

SikaCor VEL

Vinyl ester resin based laminate system

Positioning Description	SikaCor VEL is a 2 part, glass fabric reinforced, vinyl ester based coating and lining system.	
Uses	<ul style="list-style-type: none"> • Especially designed for use in a chemically stressed environment, where high chemical resistance is essential • Tank and bund lining • Lining retention ponds • Binder for laminate layers • Binder for scratch coats • For internal and external use 	
Advantages	<ul style="list-style-type: none"> • High chemical resistance to acids, alkalis, leachates, solvents and oxidizing agents • Applicable on concrete and steel • Fast curing • Laminate system has good crack bridging properties • Available as a conductive or non conductive system • Excellent bond strength • Easy application 	
Approval / Standards	<p>Approved as 'Secondary containment system' according to the principles of the DIBt, Germany, approval number Z-59. 12-69.</p> <p>Electricity Conductive according to BGR 132: $10^4 < R_A < 10^8$</p>	
Product Data		
Colour:	Non-conductive system	
	SikaCor VEL solution:	Opaque
	SikaCor VEL hardener:	Opaque
	Conductive system	
	SikaCor VEL powder:	Black
	SikaCor VEL solution conductive:	Black and grey
Packaging:	SikaCor VEL solution:	20kg drum
	SikaCor VEL hardener:	500mls container
	SikaCor VEL powder:	25kg bag
	SikaCor VEL solution conductive:	20kg drum
	Glass Fibre Matt 450gsm	30kg/roll
	SikaCor surface matt (0.030kg/m ²)	3kg/100m ² roll
	Carbon Fibre Matt (0.030kg/m ²)	3kg/roll
Storage & Shelf Life:		<u>Shelf Life</u>
	SikaCor VEL solution:	Three (3) months
	SikaCor VEL hardener:	Six (6) months
	SikaCor VEL powder:	Twenty Four (24) months
	SikaCor VEL solution conductive:	Three (3) months
	<p>Quoted shelf life is from date of production if stored properly in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +5°C and +20°C. Protect from frost.</p>	

Technical Data

Chemical Base:	Vinylester resin + organic peroxide		
Density:	SikaCor VEL solution:	~1.09kg/l	
	SikaCor VEL hardener:	~1.06kg/l	
	SikaCor VEL powder:	~0.54g/cm ³ bulk density	
	SikaCor VEL solution conductive:	~1.26kg/l	
Bond Strength:	>1.5N/mm ² (failure to concrete)		(EN 4624)
Shore D Hardness:	Approx. 84 (14 days / +23C)		(DIN EN ISO 868)
Tensile Strength:	Approx. 73N/mm ²		

Resistance

Thermal Resistance

Exposure*	
Permanent	+80°C
Short term max. 7 d	+80°C
Short term max. 12 h	+100°C

Short term moist/wet heat* up to +120C, where exposure is only occasional (steam cleaning etc.)

Chemical Resistance

Chemicals:

According to the approval of the DIBt (German Institute of Building Technology), approval number Z-59. 12-69 for test groups 1,1a ,2 ,3 ,3a ,3b ,4 ,4a ,4b ,4c , 5, 5a, 5b, 6, 6b, 7, 7a, 8, 9, 9a, 10, 11, 12, 13, 14, 15 and 15a.

Additional building inspectorate approval for the following materials:

- Hydrochloric acid ≤ 37%
- Sulphuric acid ≤ 70%
- Nitric acid ≤ 65%
- Aqueous sodium hypochlorite (12% active chlorine)
- Hydrogen peroxide ≤ 30%
- Chromic acid ≤ 50%

Resistance to a wide range of chemicals, please ask for detailed chemical resistance list of SikaCor VEL.

System Information

System Structure

SikaCor VEL, non-conductive on concrete and steel:

Primer or Scratch Coat: 1 x SikaCor VEL as a primer or scratch coat

Laminate layer:

Imbedding	1 x SikaCor VEL Glass Fibre Matt (450gsm)
Still wet	1 x SikaCor VEL Glass Fibre Matt (450gsm)
Still wet	1 x SikaCor VEL Glass Fibre Tissue (30gsm)
Top coat	2 x SikaCor VEL

SikaCor VEL conductive on concrete and steel:

Scratch Coat 1 x SikaCor VEL scratch coat

Laminate layer:

