BUILDING TRUST

PRODUCT DATA SHEET

Sikagard®-8500 CI

(formerly MProtect 8500CI)

Independently verified, dual-phase, surface-applied corrosion inhibitor

PRODUCT DESCRIPTION

Sikagard®-8500 CI is a one-component, ready to use, low viscosity, clear liquid that combines the power of a 100% active penetrating corrosion inhibitor and a latent-phase corrosion inhibitor to mitigate electrochemical corrosion of reinforcing steel in new or aged concrete.
Sikagard®-8500 CI uniquely combines the primary reactive penetrant with a second, latent-phase corrosion inhibitor. This latent-phase inhibitor activates when the concrete cracks, migrating to the reinforcing steel to provide an extra level of protection when it is most needed.

USES

Sikagard®-8500 CI is sprayed directly onto the surface of steel reinforced concrete structures and buildings. It is equally suited to cast in situ, precast, post tensioned, pre-stressed, GFRC or other steel reinforced concrete.
Sikagard®-8500 CI is primarily used for horizontal applications (i.e. decks) where saturation can be readily achieved. The Product can be used as part of an overall repair strategy using Sika® Concrete Repair Systems to mitigate corrosion rates within the balance of the structure and significantly reduce the possibility of 'ring anode' or 'halo effect' induced spalling later.
Equally Sikagard®-8500 CI can be used as a cost-effective preventative measure before the onset of corrosion induced problems occur.
It is particularly suited for the protection of:

- Steel reinforced concrete, including cast-in-place, precast, pre-stressed and post tensioned.
- Horizonal surfaces, including bridge decks, multi-storey car park decks, pedestrian walkways, concrete docks, loading bays, etc.
- Supporting elements (beams, columns, piles, piers, etc.).
- Building façades and balconies.
- Marine and other high humidity environments not subject to hydrostatic pressure.
- Steel-reinforced concrete exposed to de-icing salts.

CHARACTERISTICS / ADVANTAGES

- 100% active ingredients. No diluents or fillers.
- Easy to apply and quick-drying for fast installation.
- Provides water repellent surface to prevent penetration of moisture and chlorides.
- Reduces corrosion due to the 'ring anode' or 'halo effect'.
- Suitable for use in new construction and repair applications.
- Effective in chloride-contaminated and carbonated concrete to significantly slow down the rate of corrosion.
- Latent-phase corrosion inhibitor activates if concrete cracks or if moisture penetrates the concrete, providing extended protection when it is most needed.
- Vapour-permeable, to prevent moisture entrapment.
- Effective in high humidity environments to mitigate corrosion of reinforcing steel.
- Easy to apply surface treatment that penetrates into the concrete to bond with steel and the concrete matrix to inhibit macrocell (mat-to-mat) and microcell (along rebar) corrosion of steel reinforced concrete.
- Can be covered with most types of subsequent coatings, thereby reducing downstream labour costs compared with many other corrosion inhibitors.

APPROVALS / STANDARDS

Sikagard®-8500 CI's superior performance has been proved by several independent Test Reports.

Test Method	Description
ICCET Testing	Evaluation of performance of the surface applied corrosion inhibitors under chloride attack and carbonation.
ASTM G109	Determines corrosion effects of steel reinforcement in concrete when exposed to chloride environments.
FHWA-HRT-07-043	Corrosion tests on cracked concrete beams exposed to chlorides.
M-82 Testing	Evaluates the performance of corrosion mitigation technologies in concrete repairs
ASTM C 876	Measures corrosion potentials of uncoated reinforcing steel in concrete.
EIS Testing	Electrical Impedance Spectroscopy for measuring corrosion rates on reinforced concrete elements.
University of Bergamo Studies	Evaluation of reducing the penetration of chlorides in plain and cracked concretes as well as increasing the resistance against carbonation.

PRODUCT INFORMATION

Packaging	Sikagard®-8500 CI is available in 20 litre plastic containers and 1000 litre IBCs.		
Appearance / Colour	Clear to light amber liquid		
Shelf Life	18 months after date of production if stored in undamaged, unopened containers at below mentioned storage conditions.		
Storage Conditions	Sikagard®-8500 CI should be stored dry and cool, with no permanent storage over +30 °C. Keep containers closed when not in use and away from naked flames, heat sources and sparks.		
Density	0.88 kg/l		
Flash Point	+62 °C		(EN ISO 2719)
Viscosity	At +23 °C	0.82 cP	(Anton Paar MCR301)

TECHNICAL INFORMATION

Freeze Thaw De-Icing Salt Resistance	Loss of mass after freeze-thaw salt stress	≥ 30 cycles later than not impregnated specimen	(EN 13581)
Resistance to Weathering	No yellowing or discolouration	(NCHRP Report 244, Series IV [Southern Exposure])	
Permeability to Water Vapour	Moisture Vapor Transmission Performance	> 75 %	(Alberta B388, Type1b)
	Waterproofing Performance After Abrasion	> 85 %	

