Construction

Sikagard®-680 S

Protective Coating for Concrete

Product Description

Sikagard®-680 S is a one part solvent containing coating, based on methacrylic resins resistant to weathering, alkalis and ageing. It is available in clear and coloured grades for use on mineral substrates including concrete and other cementitious surfaces
Sikagard®-680 S protects concrete against aggressive atmospheric influences and promotes a self-cleaning effect on the treated surfaces. It does not adversely influence the characteristic texture of the concrete.

Uses

- Protection and enhancement of concrete and other cementitious materials on building and infrastructures elements
- **Sikagard®-680 S** Clear Glaze:
  Colourless material drying to a glossy coat, suitable as refresher and protective coating for exposed aggregate concrete
- **Sikagard®-680 S** Top Coat:
  Top coating, drying to a matt finish, available in a large number of decorative standard and almost unlimited special colour shades.

Characteristics / Advantages

- **Sikagard®-680 S** provides excellent weather resistance and is based on a methacrylic resin with fast evaporating solvents
- Due to its quick drying properties, the coating is rain resistant within a short time
- Almost no change in the texture characteristics of the concrete surface
- **Sikagard®-680 S** protects the concrete against aggressive atmospheric influences, which can penetrate into the concrete in the form of salts or gases
- Very high diffusion resistance against carbon dioxide and, therefore reduces considerably the rate and depth of carbonation of the concrete
- Water vapour permeability is not adversely affected
- Dirt pick up is reduced and the concrete is no longer discoloured by rain
- Suitable for sealing of green concrete in civil engineering works

Tests

Approval / Standards

Test reports P-24-ibac, P-27-ibac & P-3132 -1/03 - 188
UZ Approvals 8II 03/353, 8IV 03/366, 8IV 03/363
Sikagard®-680 S is registered in the “Compilation of approved materials and systems” at the federal Department of street construction (BASt) and in the LCPC (French Laboratoire des Ponts et Chaussées) list of approved paint system for civil engineering structures

Product Data

Form	Liquid	
Appearance / Colours	Clear Glaze: Top Coat:	clear liquid can be supplied in almost any colour shade
Packaging	Clear Glaze: Top Coat:	20 kg pail 12.5 kg and 30 kg pails

Storage

Storage Conditions / Shelf-Life	36 months from date of production if stored properly in undamaged and unopened original sealed packaging in cool and dry conditions. Protect from direct sunlight and frost.

Technical Data

Chemical Base	Acrylate resin in solvent	
Density	Clear Glaze: Top Coat: Dependent on colour shade, small variations are possible.	~ 0.9 kg/lt (at +20°C) ~ 1.4 kg/lt (at +20°C)
Solid Volume	Top Coat:	~ 45%
Flash Point	Clear Glaze: Top Coat:	+25°C +30°C
Layer Thickness	d_{minp} (minimum required thickness to achieve the required characteristics - CO_2 equivalent air thickness of 50 m and freeze / thaw resistance) = 101 microns. D_{maxp} (maximum required thickness not to go beyond the H_2O equivalent air thickness of 4 m, to allow adequate water vapour diffusion) = 237 microns.	

Carbon Dioxyde Diffusion Coefficient (μCO_2)

Dry film thickness	d = 130 µm
Equivalent air layer thickness	$S_{D,}$ CO_2 = 429 m
Diffusion coefficient CO_2	$\mu CO_2 = 3.3 \times 10^6$
Requirements for protection	≥ 50 m

Water Vapour Diffusion Coefficient (μH_2O)

Dry film thickness	d = 140 µm
Equivalent air layer thickness	$S_{D,}$ H_2O = 2.4 m
Diffusion coefficient H_2O	$\mu H_2O = 1.8 \times 10^4$
Requirements for breathability	≤ 4 m

System Information

System Structure

Sikagard®-680 S Clear Glaze:
As protection and enhancement of exposed aggregate concrete:
2 x Sikagard®-680 S Clear Glaze

Sikagard®-680 S Top Coat:
In normal situation:
2 x **Sikagard®-680 S** Top Coat
When using bright yellow and red colour shades:
3 x **Sikagard®-680 S** Top coat
When combined with hydrophobic impregnation priming coats:
1 - 2 x Sikagard®-702 W or Sikagard®-700 S
2 x **Sikagard®-680 S** Top Coat

Application Details

Consumption

Approx. consumption per application kg/m² per coat

Product	Per coat
Sikagard®-680 S Clear Glaze	~ 0.15 kg/m²
Sikagard®-680 S Top Coat	~ 0.20 kg/m²

Substrate Preparation

Exposed concrete without existing coating:
The surface must be dry, sound and free from loose and friable particles. Suitable preparation methods are steam cleaning, high pressure water jetting or blastcleaning.

