BUILDING TRUST

PRODUCT DATA SHEET

Sikagard® M 790

(formerly MSeal M 790)

2-component highly chemical resistant, crack-bridging membrane based on Xolutec® for protection of concrete structures in harsh conditions

PRODUCT DESCRIPTION

Sikagard® M 790 is a two-component crack-bridging membrane based on Xolutec® - Technology providing high chemical and mechanical resistance.

Xolutec is an innovative and smart way of combining complementary chemistries. When the material is mixed on site a cross linked interpenetrating network (XPN) is formed enhancing the overall material properties. By controlling the cross-linking density, the properties of Xolutec can be adjusted depending on the product performance required, e.g. this allows the formulation of materials with varying degrees of toughness and flexibility. Xolutec is very low in volatile organic components (VOC), is quick and easy to apply with both spray and hand application depending on requirements. It cures rapidly even at low temperature, reducing application time thus enabling fast return to service and minimizing downtime. This technology is not sensitive to moisture and tolerates a wide variety of different site conditions, greatly expanding the application window and reducing the potential for delays and failures. Long maintenance cycles and lower life cycle costs significantly reduce total cost of ownership.

USES

Sikagard® M 790 is used in all protection applications where a high level of chemical resistance is required. This includes:

- Waste water treatment plants both in the inflow and outflow areas.
- Sewage effluent pipelines.
- Biogas plants.
- Secondary containment.

Sikagard® M 790 can be applied on:

- Horizontal and vertical substrates.
- Internal and external areas, also with rubber wheel traffic.
- Concrete, cementitious mortar or steel substrates.
- Reinforced concrete to protect it against carbonation or chloride induced corrosion and for protection against chemical attack in secondary containment bunds in chemical and petrochemical industries.

Contact your local Sika representative for any other applications not listed here.

CHARACTERISTICS / ADVANTAGES

- Easy hand application by roller or trowel
- Continuous membrane: monolithic – no laps, welds or seams
- Excellent chemical resistance – including high concentrations of biogenic sulphuric acid.
- Waterproof and resistant to standing water.
- Fully bonded to substrate: can be applied to a wide range of substrates with the appropriate primer.
- Moisture tolerant: can be applied on substrates with high residual humidity.
- High resistance to carbon dioxide diffusion: Protects concrete from rebar corrosion.
- High tear, abrasion and impact resistance: Withstands traffic and use in areas exposed to mechanical damages.
- Tough - but flexible and crack bridging.
- Long-term durability and protection
- Thermoset: does not soften at high temperatures.
- Weatherproof: proven thundershower and freeze / thaw resistance, can be applied outdoors without additional top coating.
- Does not contain solvents.
- Can be spray-applied with selected 2-component spray machines (please contact our technical service for details)

APPROVALS / STANDARDS

- CE Certification according to EN 1504-2
- Long-term resistance to biogenic sulfuric acid corrosion resistance (Fraunhofer Institute)
- Chemical Resistance according to EN 13529
- Bond Strength and blistering if exposed to reverse moisture according to DAfStb Repair Guideline
- DIBt-Approval for use in concrete in biogas facilities, tanks, bunker silos and for containment areas in storage and filling of liquid manure and silage (JGS).

PRODUCT INFORMATION

Packaging	Sikagard® M 790 is available in ▪ 5 kg Kits consisting of 1.5 kg Part A and 3.5 kg Part B ▪ 10 kg Kits consisting of 3 kg Part A and 7 kg Part B ▪ 30 kg Kits consisting of 9 kg Part A and 21 kg Part B		
Shelf Life	12 months in unopened pails if stored under below mentioned storage conditions.		
Storage Conditions	Sikagard® M 790 must be stored in unopened, original containers under dry conditions at temperatures between 10 - 25° C preferably. Protect from frost and no permanent storage over +30 °C.		
Colour	Grey and Red		
Appearance / Colour	Part A: grey or red liquid Part B: yellowish liquid		
Density	Part A	approx. 1.27 g/cm³	(EN ISO 2811-1)
	Part B	approx. 1.15 g/cm³	
	Mixed	approx. 1.2 g/cm³	
Viscosity	Mixed Product	approx. 2800 mPas	
	(EN ISO 3219)		

