

PRODUCT DATA SHEET

Sikagard®-680 S Betoncolor

Protective coating for concrete

DESCRIPTION

Sikagard®-680 S Betoncolor is a 1-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 in clear and coloured versions. 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 cementitious 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 to all types of concrete structures and elements such as buildings, bridges, 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
- Available in many colours
- 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 CO₂ 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
	Coloured coating	12,5 and 30 kg containers
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
	Coloured coating	Final appearance: Smooth matt finish
	<ul style="list-style-type: none"> ▪ Available in many colours. Refer to current price list for colour range ▪ Applied colours selected from colour charts will be approximate. ▪ For colour matching, apply colour sample and confirm selected colour under real lighting conditions ▪ 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. 	
Density	Clear coating	~0,9 kg/l (+20 °C)
	Coloured coating	~1,4 kg/l (+20 °C)
Flash Point	Clear coating	~+25 °C
	Coloured coating	~+30 °C
Solid content by volume	Coloured coating	~45 %

TECHNICAL INFORMATION

Diffusion Resistance to Water Vapour	Dry film thickness	$d = 140 \mu\text{m}$	(EN ISO 7783)
	Equivalent air layer thickness	$S_D, \text{H}_2\text{O} = 2,4 \text{ m}$	
	Diffusion coefficient	$\mu\text{H}_2\text{O} = 1,8 \times 10^4$	
	Requirement for breathability	$S_D, \text{H}_2\text{O} \leq 5 \text{ m}$	
Carbonation Resistance	Dry film thickness	$d = 130 \mu\text{m}$	(EN 1062-6)
	Equivalent air layer thickness	$S_D, \text{CO}_2 = 429 \text{ m}$	
	Diffusion coefficient CO_2	$\mu\text{CO}_2 = 3,3 \times 10^6$	
	Requirement for carbonation resistance	$S_D, \text{CO}_2 \geq 50 \text{ m}$	

SYSTEM INFORMATION

System Structure

Clear coating	
Product	Number of coats
Sikagard®-680 S Betoncolor	2

Coloured coating	
Product	Number of coats
Sikagard®-680 S Betoncolor	2 (with or without primer)
Sikagard®-680 S Betoncolor for bright yellow and red colour shades	3
Sikagard®-702 W hydrophobic impregnation primer	1-2
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

Consumption	Product	Per Coat
	Sikagard®-680 S Betoncolor Clear coating	~0,15 kg/m ²
	Sikagard®-680 S Betoncolor Coloured coating	~0,20 kg/m ²

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.

Layer Thickness	Minimum dry film thickness (DFT) to achieve full durability characteristics (CO ₂ diffusion, adhesion after thermal cycling, etc.) = 101 µm. Maximum DFT to comply with H ₂ O equivalent air thickness of 5 m = 290 µm.
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Ambient Air Temperature	+5 °C min. / +35 °C max.
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Relative Air Humidity	< 85 %
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Dew Point	Substrate and ambient temperature must be at least 3 °C above dew point.
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Substrate Temperature	+5 °C min. / +35 °C max.
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Waiting Time / Overcoating	Waiting time between coats:	
	Temperature	Time
	+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.

Applied Product Ready for Use	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.
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BASIS OF PRODUCT DATA

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®- 723 N or Sikagard® -720 EpoCem®.
- Dark colour shades (especially black, dark red and blue, etc.) may fade quicker than other lighter colour shades. Therefore, a maintenance / refresher coat might be required at an earlier interval than usual.
- For consistent colour matching, make sure the Product in each area is applied from the same control batch numbers.

ECOLOGY HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing 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®-723 N, Sikagard®-720 EpoCem® etc.) to provide a defect free surface.
4. Allow Sika MonoTop®-723 N, 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. Sikagard®-680 S Betoncolor, Sika MonoTop®-723 N, Sikagard®-720 EpoCem® etc.) to provide a defect free surface.
3. Prefill surface defects, blowholes, cavities pores etc. using a pore filler (e.g. Sika MonoTop®-723 N, Sikagard®-720 EpoCem® etc.) to provide a defect free surface.
4. Allow Sika MonoTop®-723 N, 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.

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

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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. For the coloured version, before application, mix for 2 minutes using a low speed electric single paddle mixer or similar equipment. Mix the liquid and all the coloured pigment until a uniform colour has been achieved.

Note: For the coloured coating, on very absorbent and/or porous substrates, it is recommended to mix in ~50 % of Sikagard®-680 S Betoncolor (Clear version) into the Sikagard®-680 S Betoncolor (Coloured version) for the first coat.

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 air less 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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

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