New concrete must be at least 28 days old.

If required, a levelling pore sealer (e.g. Sika® MonoTop®-620, Sika Rep Fine, Sikagard®-545 W Elastofill (M), Sikagard®-526 Porefiller etc.) should be applied. For cement based products, allow a curing time of at least 4 days before coating.

Exposed concrete with existing coating:

Existing coatings must be tested to confirm their adhesion to the substrate - adhesion test average > 1.0 N/mm² with no single value below 0.7 N/mm².

Inadequate adhesion:
Existing coatings must be completely removed by suitable methods and the substrate must be sufficiently sound and suitable to be coated as above.

Adequate adhesion:
Thorough cleaning of all surfaces by means of steam cleaning or high pressure water jetting. Normally, **Sikagard®-680 S** can be applied on existing coating without any priming. It is recommended to carry out adhesion testing on a small scale prior to full scale operations.

Note: Existing water-based coating, even well adhering, must be removed completely prior to apply **Sikagard®-680 S**.

Application Conditions / Limitations

Substrate Temperature

+5°C min. / +30°C max.

Ambient Temperature

+5°C min. / +30°C max.

Relative Air Humidity

< 85%

Dew Point

Temperature must be at least 3°C above dew point

Application Instructions

Mixing

Sikagard®-680 S is supplied ready for use. Stir thoroughly prior to application.
In difficult painting conditions such as very low or very high temperatures, up to 5% of Sika Thinner C can be added. Do not use any other thinner.

Application Method / Tools

For use on very dense substrates, the first coat of **Sikagard®-680 S** shall be thinned with up to 10% Sika® Thinner C.
On very absorbent and/or porous substrate, it is recommended to add about 50% of **Sikagard®-680 S** Clear Glaze to the first coat of **Sikagard®-680 S** Top Coat in order to strengthen the substrate and to reduce the risk of a patchy appearance.
Sikagard®-680 S (Clear Glaze and Top Coat) can be applied by brush or short-piled lambskin roller.
The top coat can also be applied by airless spray:
Thinning: up to 7% max. of Sika® Thinner C.
Spray pressure 150 bars, nozzle bore 0.38 - 0.66 mm, spray angel 50 - 80°.

Cleaning of Tools

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

Waiting Time / Overcoatability

Waiting time between coats:

Substrate temperature	Time
+10°C	8 hours
+20°C	8 hours
+30°C	3 hours

Note: Refresher coats of **Sikagard®-680 S** can be applied without priming if the existing coating has been thoroughly cleaned.

Notes on Application / Limitations

Suitable for use in hot and tropical climatic.
Do not apply when there is:
- Expected rain
- Relative humidity > 85%
- Temperature below +5°C and/or below dew point

For lightweight concrete façade, we recommend a crack bridging intermediate coat such as Sikagard®-550 W Elastic (M).
In marine environments or if the concrete surface is exposed to splashes of de-icing salts, an impregnation of Sikagard®-702 W Aquaphob or Sikagard-700 S is recommended as water repellent primer.
On fair faced and precast concrete without Sika® MonoTop-620 or Sika Rep Fine, bubbles may occur if the application is carried out during rising temperatures.
The system is fully resistant for all normal atmospheric exposures and rainfall etc.
Splashed water containing de-icing salts or sea water may cause a loss of gloss and colour shade variation. However the protective performances are not adversely affected.

Curing Details

Curing Treatment

Sikagard®-680 S does not require any special curing but must be protected from rain for at least 1 hour at +20°C (dust dry in 30 minutes at +20°C).

Applied Product ready for use

Full cure: ~ 5 days at +20°C

Notes

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 Restriction

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 product uses.

Health and Safety Information

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

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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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