Imbedding	1 x SikaCor VEL Glass Fibre Matt (450gsm)
Still wet	1 x SikaCor VEL Glass Fibre Matt (450gsm)
Still wet	1 x SikaCor VEL conductive + 1 Carbon Fibre Matt
Earthing	Sikafloor Earthing Kit
Top coat	2 x SikaCor VEL conductive



SikaCor VEL, conductive, anti-slip on concrete and steel

Primer / Scratch Coat: 1 SikaCor VEL scratch coat

Laminate layer:

Imbedding	1 SikaCor VEL Glass Fibre Matt (450gsm)
Still wet	1 x SikaCor VEL Glass Fibre Matt (450gsm)
Still wet	1 x SikaCor VEL Glass Fibre Tissue (30gsm)
Earthing	Sikafloor Earthing Kit
1 st top coat	1 x SikaCor VEL conductive
Still wet	broadcast with silicon carbide
2 nd top coat	1 x SikaCor VEL conductive

Application of all above mentioned system build ups on Sikagard 720 EpoCem.
Before application of the SikaCor VEL scratch coat apply one thin primer coat of SikaCor VEL.

Application Details**Consumption / Dosage****SikaCor VEL, non-conductive on concrete and steel**

Coating System	Product	Consumption
Primer or Scratch coat	Primer 100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener	~0.33 kg/m ² ~0.005 kg/m ²
	Scratch Coat 100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener +80 pbw Sika Aggregate-508	~0.33 kg/m ² ~0.005 kg/m ² <u>~0.26 kg/m²</u> ~0.60 kg/m ²
Laminate Layer	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener Glass Fibre Matt Glass Fibre Tissue	~2.38 kg/m ² ~0.035 kg/m ² ~0.90 kg/m ² ~0.03 kg/m ²
Top Coat x 2	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener	~0.2 kg/m ² per coat ~0.003 kg/m ² per coat

SikaCor VEL, non-conductive, anti-slip on concrete and steel

Coating System	Product	Consumption
Primer or Scratch coat	Primer 100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener	~0.33 kg/m ² ~0.005 kg/m ²
	Scratch Coat 100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener +80 pbw Sika Aggregate-508	~0.33 kg/m ² ~0.005 kg/m ² <u>~0.26 kg/m²</u> ~0.60 kg/m ²
Laminate Layer	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener Glass Fibre Matt Glass Fibre Tissue	~2.38 kg/m ² ~0.035 kg/m ² ~0.90 kg/m ² ~0.03 kg/m ²
1 st Top Coat	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor VEL hardener	~0.2 kg/m ² ~0.003 kg/m ²
Broadcast	Silicon Carbide (0.5mm)	~0.50 kg/m ²
2 nd Top Coat	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor VEL hardener	~0.2 kg/m ² ~0.003 kg/m ²



SikaCor VEL conductive, on concrete and steel

Scratch coat	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener +80 pbw SikaCor VEL powder	~0.33 kg/m ² ~0.005 kg/m ² ~0.26 kg/m ² ~0.60 kg/m ²
Laminate Layer	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener Glass Fibre Matt Glass Fibre Tissue Or Carbon Fibre Matt	~2.38 kg/m ² ~0.035 kg/m ² ~0.90 kg/m ² ~0.03 kg/m ² ~0.03 kg/m ²
Sikafloor Earthing Kit		
Conductive layer	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor Vel hardener Carbon Fibre Matt 30	~0.20 kg/m ² ~0.003g/m ² ~0.03 kg/m ²
Top Coat	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor VEL hardener	~0.2 kg/m ² per coat ~0.003 kg/m ² per coat

SikaCor VEL conductive, anti-slip on concrete and steel

Coating System	Product	Consumption
Scratch coat	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener +80 pbw SikaCor VEL powder	~0.33 kg/m ² ~0.005 kg/m ² ~0.26 kg/m ² ~0.60 kg/m ²
Laminate Layer	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener Glass Fibre Matt	~2.38 kg/m ² ~0.035 kg/m ² ~0.90 kg/m ²
Sikafloor Earthing Kit		
Conductive layer	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor Vel hardener Carbon Fibre Matt 30	~0.20 kg/m ² ~0.003g/m ² ~0.03 kg/m ²
1 st Top Coat	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor VEL hardener	~0.2 kg/m ² ~0.003 kg/m ²
Broadcast	Silicon Carbide (0.5mm)	~0.50 kg/m ²
2 nd Top Coat	100 pbw SikaCor VEL solution conductive 1.5 pbw SikaCor VEL hardener	~0.2 kg/m ² ~0.003 kg/m ²

All system build ups mentioned above, on Sikagard 720 EpoCem

Primer	100 pbw SikaCor VEL solution 1.5 pbw SikaCor VEL hardener	~0.10 kg/m ² ~0.0015 kg/m ²
Followed by system build up chosen from above		

Note: These figures are theoretical and do allow for additional material required due to surface porosity, surface profile, variation in level or wastage etc. Due to availability, the indicated chemical and mechanical stress the type and amount of embedded glass fabric can be changed. Refer to Sika (NZ) Ltd.