TECHNICAL INFORMATION

Shore D Hardness	After 7 days	80	
Abrasion Resistance	Taber test (mass loss)	194 mg	
	BCA test (thickness loss)	< 10 µm (= class AR 0,5)	(EN 13894-2)
	Dynamic friction (test for rubber wheel traffic) “Stuttgarter Gerät”	Assessment	
	20,000 cycles dry	no abrasion of material	
	20.000 cycles wet	no abrasion of material	
Resistance to Impact	24.5 Nm (class III)		
Tensile Strength	> 20 N/mm²		
Crack Bridging Ability	Static Crack bridging		
	At +23 °C	> 0.5 mm (class A3)	(EN 1062-7)
	At +70 °C (dry curing)	> 0.25 mm (class A2)	
	At -10 °C	> 0.25 mm (class A2)	
	Dynamic Crack bridging		
	At +23 °C	class B3.1	(EN 1062-7)
	At -10 °C	class B2	
Tensile adhesion strength	dry concrete after 28d	2.9 N/mm²	
	wet concrete after 28d	2.2 N/mm²	
	steel (without Primer) after 7d	≥ 7.0 N/mm²	

	(EN 1542) (EN 13578) (EN 12188)		
Thermal Resistance	Service temperature (dry)	- 20 to +80 ºC	
	Service temperature (wet)	up to +60 °C	
Capillary Absorption	0.0005 kg/m²·h^{0,5}		(EN 1062-3)
Water Penetration under Pressure	Resistance to positive water pressure	5 bar	(EN 12390-8)
Water Penetration under Negative Pressure	Resistance to negative water pressure	2.5 bar	
	(UNI 8298-8)		
Permeability to Water Vapour	Class III (S_D = 126 m)	(EN ISO 7783)	
Permeability to CO2	S_D = 206 m	EN 1062-6)	
Chemical Resistance	Please refer to the detailed Chemical Resistance information (available on request).		
Water resistance	Resistance to osmotic pressure (with Sikagard P 770 and Sikagard-385 Epocem as primers)	No adhesion loss and no bubble formation	
Behaviour after Artificial Weathering	After 2000 h	no blistering, cracking or flaking; colour change	(EN 1062-11)
Freeze Thaw De-Icing Salt Resistance	Adhesion to concrete after cycling with de-icing salt immersion & thunder shower cycling	2.7 N/mm²	
	(EN 13687-1 & EN 13687-2)		
Reaction to Fire	Class E	(EN 13501-1)	

SYSTEM INFORMATION

Systems	Sikagard® M 790 is the Membrane/Topcoat of the Sikagard®-7000 CR system.
System Structure	Sikagard®-7000 CR consists of two components: the primer Sikagard® P 770 and the membrane Sikagard® M 790, both based on our innovative Xolutec® technology. The two colours of Sikagard® M 790 – red and grey – allow safe application even in environments with poor visibility.

APPLICATION INFORMATION

Mixing Ratio	Mixing ratio Part A : Part B (by weight)	1 : 2.33
	Mixing ratio Part A : Part B (by volume)	1 : 2.58
	Please note that Part B is the bigger part of the mix!	
Consumption	The consumption of Sikagard® M 790 hand-applied is approximately 0.4 kg/m² per coat. A minimum of two coats is required, depending on the condition and porosity of the substrate and requested film thickness. A two-coat application with a total consumption of approximately 0.8 kg/m² will provide a dry film thickness of approx. 0.7 – 0.8 mm. In high chemically demanding environments (e.g. industrial waste water treatment plants) and/or in harsh, abrasive conditions, a dry film thickness of 1.0 - 1.1 mm is recommended. Therefore, a minimum consumption of 1.0 - 1.2 kg /m² in	