Penetration Depth	15 mm		(EN 1504-2 Table 3,No. 19)
Chloride Ion Diffusion Resistance	Chloride Reduction	> 88 %	(NCHRP Report 244,Series II [NorthernExposure])
	Chloride Reduction	> 90 %	(NCHRP Report 244,Series IV [SouthernExposure])
Water Absorption	Compared to Untreated Sample	2.8 %	(EN 13580)
	In Alkaline Solution Compared to Untreated Sample	9.9 %	
	Water Absorption Reduction	> 88 %	(NCHRP Report 244,Series II [NorthernExposure])
Drying rate coefficient	55 %		(EN 13579)

APPLICATION INFORMATION

Consumption	0.6 litre/m², respectively 0.5 kg/m²
Ambient Air Temperature	+5 °C to +38 °C
Substrate Temperature	+5 °C to +38 °C
Curing Time	Chemical reactions are complete after two weeks.
Waiting Time / Overcoating	Wait at least for 24 hours after the last Sikagard®-8500 CI application before applying subsequent coatings.

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.

LIMITATIONS

- For professional use only; not for sale to, or use by, the general public.
- The effectiveness of Sikagard®-8500 CI depends on existing corrosion rates, condition of the reinforcing steel and service conditions.
- Proper application is the responsibility of the user. Field visits by Sika® personnel are for making technical recommendations only and not for supervising or providing quality control on the job site.
- Do not apply at temperatures below +5 °C or over +35 °C.
- Do not apply if rain is expected within four hours following application, or if high winds or other conditions prevent proper application.
- Allow concrete surfaces to dry for between 24 and 72 hours after heavy rain or cleaning with water before applying Sikagard®-8500 CI.
- Do not alter or dilute the material as supplied.

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.

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

New concrete must be properly cured. Concrete should have obtained 80% of design strength, which typically takes 14 to 28 days, depending on mix design.
Concrete surfaces must be dry and cleaned to remove all traces of mould oil, curing compounds, dirt, dust, efflorescence, mould, algae, grease, oil, bitumen, paint, lacquers, or other coatings, or any other materials that would prevent penetration.
Acceptable cleaning methods include shot or sandblasting, high-medium pressure water blasting, or grinding. An ICRI 310.2R CSP 3 to 5 is preferred for best penetration.
All delaminated, loose or spalled concrete must be removed and repaired with an approved product from Sika®'s concrete repair range. Repair mortars must be properly cured and obtain 80% of their design strength.
Sikagard®-8500 CI can, as an additional protective measure, be applied directly to exposed rebar before repair work commences.
Non-moving shallow shrinkage cracks (<0.3 mm) with no structural significance are simply treated with multiple coats or ponding of Sikagard®-8500 CI.
Other cracks or failed joint sealants should be routed

clean and treated with Sikagard®-8500 CI before being filled with suitable joint sealant from the Sikaflex® product range.

MIXING

Sikagard®-8500 CI is a ready to use Product. Do not mix or add anything into the material. Simply shake the container before opening.

APPLICATION

1. Use Sikagard®-8500 CI as supplied. Do not alter or dilute the Product in any way.
2. During application, precautions should be taken to protect the surrounding area from overspray and run-off.
3. Apply Sikagard®-8500 CI to dry concrete. Air and concrete temperatures must be between +5 °C and +38 °C. Lower or higher application temperatures require prior written approval from Sika®'s Technical Services.
4. Apply Sikagard®-8500 CI to all concrete surfaces, including repairs, in a multiple coat application. Sikagard®-8500 CI can be applied with low pressure, non-atomising spray equipment with a wet fan-type spray nozzle, or by brush or roller. Sprayers should be fitted with solvent-resistant hoses and gaskets. The Product can also be poured when pre-treating cracks in horizontal surfaces. Allow a minimum of 15 minutes between coats but do not re-coat before previous application is visibly dry.
5. Most applications require two or three coats applied at a rate of 180 - 230 ml/m² each. Apply a minimum of 600 ml/m² in total. The exact amount of Sikagard®-8500 CI will vary due to concrete porosity, application environment and with the degree of corrosion, chloride content of the concrete, and the severity of expected service conditions. Contact your Sika® Representative to discuss specific project requirements.
6. Sikagard®-8500 CI only reacts with mineral based substrates. Therefore, it does not react inside the container or application pump. As long as it is kept in its original container or inside a clean sealed pump, it can be used whenever needed during its shelf life.

CURING TREATMENT

It is recommended that any surface treated with Sikagard®-8500 CI to be left undisturbed for a minimum of 4 hours in order to allow proper penetration.

CLEANING OF TOOLS

After use all equipment should immediately be cleaned with Sika® Thinner C.

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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