Substrate Quality

Concrete must be sound and of sufficient compressive strength (minimum 25 N/mm²) with a minimum pull off strength of 1.5 N/mm². The substrates must be clean, dry and free of all contaminants such as dirt, oil, grease, coatings and surface treatments etc.

Steel must be clean, dry, free of rust and all contaminants such as dirt, oil, grease, coatings and surface treatments etc. If in doubt, apply a test area first.



Application Conditions / Limitations

Substrate Temperature : +5°C min. / +35°C max.

Ambient Temperature: +5°C min. / +35°C max.

Substrate Moisture

Content : < 4% pbw moisture content

Test method: Sika Tramex meter, CM – measurement or Oven-dry-method.
No rising moisture according to ASTM (Polyethylene-sheet)

Relative Air Humidity: 80% r.h. max.

Dew Point: Beware of condensation!

The substrate and uncured floor must be at least 3°C above the dew point to reduce the risk of condensation or blooming on the floor finish.

Application Instructions

Mixing

Scratch coat:

Part A : part B : part C = 100 : 1.5 : 80 (by weight)

Laminate layer and top coat:

Part A : part B = 100 : 1.5 (by weight)

Mixing Time

Scratch coat:

Prior to mixing, stir part A mechanically. When all of part B has been added to Part A, mix continuously for 1 - 2 minutes until a uniform mix has been achieved. Add, while stirring slowly, the total amount of SikaCor VEL powder.

Laminate layer and top coat:

Prior to mixing, stir part A mechanically. When all of part B has been added to Part A, mix continuously for 1 - 2 minutes until a uniform mix has been achieved.

Over mixing must be avoided to minimise air entrainment.

Mixing Tools

SikaCor VEL and SikaCor VEL® conductive must be thoroughly mixed using a low speed electric stirrer (300 - 400 rpm) or other suitable equipment.

Substrate Preparation

Concrete substrates must be prepared mechanically using abrasive blast cleaning or scarifying equipment to remove cement laitance and achieve an open textured surface.

Weak concrete must be removed and surface defects such as blowholes and voids must be fully exposed.

Repairs to the substrate, filling of blowholes/voids and surface levelling must be carried out using Sikagard-720 EpoCem.

The concrete or screed substrate has to be primed and/or levelled in order to achieve an even surface.

High spots must be removed by e.g. grinding.

All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum.

Steel surfaces must be prepared mechanically using abrasive blast cleaning.

The level SSPC-SP 10 "near white metal blast cleaned" or level Sa 2 ½ according to ISO EN 12944-4 has to be achieved.

Welds and joints have to be prepared according to EN 14879, part 1.

After blast cleaning remove all dust dirt and blasting material. In order to maintain the surface conditions after blast cleaning air-conditioning is recommended.



Application Tools

Prior to application, confirm substrate moisture content, relative humidity and dew point.

If > 4% pbw moisture content, substrate has to be dried or Sikagard-720 EpoCem has to be used as TMB (temporary moisture barrier).

Primer:

On Sikagard-720 EpoCem a thin primer coat of SikaCor VEL has to be applied by roller or brush.

Scratch coat:

Rough surfaces need to be levelled first. Apply the scratch coat by trowel to the required thickness.

Laminate layer:

Apply the first layer of SikaCor VEL or SikaCor VEL conductive by roller, imbed the glass fabric, apply the second and the third layer in the same way, wet on wet. After application of the final glass fabric de-aerate with a disc roller.

Top coat:

Apply SikaCor VEL or SikaCor VEL conductive by roller.

Notes:

- 1) During application a high air change rate has to be provided.
- 2) Water, even in the smallest amount, could affect the hardening and block the curing process. Tools and equipment have to be totally dry.

Cleaning Tools

Clean all tools and application equipment with acetone immediately after use. Hardened and/or cured materials can only be removed mechanically.

Attention: Acetone is a flammable liquid, please handle with care, use all equipment for your personal protection required.

