, Ref. S/REP/125424/1a and 2a, dated 8<sup>th</sup> February, 2012

Fire classification report according to EN 13501-1 from Exova Warrington Fire No.317050, dated 24<sup>th</sup> of March, 2012

Liquid water transmission rate test report from the Technology Centre, Ref. 15456 dated January 25<sup>th</sup>, 2012

Impact resistance values tested at PRA, Ref. n° 75221-151, dated January 11<sup>th</sup>, 2012

## Product Data

### Form

#### Appearance / Colours

Part A pre-tinted: coloured liquid  
Part B: brown liquid  
Part C: natural grey powder  
Available colours:

**Beige**  
**Maize Yellow**  
**Oxide Red**  
**Sky Blue**  
**Grass Green**  
**Pebble Grey**  
**Light Grey**  
**Dusty Grey**  
**Agate Grey**

#### Packaging

Part A+B+C: 5.1 kg ready to mix units  
Part A: 1.50 kg plastic drum  
Part B: 1.50 kg plastic jerrycan  
Part C: 2.10 kg plastic bags



## Storage

|  |   |
|--|---|
| <b>Storage Conditions / Shelf-Life</b> | If stored properly in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +10°C and +25°C.<br>Part A : 12 months from date of production. <b>Protect from freezing.</b><br>Part B: 12 months from date of production. <b>Protect from freezing</b><br>Part C: 6 months from date of production. <b>Must be protected from humidity</b> |
|--|---|

## Technical Data

|                        |                         |                                    |                               |
|------------------------|-------------------------|------------------------------------|-------------------------------|
| <b>Chemical Base</b>   | Polyurethane Cement     |                                    |                               |
| <b>Density</b>         | Part A:                 | ~ 1.07 kg/l (at +20°C)             | (EN ISO 2811-1)& (ASTM C 905) |
|                        | Part B:                 | ~ 1.24 kg/l (at +20°C)             |                               |
|                        | Part C:                 | ~ 1.05 kg/l (at +20°C)             |                               |
| <b>Layer Thickness</b> | As Top Coat:            | 70 microns min. / 140 microns max. |                               |
|                        | As stand alone coating: | 140 microns min. / 275 microns max |                               |

## Mechanical / Physical Properties

| <b>Capillary Absorption / Liquid water transmission rate</b> | Permeability to water: <math> < 0.016 \text{ kg /m}^2 \text{ h}^{0.5}</math><br>Class Low<br>(Average of three values, system of Sikafloor® -29 PurCem® plus Sikafloor® -31 PurCem®)   | (EN 1062-3)       |         |         |   |    |    |  |         |         |  |
|--|--|-------------------|---------|---------|---|----|----|--|---------|---------|--|
| <b>Thermal Expansion Coefficient</b>                         | $\alpha \approx 8.27 \times 10^{-5}$ per °C<br>(temperature range: -20°C to +40°C)   | (EN 1770)         |         |         |   |    |    |  |         |         |  |
| <b>Water Absorption</b>                                      | ≤ 0.10%  | (ASTM C 413)      |         |         |   |    |    |  |         |         |  |
| <b>Permeability</b>  | To Water Vapour: 0.260 g/h/m <sup>2</sup><br>(1.2 mm)  | (ASTM E-96)       |         |         |   |    |    |  |         |         |  |
| <b>Fire Rating</b>   | Class B <sub>(fl)</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 when applied over Sikafloor®-20 PurCem® in 9.0 mm thickness or over Sikafloor®-29 PurCem®, within the recommended open time.<br>When applied over Sikafloor®-20 PurCem® or Sikafloor®-21 PurCem®, within the recommended open time, Sikafloor®-31 PurCem® will withstand a minimum service temperature of -40°C.<br>As stand-alone coating the continuous service temperature is between -10°C and +90°C<br>Not suitable for steam cleaning or thermal shock.if used as stand-alone coating |                   |         |         |   |    |    |  |         |         |  |
| <b>Bond Strength</b>   | > 2.0 N/mm <sup>2</sup> (failure in concrete)<br>(1.5 N/mm <sup>2</sup> is the minimum pull out strength of the recommended concrete substrate)  | (EN 1542)         |         |         |   |    |    |  |         |         |  |
| <b>Bond Strength after Thermal Shock Resistance Test</b>     | 4.93 ± 0.42 N/mm <sup>2</sup>  | (EN 1542)         |         |         |   |    |    |  |         |         |  |
| <b>Shore D Hardness</b>                                      | 80   | (ASTM D 2240)     |         |         |   |    |    |  |         |         |  |
| <b>Flexural Modulus</b>                                      | Standard version 2200 ± 183 MPa  | (ASTM C 580)      |         |         |   |    |    |  |         |         |  |
| <b>Coefficient of Friction</b>                               | Steel: 0.3<br>Rubber: 0.5  | (ASTM D 1894-61T) |         |         |   |    |    |  |         |         |  |
| <b>Slip Resistance</b>                                       | Slip Resistance Values (EN 13036- 4)   |                   |         |         |   |    |    |  |         |         |  |
|  | <table border="1"><thead><tr><th>Substrate</th><th>SRV Dry</th><th>SRV Wet</th></tr></thead><tbody><tr><td>Sikafloor®-29 PurCem® overcoated with Sikafloor®-31 PurCem®</td><td>65</td><td>40</td></tr><tr><td>Sikafloor®-31 PurCem® over Sikafloor®-21 PurCem®</td><td>60 – 65</td><td>35 - 40</td></tr></tbody></table>   | Substrate         | SRV Dry | SRV Wet | Sikafloor®-29 PurCem® overcoated with Sikafloor®-31 PurCem® | 65 | 40 | Sikafloor®-31 PurCem® over Sikafloor®-21 PurCem® | 60 – 65 | 35 - 40 |  |
| Substrate  | SRV Dry  | SRV Wet           |         |         |   |    |    |  |         |         |  |
| Sikafloor®-29 PurCem® overcoated with Sikafloor®-31 PurCem®  | 65   | 40                |         |         |   |    |    |  |         |         |  |
| Sikafloor®-31 PurCem® over Sikafloor®-21 PurCem®             | 60 – 65  | 35 - 40           |         |         |   |    |    |  |         |         |  |
|  | TRRL Pendulum, Rapra 4S Slider   |                   |         |         |   |    |    |  |         |         |  |



