

Sikagard® -680S

Methacrylic resin protective and anti-carbonation coating for concrete

Description

Sikagard® -680S is a 1-component methacrylic resin based protective and decorative coating. Sikagard® -680S protects concrete and most mineral-based substrates against aggressive atmospheres, moisture ingress and carbonation. Sikagard-680S allows two way water vapour diffusion enabling the treated structure to breathe.

Uses

Sikagard® -680S may be used to overcoat most mineral substrates including concrete, stone, fibrous cement, suitable brickwork and blockwork. Sikagard® -680S is ideally suited as a final protective coating in concrete repair and building façade refurbishment work to halt the process of carbonation, aggressive ion infiltration and other atmospheric contamination.

Advantages

- Excellent barrier to carbonation and chloride ions.
- Protective and decorative.
- Highly weather and UV light resistant.
- Water vapour permeable.
- Wide colour range possible in non transparent finishes.
- Proven worldwide for over 20 years.
- Will not flake or peel if correctly applied.
- Self cleaning.
- Easily applied.
- Resistant to rain approximately 1.5 hours after application.
- Excellent resistance to yellowing and chalking.
- Prevents moisture ingress.
- Easily overcoated; whenever maintenance is required (normally after a minimum period of 10 years), simply clean down and apply of a refresher coat.
- Slight colour shade differences of concrete can be corrected.
- Can be used as a concrete curing membrane particularly in slip-forming where curing and protective coating is effected in one operation.

Storage and Shelf Life

Minimum shelf life approximately 3 years. Store under controlled conditions in original containers (minimum 5°C, maximum 35°C temperature range).

Grades

Sikagard®-680S is available in three grades.

Sikagard®-680S (Clear Glaze): Colourless material drying to a glossy finish. Suitable as a refresher and protective coating for exposed aggregate concrete, especially for surfaces dulled by a cement film.

Sikagard®-680S (Transparent Matt): A transparent, slightly tinted coating drying to a matt finish. Particularly suited to masking colour variations in patched concrete substrates.

Sikagard®-680S (Finish): Decorative coloured coating drying to a matt finish. Ideal for protection and enhancement of concrete building facades.

Specification – Anti-carbonation Protective Coating

Mechanical Properties

The coating will be a one component acrylic based water borne material, capable of anticarbonation qualities, such as Sikagard®-680S. The dry coating shall have the following properties :

Total dry film thickness (d.f.t)	140 micron for 2 coats
Water vapour diffusion	
Resistance (S_d)	= 1.87 (@ 140 micron)
CO ² diffusion resistance (R)	= 262m (@1400 micron)

Surface Preparation

The substrate must be mechanically cleaned to remove all loose and friable particles, dust, oil, grease, organic matter, existing coatings, curing membranes and laitance. Blow holes, honeycombed areas and other surface irregularities should be filled with Sika® MonoTop or SikaTop SF mortars.

Application of Sikagard®-680S on existing coatings must be on sound quality surfaces. Trials must be conducted to ensure that the Sikagard®-680S is compatible and bond retentive with the existing coating and the substrate.

Priming

It is important that correct priming procedures are followed where Sikagard®-680S does require priming before application. See coating systems below for details.

Coating Systems

Substrate Condition	Primer	Coating
Blast cleaned concrete – dense	1 coat Sikagard®-680S + 10% Thinner	1 coat Sikagard®-680S
Blast cleaned concrete – normal	1 coat Sikagard®-680S + 5% Thinner C	1 coat Sikagard®-680S
Blast cleaned concrete – pourous	1 coat 50% Sikagard-680S + 50% Sikagard®-680S (Clear Glaze)	1 coat Sikagard®-680S
Sika® MonoTop Repair Mortar	1 coat Sikagard®-680S + 10% Thinner C	1 coat Sikagard®-680S
Concrete surfaces exposed to marine environments	Sikagard® -700S*	2 coats Sikagard®-680S
Old water borne coatings	NOT APPLICABLE	
Old Sikagard®-680S Coatings	1 coat Sikagard®-680S	1 coat Sikagard®-680S

* In this case ensure the impregnation of Sikagard®-700S is thoroughly dry before over coating with Sikagard®-680S to prevent the formulations of bubbles caused by solvent entrapment. Refer to Sikagard®-700S Technical Data Sheet for more information.

Sikagard®-680S (Clear Glaze)

For the protection and embellishment of exposed aggregate concrete normally two to three coats of Sikagard®-680S (Clear Glaze).

Sikagard®-680S (Transparent Matt)

Normally two to three coats required.

1st Coat: One coat Sikagard®-680S (Transparent Matt). In case of dense, non-porous surfaces this first coat must be thinned with up to 10% Thinner C.

2nd and 3rd Coat: One coat of Sikagard®-680S (Transparent Matt).

Note that small quantities of Sikagard®-680S (Finish) with grey pigmentation can be added to this coat of Sikagard®-680S (Transparent Matt) to provide heavier masking of variations in substrate colour. Consult the Sika Technical Department for further information.

Sikagard®-680S (Finish)

Normally two coats of Sikagard®-680S (Finish) however, for very intense yellow or red shades, three coats are recommended. In cases of very dense surfaces the first coat must be thinned with up to 10% Thinner C.

Mixing

Sikagard®-680S is supplied ready for use but requires thorough stirring prior to application using a slow running electric stirrer (maximum speed 600 rpm). In cases of problematic conditions, e.g. very low or very high temperatures, up to 5% Thinner C may be added.
Do not use any other thinners.