	two or three layers must be applied. With the specific spraying equipment, the application of up to 1 mm thickness can be completed in one coat. These consumptions are theoretical and can vary according to the absorption and roughness of the substrate. It is essential to carry out representative trials on site to evaluate the exact consumption.	
Ambient Air Temperature	+5 to +35 °C	
Relative Air Humidity	Not restricted, but no condensation of water on the surface.	
Dew Point	The temperature of the contact surfaces must be at least 3 °C above the ambient dew point temperature.	
Substrate Temperature	+5 to +35 °C	
Substrate Moisture Content	Not restricted, but surface must be visibly dry.	
Pot Life	at +10 °C	approx. 25 min
	at +20 °C	approx. 20 min
	at +30 °C	approx. 15 min
Waiting Time / Overcoating	at +5 °C	approx. 24 hours
	at +20 °C	approx. 8 hours
	at +30 °C	approx. 4 hours
Applied Product Ready for Use	Exposure to water pressure at +20 °C after	24 hours
	Fully cured at +20 °C after	7 days

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

- Do not apply at temperatures below +5 °C nor above + 35 °C
- Do not add any solvents, sand or other components to Sikagard® M 790 mixes.
- Ensure application in a continuous layer avoiding pinholes, or surface defects that can facilitate penetration of chemicals to substrate.
- Under strong UV radiation the hardened membrane can yellow and loose gloss; this has however no influence on the chemical resistance and mechanical performance of the material.
- **Attention:** unused remains of mixed material can lead to a strong heat development in the pail. Use up all material completely!
- Lower temperatures can cause both components of Sikagard® M 790 to become more viscous. This phenomenon does not affect the properties or the workability of the product. Material can be mixed normally.

ECOLOGY, HEALTH AND SAFETY

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

Sikagard® M 790 must be applied to primed substrates.

A primer coat will improve the adhesion and prevent the appearance of pinholes or bubbles in the hardened coating. The recommended primer for Sikagard® M 790 is Sikagard® P 770.

Priming instructions: The prepared substrate should be visibly dry - there is no limit to residual humidity. The substrate temperature must be minimum +5 °C and maximum +35 °C. The temperature of the contact surfaces must be at least 3 °C above the ambient dew point temperature.

Sikagard® P 770 can be applied by roller in one layer and its consumption is approx. 0.25 - 0.4 kg/m². Wait for at least 5 hours (at + 20° C) before applying Sikagard® M 790. We recommend overcoating the primer within the next 48 hours of its application. If this time is exceeded, please contact your local technical Sika representative.

MIXING

Sikagard® M 790 is supplied in working kits which are pre-packaged in the exact mixing ratio.
Open the two Parts of the product and briefly mix the single components with a mechanical drill and paddle at low speed (max. 400 rpm) in order to obtain a uniform consistency.
Then pour the entire content of Part A into the container of Part B and mix with a mechanical drill and

paddle at low speed (max. 400 rpm) for 90 seconds. Scrape the sides and the bottom of the container several times to ensure complete mixing. Keep the mixer blades submerged in the coating to avoid introducing air bubbles.
Do not mix part packs and do not mix by hand!
Attention: unused remains of mixed material can lead to a strong heat development in the pail. Always use up all mixed material completely.

APPLICATION

Sikagard® M 790 can be applied by brush or roller. It is always recommended to complete the application in a minimum of two layers.
For spray application of Sikagard® M 790 please refer to our application manual for Sikagard®-7000 CR.
At low temperatures, the chemical reactions are slowed down; this lengthens the pot life, open time and curing times. High temperatures speed up the chemical reactions thus the pot life, open time and curing times are shortened accordingly. To fully cure, the material, substrate and application temperature should not fall below the minimum. The temperature of the contact surfaces must be at least 3 °C above the ambient dew point temperature.
Minimum waiting time before application of second coat is 8 hours (overnight) at +20 °C ambient and substrate temperature. We recommend completing the application of the subsequent coat within 48 hours. If this time is exceeded, please contact our Technical Service.

CLEANING OF TOOLS

Tools can be cleaned with solvent-based cleaner while still wet. Once cured, the 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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