Pot Life

Temperature	Time
+ 5°C	~ 45 minutes
+ 20°C	~ 30 minutes
+ 30°C	~10 minutes

Waiting Time / Overcoating

Before applying SikaCor VEL on Sikagard-720 EpoCem allow:

Substrate temperature	Minimum	Maximum
+ 5°C	~ 2 days	~ 5 days
+ 20°C	~ 1 day	~ 3 days
+ 30°C	~ 1 day	~ 3 days

SikaCor VEL is only overcoat-able with itself. Before applying further layers on SikaCor VEL allow:

Substrate temperature	Minimum	Maximum
+ 5°C	~ 4 hours	~ 4 days
+ 20°C	~ 2 hours	~ 3 days
+ 30°C	~ 2 hours	~ 2 days

Times are approximate and will be affected by changing ambient conditions particularly temperature and relative humidity.

If the indicated over coating is exceeded the surface has to be re-activated by mechanical preparation followed by cleaning.



Notes on Application / Limitations

Do not apply SikaCor VEL on substrates with rising moisture.

Do not apply SikaCor VEL on polymer modified cementitious mortars, except Sikagard-720 EpoCem.

Freshly applied SikaCor VEL and SikaCor VEL conductive should be protected from damp, condensation and water for at least 8 hours.

Do not allow the imbedding resin to puddle on the surface.

Insure min. 5cm overlapping of the glass fabric.

Construction joints require pre-treatment. Treat as follows:

- Static Cracks: fill and level with Sikagard-720 EpoCem, epoxy resin
- Dynamic cracks: will be covered, up to 0.2mm, with the coating system for cracks wider than 0.2mm design as a movement joint

During application the use of personal protective health & safety equipment is mandatory! Please refer to the latest SDS.

Under certain conditions, floor heating or high ambient temperatures combined with high point loading, may lead to imprints in the resin.

The incorrect assessment and treatment of cracks may lead to a reduced service life and reflective cracking.

If heating is required do not use gas, oil, paraffin or other fossil fuel heaters, these produce large quantities of both CO₂ and H₂O water vapour, which may adversely affect the finish. For heating use only electric powered warm air blower systems.

Curing

Applied Product ready for use

Temperature	Foot traffic	Light traffic	Full cure
+ 5°C	~ 8 hours	~ 2 days	~ 3 days
+ 20°C	~ 4 hours	~ 24 hours	~ 2 days
+ 30°C	~ 3 hours	~ 24 hours	~ 2 days

Note: Times are approximate and will be affected by changing ambient conditions

Notes

All technical data stated in this Product Data Sheet are based on tests. Actual measured data may vary due to circumstances beyond our control.

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.

Health & Safety Information

Protective Measures

- To avoid allergic reactions, we recommend the use of protective gloves. Change soiled work clothes and wash hands before breaks and after finishing work.
- Local regulations as well as health and safety advice on packaging labels must be observed.
- For further information refer to the Sika Safety Data Sheet which is available on www.sika.co.nz, or on request.
- If in doubt always follow the directions given on the pack or label.



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.

CE Labelling

The harmonised Europe Standard EN 1504-2 Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 2: Surface protection systems for concrete gives specifications for products and systems used as methods for various principles presented under EN 1504-9.

Products which fall under specification have to be CE labelled as per Annex ZA. 1, Tables ZA, 1a to ZA 1g according to the scope and relevant clauses there indicated and fulfill the requirements of the given mandate of the Construction Product Directive (86/106):

Here below indicated are the minimum performance requirements set by the standard. For the specific performance results of the product to the particular tests, please see the actual values above in the PDS.

CE	
0921	
Sika (NZ) Limited PO BOX 19192 Avondale 1746 New Zealand	
10 ¹⁾	
EN 1504-2	
Surface Protection Product Coatings ²⁾	
Abrasion resistance (Taber test)	NPD
Permeability to CO ₂	S _D > 50 m
Permeability to water vapour	Class III
Capillary absorption and permeability to water	$w < 0.1 \text{ kg/m}^2 \times \text{h}^{0.5}$
Resistance to severe chemical attack ³⁾	Class II
Impact resistance	Class III
Adhesion strength by pull-off test	≥ 3.0 N/mm ²
Fire Classification: ⁴⁾	E _{fl}



- 1) Last two digits of the year in which the marking was affixed.
- 2) tested as laminate system build-up
- 3) Please refer to the SikaCor Chemical Resistance List.
- 4) Min. classification, please refer to the individual test certificate.