|                            |  |  |
|----------------------------|--|--|
| <b>Abrasion Resistance</b> | Class "Special" Severe abrasion resistance<br>AR 0.5<br>(Less than 0.05 mm wear depth)<br>Class A6<br>6,0 cm <sup>3</sup> /50cm <sup>2</sup><br>501 mg<br>Taber Abrader H-22 wheel / 1000 gr / 1000 cycles<br>(tested internally in combination with Sikafloor® -29 PurCem®) | (BS 8204 Part 2)<br>(EN 13892-4)<br><br>(EN 13892-3)<br><br>(ASTM D 4060-01) |
|----------------------------|--|--|

|                    |      |                   |
|--------------------|------|-------------------|
| <b>Indentation</b> | ≈ 0% | (MIL – PFR 24613) |
|--------------------|------|-------------------|

|                          |   |                                      |
|--------------------------|---|--------------------------------------|
| <b>Impact Resistance</b> | Class III (≥ 20Nm)<br>(applied over Sikafloor® -29N PurCem®)<br>2 pounds / 10 inches (1 mm thick) | (EN ISO 6272-1)<br><br>(ASTM D 2794) |
|--------------------------|---|--------------------------------------|

## Resistance

|                            |   |  |
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| <b>Chemical Resistance</b> | Resistant to many chemicals. Please ask for a detailed chemical resistance table. |  |
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|                           |   |  |
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| <b>Thermal Resistance</b> | When applied over -20 PurCem® in 9 mm thickness, Sikafloor®-31 PurCem® will withstand thermal shock caused by steam cleaning if application is done within 12 hours of application of the screed layer.<br>Not suitable for steam cleaning or thermal shock exposure as standalone coating. |  |
|---------------------------|---|--|

|                                    |   |              |
|------------------------------------|---|--------------|
| <b>Resistance to Thermal Shock</b> | Pass<br>No cracks and/or delamination<br>Sikafloor®-31 PurCem® will withstand thermal shock caused by steam cleaning if application is done within 12 hours of application of the screed layer. | (ASTM C 884) |
|------------------------------------|---|--------------|

## System Information

|                         |   |  |
|-------------------------|---|--|
| <b>System Structure</b> | Use the products mentioned below as indicated in their respective Product Data Sheets. For additional information, please refer to the Method Statement.<br><i>As Seal Coat:</i><br>- <u>Smooth base coat:</u><br>Sikafloor®-20, Sikafloor®-21, Sikafloor®-24 PurCem® or Sikafloor®-29 PurCem®<br>- <u>Seal Coat:</u><br>1 x Sikafloor®-31 PurCem®<br><br>- <u>Broadcast base coat:</u><br>Sikafloor®-22 PurCem® broadcast<br>- <u>Seal Coat:</u><br>1 – 2 x Sikafloor®-31 PurCem®<br><br><i>As Stand-alone Coating:</i><br>- <u>Primers:</u><br>Sikafloor®-155W N , Sikafloor®-156 or Sikafloor®-161 .<br>- <u>Seal Coat:</u><br>1 – 2 x Sikafloor®-31 PurCem® |  |
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## Application Details

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**Consumption / Dosage**    *As seal coat:*  
Over Sikafloor®-/20/21/24/29PurCem®, 0.1 - 0.2 kg/m<sup>2</sup> in one coat.  
*As seal coat on broadcast quartz sand:*  
Over Sikafloor®-22 PurCem®, 0.4 - 0.6 kg/m<sup>2</sup> for the first coat and 0.3 – 0.35 kg/m<sup>2</sup> for the second coat, depending on the aggregate used..  
*As stand-alone coating:*  
Over an adequately prepared mineral substrate, 0.1 - 0.2 kg/m<sup>2</sup> per coat in two coats.

