

## PRODUCT DATA SHEET

# Sikagard®-680 S Betoncolor

Protective Coating for Concrete and Masonry



## PRODUCT DESCRIPTION

Sikagard®-680 S Betoncolor is a one-part, solvent-based, decorative methacrylic protective coating for concrete and cementitious surfaces. It protects against aggressive atmospheric influences and promotes a self-cleaning effect on the treated surfaces. It is available as a clear coating. Sikagard®-680 S Betoncolor complies with the requirements of EN 1504-2 as a protective coating.

## USES

As a protective and decorative coating for:

- The protection and enhancement of concrete and masonry substrates on building and infrastructure elements.
- Reducing the deterioration of concrete and assisting with controlling the corrosion of any embedded steel reinforcement.
- Increasing the service life of all types of concrete structures and elements such as buildings, bridges and car parks.
- Exterior use only.

Suitable for:

- Protection against ingress (Principle 1, method 1,3 of EN 1504-9).
- Moisture control (Principle 2, method 2,3 of EN 1504-9).
- Increasing the resistivity (Principle 8, method 8,3 of EN 1504-9).

## CHARACTERISTICS / ADVANTAGES

- Good resistance against weathering and ageing.
- Quick drying.
- Good opacity (coloured version).
- Applied by brush, roller or airless spray.
- Clear coating to maintain decorative exposed aggregate features.
- Rain resistant within a short time.
- Maintains the texture characteristics of the surface.
- High diffusion resistance against CO<sub>2</sub> reducing the rate of carbonation.
- Water vapour permeable.
- Reduced tendency to dirt pick-up and contamination.
- Suitable for sealing of green concrete in civil engineering works.

## APPROVALS / STANDARDS

- CE Marking and Declaration of Performance to EN 1504-2 - Surface protection product for concrete - Coating.
- Surface Protection System OS-B TL/TP OS, ZTV-SIB 90, Sikagard®-680 S Betoncolor, Institut für Bauforschung, Test Report No. A3026/B2.
- Surface Protection System OS-C TL/TP OS, ZTV-SIB, Sikagard®-680 S Betoncolor, Institut für Bauforschung, Test Report No. A 2216/C1.
- Surface Protection System TL/TP OS, ZTV-SIB 90, Sikagard®-680 S Betoncolor, Polymer Institut, Test Report No. P 3132-1.
- Surface Protection System DIN EN 1504-2, Sikagard®-680 S Betoncolor / Sika MonoTop®-622, Sika Deutschland GmbH, Test Report No. OS 4 622-680.

## PRODUCT INFORMATION

Product Declaration	EN 1504-2: Surface protection product for concrete - Coating	
Chemical Base	Solvent-based acrylate resin	
Packaging	Clear coating	20 kg container
Shelf Life	36 months from date of production	
Storage Conditions	The product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging.	
Appearance / Colour	Thixotropic liquid Clear coating Final appearance: Smooth gloss finish	
	<ul style="list-style-type: none"><li>When the product is exposed to prolonged direct sunlight, splashed water containing de-icing salts or sea water, there may be some discolouration, a change in surface finish and colour variation. This has no influence on the function and performance of the product finish.</li></ul>	
Density	Clear coating	~0,9 kg/l (+20 °C)
Flash Point	Clear coating	~+25 °C

## TECHNICAL INFORMATION

Diffusion Resistance to Water Vapour	Dry film thickness	$d = 140 \mu\text{m}$	(EN ISO 7783)
	Equivalent air layer thickness	$S_{D, H_2O} = 2,4 \text{ m}$	
	Diffusion coefficient	$\mu_{H_2O} = 1,8 \times 10^4$	
	Requirement for breathability	$S_{D, H_2O} \leq 5 \text{ m}$	
Carbonation Resistance	Dry film thickness	$d = 130 \mu\text{m}$	(EN 1062-6)
	Equivalent air layer thickness	$S_{D, CO_2} = 429 \text{ m}$	
	Diffusion coefficient $CO_2$	$\mu_{CO_2} = 3,3 \times 10^6$	
	Requirement for carbonation resistance	$S_{D, CO_2} \geq 50 \text{ m}$	

## SYSTEM INFORMATION

System Structure	<b>Clear Coating</b>	
	<b>Product</b>	<b>Number of Coats</b>
	Sikagard®-680 S Betoncolor	2
	Sikagard®-700 S hydrophobic impregnation primer	1-2
	Note: In marine environments, or if the concrete surface is exposed to splashes of de-icing salts, use a hydrophobic impregnation primer for improved protection and durability.	

## APPLICATION INFORMATION

<b>Consumption</b>	<b>Product</b>	<b>Per Coat</b>
	Sikagard®-680 S Betoncolor Clear coating	~0,15 kg/m <sup>2</sup>
These figures are theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.		
<b>Layer Thickness</b>	Minimum dry film thickness (DFT) to achieve full durability characteristics (CO <sub>2</sub> diffusion, adhesion after thermal cycling, etc.) = 101 µm. Maximum DFT to comply with H <sub>2</sub> O equivalent air thickness of 5 m = 290 µm.	
<b>Ambient Air Temperature</b>	+5 °C minimum / +35 °C maximum	
<b>Relative Air Humidity</b>	< 85 %	
<b>Dew Point</b>	Substrate and ambient temperature must be at least 3 °C above dew point.	
<b>Substrate Temperature</b>	+5 °C minimum / +35 °C maximum	
<b>Waiting Time / Overcoating</b>	Waiting time between coats:	
	<b>Temperature</b>	<b>Time</b>
	+10 °C	~8 hours
	+20 °C	~5 hours
	+30 °C	~3 hours
Note: Refresher coats of Sikagard®-680 S Betoncolor can be applied without priming if the existing coating is fully bonded and is thoroughly cleaned. Times are approximate and will be affected by film, thickness and changing ambient conditions particularly temperature and relative humidity.		
<b>Applied Product Ready for Use</b>	Full cure: ~5 days (+20 °C). Dust dry: ~30 minutes (+20 °C). Times are approximate and will be affected by film, thickness and changing ambient conditions particularly temperature and relative humidity.	