Application

To ensure maximum protection is achieved, Sikagard®-680S must be applied correctly and at the specified consumption rate.

Sikagard®-680S may be applied by brush, roller or spray. It is advisable to brush apply the first coat and work it well into the substrate to ensure complete penetration. Subsequent coats can be applied by brush, roller or spray. Roller application should be by short-piled lambskin rollers only.

Spray application should be by airless spray equipment; for this method up to 7% Thinner C must be added. Recommended spray pressure is 150 bar (2133 psi), nozzle bore 0.38 – 0.66 mm and spray angle 50° - 80°.

Cleaning

Uncured material may be cleaned from application tools, etc. by using Thinner C (flammable solvent). In cases of very dense surfaces the first coat must be thinned with up to 10% Thinner C.

Technical Data (Typical)

Form

Liquid

Density

Clear Glaze: 0.9 kg/litre

Transparent Matt: 1.1 kg/litre

Finish: 1.4 kg/litre

Volume of Solids

Clear Glaze: 23% approx.

Transparent Matt: 37% approx.

Finish: 42% approx.

Application Temperature

Minimum 5°C

Maximum 35°C

Cure Time	Touch Dry: Rain resistance: Fully dry: Intercoat period:	30-60 minutes approx. 1-1.5 hours approx. 24 hours approx. 4-24 hours approx.
Consumption	Clear Glaze: Transparent Matt: Finish: <i>(Dependent upon surface profile, texture, temperature, porosity, loss and wastage)</i>	0.17 litres/m ² per coat approx. 0.14 litres/m ² per coat approx. 0.14 litres/m ² per coat approx.
Dry Film Thickness	Clear Glaze: Transparent Matt: Finish:	80 micron for 2 coats approx. 105 micron for 2 coats approx. 120 micron for 2 coats approx.
Colour	Off White Light Grey Other colours subject to minimum order quantity and lead times.	
Carbon dioxide diffusion resistance	R = m <i>Taywood Certificate No. 1075</i> (initial value measured on dry film thickness of 140 micron) R = 315 m <i>Taywood Certificate No. 1555</i> (after 4000 hours accelerated weathering measured on dry film thickness of 100 micron) <i>Note: According to Klopfer, to protect concrete from carbonation, R must be at least 50 m.</i>	
Water vapour diffusion resistance	Sd – 1.87 m <i>Taywood Certificate No. 969</i> (initial value measured on dry film thickness of approximately 140 micron) <i>Note: According to Klopfer, an Sd rate of less than or equal to 4 is considered acceptable to achieve two-way water vapour diffusion through a concrete coating.</i>	
Curing efficiency	98% Water Retention Efficiency <i>(Tested to AS 3799, Appendix B 1990. Certificate available on request).</i>	
Packaging	20 litre pails	
Application Limitations	<p>Sikagard®-680S is designed to act as an anti-carbonation coating and protective coating that is decorative. It is important to note that:</p> <ul style="list-style-type: none"> • When applying Sikagard®-680S over sound existing coatings, trials must be conducted to ensure compatibility and bond retention between the existing coating and the substrate. • Sikagard®-680S must not be applied to aged waterborne coatings. • Sikagard®-680S should not be applied to balcony soffits, or other concrete substrates, that have not been protected by membranes and thus contain moisture and water vapour. • Correct priming procedure must be carried out before application, particularly in marine/chloride environments. 	

Important Notes

- For multicoat systems it is advisable that each coat is of a slightly different colour shade to provide a visual aid to complete coating.
- Where very dense surfaces are to be coated the initial coat should be thinned by adding up to 10% Thinner C.
- Sikagard®-680S (Clear Glaze) may turn opaque (milky) if applied to a wet surface.
- Sikagard®-680S may be applied to early age concrete as a curing membrane, however, as with the usual application of curing membranes the substrate surface must not be wet at the time of application i.e. the surface water must have dried to a dull, damp finish.
- Sikagard®-680S is not suitable for use as a floor treatment or for areas which are permanently wet.
- Water splashes containing de-icing salt or sea water may cause a loss of gloss and colour variations.
- Sikagard®-680S is resistant to normal aggressive atmospheric pollutants, however, owing to specific thermoplasticity, slight atmospheric contamination may occur, especially on horizontal surfaces.
- Sikagard®-680S may be overcoated with subsequent coats for maintenance purposes (normally after a minimum period of ten years) provided the previous coat is well cleaned.
- During application in confined areas, shafts etc, adequate ventilation must be provided. Solvents are denser than air and sink to the ground; therefore it is recommended to work from the ground upward.
- In a liquid state Sikagard®-680S contaminates water. Do not pour into drains, groundwater etc.
- Sikagard®-680S (Transparent) has a milky grey tint and therefore may produce aesthetically unacceptable finishes to substrates that are not originally grey.
- Do not use Sikagard®-680S (Clear Glaze or Transparent Matt) to coat brickwork, the result is generally aesthetically unacceptable.
- Always ensure intermediate coats of Sikagard®-680S are dry prior to overcoating to prevent solvent entrapment.

Handling Precautions

- Avoid contact with skin, eyes and avoid breathing in vapour.
- Wear protective gloves when mixing or using.
- If poisoning occurs, contact a doctor or Poisons Information Centre.
- If swallowed, do NOT induce vomiting. Give a glass of water.
- If skin contact occurs, remove contaminated clothing and wash skin thoroughly.
- If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

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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