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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.  
Sikafloor®-PurCem® can be applied onto recent concrete over 7 to 10 days old or onto old damp concrete (SSD), as long as the substrate fulfils the above requirements.  
If in doubt, apply a test area first.

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**Substrate Preparation**    For best results, applications as seal coat over recent Sikafloor® PurCem® substrates must be carried out within the recommended overcoat time of the product concerned. (See respective PDS for limitations.)  
Grinding or sanding of the Sikafloor® –PurCem® screed underneath will increase the bond by providing an additional mechanical key effect to add to the chemical bond between the layers, when the application is done within the recommended open time. (See Waiting Time / Overcoating).

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## Application Conditions / Limitations

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**Substrate Temperature**    +10°C min. / +40°C

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**Ambient Temperature**    +10°C min. / +40°C

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**Substrate Humidity**    Check absence of rising moisture (according ASTM D 4263 Polyethylene sheet test) and/or standing water.

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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

### Mixing

Part A : B : C = 1 : 1: 1.40 (packaging size = 1.50 : 1.50 : 2.10 ) by weight

### Mixing Time

Refer to the Sikafloor®- PurCem® Information Manual

Material and ambient temperature will affect the mixing process.

If necessary, condition the materials for best use to 15°C – 21°C

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

Use a double paddle (axis) mixer and gradually add 1 part C (aggregate) to the mixed resin. **DON'T DUMP!**

For the **colourpack** version, premix 1 part A neutral with a low speed electric stirrer and add part D to it. Mix until a uniform colour is achieved. Add part B and mix-for 30 seconds. Make sure all pigment is uniformly distributed.

Use a double paddle (axis) mixer and gradually add **2** part C (aggregate) to the mixed resin. **DON'T DUMP!**

Allow part C to blend for further 2 minutes minimum, to ensure complete mixing and a uniform moist mix is obtained. During the operations, scrape down the sides and bottom of the container with a flat or straight edge trowel at least once (parts A+B+C) to ensure complete mixing. **Mix full units only.**

### Mixing Tools

A low speed electric stirrer (300-400 r.p.m.) and an Exomixer-type mixing paddle (recommended) suited to the size of the mixing container to minimise the air entrapment.

### Application Method / Tools

Prior to application, confirm substrate moisture content, r.h. and dew point.

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.

Apply at least two coats when using as stand-alone coating.

When overcoating previously laid Sikafloor®- PurCem® screeds a single coat application generally provides sufficient coverage, depending on the colour.

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 nap 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.

### Cleaning of Tools

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



**Potlife**

| Temperature | Time              |
|-------------|-------------------|
| +10°C       | ~ 35 - 40 minutes |
| +20°C       | ~ 22 - 25 minutes |
| +30°C       | ~ 15 - 18 minutes |
| +35°C       | ~ 12 - 15 minutes |

**Waiting Time / Overcoating**

Before applying Sikafloor®-31 PurCem® on Sikafloor® -20 -21 -22 -24 or -29 PurCem® allow:

| Substrate temperature | Waiting time |          |
|-----------------------|--------------|----------|
|                       | Minimum      | Maximum  |
| +10°C                 | 16 hours     | 72 hours |
| +20°C                 | 8 hours      | 48 hours |
| +30°C                 | 4 hours      | 24 hours |
| +35°C                 | 4 hours      | 24 hours |

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

**Notes on Application / Limitations**

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

Always ensure good ventilation when using Sikafloor®-31 PurCem® in a confined space, to prevent excessive ambient humidity.

Freshly applied Sikafloor®-31 PurCem®, must be protected from damp, condensation and direct water contact (rain) for at least 24 hours.

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

Do not apply to cracked or unsound substrates.

Always allow a minimum of 48 hours after product application prior to placing into service in proximity with food stuffs.

Products of the Sikafloor® -PurCem® product range are subject to discolouration when exposed to UV radiation. Extent depends on colour. There are no measurable losses of any 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.

In some slow curing conditions, soiling of the surface may occur when opened to foot traffic, even though mechanical properties have been achieved. It is advised to remove dirt using a dry mop or cloth. Avoid scrubbing with water for the first three days.



## Curing Details

**Applied Product ready for use**

Sikafloor®-31 PurCem®

| Substrate temperature | Foot traffic | Light traffic | Full cure |
|-----------------------|--------------|---------------|-----------|
| +10°C                 | 36 hours     | 72 hours      | 7 days    |
| +20°C                 | 12 hours     | 48 hours      | 5 days    |
| +30°C                 | 7 hours      | 36-48 hours   | 3 days    |
| +35°C                 | 7 hours      | 36-48 hours   | 3 days    |

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

## Cleaning / Maintenance

**Methods**

Refer to the method statement Sikafloor®- Cleaning Regime with cleaning agents from Diversey Care™

## Value Base

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

## Local Restrictions

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

## Health and Safety Information

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

## Legal Notes

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



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