## 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.

## FURTHER DOCUMENTS

Sika Method Statement: Protective Coatings

## LIMITATIONS

- Do not apply if rain is expected.
- For lightweight concrete façades, it is recommended to use a crack bridging intermediate coat such as Sikagard®-550 W Elastic.
- On fair faced and precast concrete, bubbles may occur if the coating application is carried out during rising temperatures. To prevent this occurring, make sure substrate pores are filled with a pore filler of Sika® MonoTop®- 3020 or Sikagard® -720 EpoCem®.

## ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

### DIRECTIVE 2004/42/CE - LIMITATION OF EMISSIONS OF VOC

According to the EU-Directive 2004/42, the maximum allowed content of VOC (Product category IIA / i type sb) is 500 (Limit 2010) for the ready to use product. The maximum content of Sikagard®-680 S Betoncolor is < 500 g/l VOC for the ready to use product.

# APPLICATION INSTRUCTIONS

## EQUIPMENT

### Preparation equipment

- Steam cleaning equipment
- Abrasive blast cleaning equipment
- High-pressure water jetting equipment

### Application equipment

- Brush
- Short pile fleece roller
- Airless spray pressure: 150 bar, nozzle diameter: 0,38 to 0,66 mm, angle: 50° to 80°

## SUBSTRATE QUALITY / PRE-TREATMENT

### Concrete without existing coating

#### IMPORTANT

For use as a protective coating, new concrete must be at least 28 days old.

1. Clean the substrate and make sure it is dry and free of all contaminants such as dirt, oil, grease, surface treatments and loose friable material which could reduce the adhesion of the Product.
2. Prepare the substrate using steam cleaning, abrasive blast cleaning, high-pressure water jetting or similar methods to achieve a textured surface profile suitable for the Product thickness and required adhesion values.
3. Prefill surface defects, blowholes, cavities pores etc. using a pore filler (e.g. Sika MonoTop®-3020, Sikagard®-720 EpoCem®, etc.) to provide a defect free surface.
4. Allow Sika MonoTop®-3020, to cure for at least 4 days or 24 hours if Sikagard®-720 EpoCem® is used.

### Concrete with existing coating

#### IMPORTANT

Test the existing coating to confirm adhesion to the substrate and compatibility. As guidance, in the absence of any national standards or regulations, adhesion test average  $\geq 1,0 \text{ N/mm}^2$  with no single value below  $0,7 \text{ N/mm}^2$ .

#### Inadequate adhesion

1. Completely remove existing coatings using abrasive blast cleaning, high-pressure water jetting or similar methods.
2. Prefill surface defects, blowholes, cavities pores, etc. using a pore filler (e.g. Sika MonoTop®-3020, Sikagard®-720 EpoCem®, etc.) to provide a defect free surface.
3. Allow Sika MonoTop®-3020, to cure for at least 4 days or 24 hours if Sikagard®-720 EpoCem® is used.

#### Adequate adhesion

#### IMPORTANT

Existing water-based coatings must be removed.

#### IMPORTANT

Confirm existing coating compatibility, adequate surface preparation and Product adhesion, by carrying out preliminary trials with adhesion tests before full application.

- Thoroughly clean the existing fully bonded coating surfaces using steam cleaning, low / high-pressure water jetting or similar methods to remove all contaminants.

## APPLICATION

Strictly follow installation procedures as defined in method statements, application manuals and working instructions, which must always be adjusted to the actual site conditions.

Note: Confirm waiting / overcoating times of any previous coats is achieved before applying subsequent coats (refer to waiting / overcoating time in Application Information).

Note: Confirm Product application conditions: substrate moisture content, substrate, air and product temperatures, relative humidity and dew point (refer to Application information).

### Primer coat (if required)

1. Apply the primer evenly over the surface at the required consumption. Refer to the appropriate Product Data Sheet.
2. Protect primer from rain before applying protective coating.

### Protective coating

Note: The product is supplied ready for use.

### Manual application

1. Apply the Product evenly over the surface with a brush or short pile fleece roller at the required consumption.
2. Control the layer thickness during application using a thickness gauge.
3. To achieve a smooth finish, smooth the surface with a brush.
4. The coating must be continuous, pore free and to the required surface finish.
5. Protect the Product from rain for at least 24 hours.
6. Apply additional coats as required.

### Spray application

1. Spray apply the Product in a continuous operation and at a speed to achieve a consistent thickness and surface finish.
2. Control the layer thickness during application using a thickness gauge.
3. The coating must be continuous, pore free and to the required surface finish.
4. Protect the Product from rain for at least 24 hours. Apply additional coats as required.

### Sealing green concrete

1. Apply the Product evenly over the surface with a brush, short pile fleece roller or airless spray at the required consumption.
2. The coating must be continuous and pore free.
3. Protect the Product from rain for at least 24 hours.
4. Apply additional coats as required.

## CLEANING OF TOOLS

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

## 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.

## 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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**Product Data Sheet**  
Sikagard®-680 S Betoncolor  
March 2023, Version 04.02  
020303110020000001

Sikagard-680SBetoncolor-en-GB-(03-2023)-4-2.pdf