Construction

Sikagard®-720 EpoCem®

3-part cement and epoxy combination micro mortar for surface sealing

Product Description	Sikagard®-720 EpoCem® is a three part, epoxy modified cementitious, thixotropic, fine textured mortar for levelling and finishing of concrete, mortar or stone surfaces.
Uses	■ As a levelling layer over concrete and mortars in 0.5 - 3 mm on vertical or horizontal surfaces, in new works or repairs, particularly in aggressive chemical environments ■ As a Temporary Moisture Barrier (TMB) (min. 2 mm thick) allowing the application of Epoxy, Polyurethane and PMMA* resin floors requiring dry substrates, over high moisture content substrates, even green concrete, for a lasting solution. ■ As a pore sealer for the reprofiling, smoothing and levelling of concrete surfaces ■ In the food industry, as a levelling and smoothing layer for walls and covings, prior to the application of a suitable Sika® Epoxy or PUR finish ■ Suitable for moisture control (Principle 2, method 2.3 of EN 1504-9) ■ Suitable for restoration work (Principle 3, method 3.1 and 3.3 of EN 1504-9). ■ Suitable for physical resistance (Principle 5, method 5.1 of EN 1504-9) ■ Suitable for preserving or restoring passivity (Principle 7, method 7.1 and 7.2 of EN 1504-9) ■ Suitable for increasing resistivity (Principle 8, method 8.3 of EN 1504-9) * See Notes on Application / Limitations
Characteristics / Advantages	■ Excellent protection of concrete in aggressive environments ■ Good chemical resistance ■ Easy and fast application ■ Class R4 of EN 1504-3 ■ Impervious to liquids but permeable to water vapour ■ Excellent bond to green or hardened concrete whether damp or dry ■ Minimum waiting time prior to the application of other Sika® resin based finish products ■ It is the ideal preparation for smooth surface finishes ■ For internal or external use ■ Contains no solvents ■ Can be applied by spray pump machine

Tests

Approval / Standards	ITT reports for EN 1504-2, Ref. 09/343-946, dated May 6th, 2009 and EN 1504-3 Ref. 09/300-964 dated May 4th, 2009 by Applus Laboratory, Barcelona, Spain. Qualification tests in accordance with Swiss Standard SIA 162/5, Ref. A-29'212-1E, dated September 26th, 2005 by LPM AG, Beinwil am See, Switzerland Conforms to the requirements of EN 1504-2 for principles 2 (MC), 5 (PR) and 8 (IR) as a Coating as well as to the requirements of EN 1504-3 for principles 3 (CR) and 7 (RP) as R4 mortar.

Product Data

Form

Appearance /Colours	Part A - resin: Part B - hardener: Part C - filler:	white liquid transparent yellow liquid Aggregate powder
	Colour: Finish:	grey matt
Packaging	Pre-dosed 21 kg sets.	
	Part A: Part B: Part C:	1.14 kg plastic bottle 2.86 kg plastic jerrycan 17.0 kg plastic lined double paper bags

Storage

Storage Conditions/ Shelf-Life	Part A, part B: Part C:	12 months 9 months
	From date of production if stored in original, unopened and undamaged sealed packaging, in dry conditions at temperatures between +5°C and +30°C. Protect from direct sunlight.	
	Part A, part B: Part C:	Protect from frost Protect from humidity

Technical Data

Chemical Base	Epoxy modified cementitious mortar.		
Density	Part A: Part B: Part C:	~ 1.05 kg/l (at +20°C) ~ 1.03 kg/l (at +20°C) ~ 1.30 kg/l (at +20ºC)	
	Mixed A+B+C:	~ 2.00 kg/l (at +20°C)	(EN 1015-6)
Layer Thickness	Min.: 0.5 mm / Max.: 3 mm Isolated and confined small areas (< 0.01 m^2) up to 5 mm		
Fire Rating	Class $A2_{(fl)}$ S1		(EN 13501-1)
Coefficient of Carbon Dioxide Diffusion	$\mu C0_2 \approx 7{,}000$ Carbonation resistance for 1 mm thickness: R ≈ 7 m		(SN EN 1062-6)
Service Temperature	-30°C to +80°C for continuous exposure.		

Mechanical / Physical Properties

Requirements

Requirements as per EN 1504-3 (Class R4)

	Results (ITT results)	Requirements (R4)	Test Method
Compressive Strength	47.5 N/mm² (MPa)	≥ 45 N/mm² (MPa)	EN 12190
Chloride Ion Content	0.01%	≤ 0.05%	EN 1015-17
Adhesive Bond	3.0 N/mm² (MPa)	≥ 2.0 N/mm² (MPa)	EN 1542
Carbonation Resistance	Pass	Lower than control	EN 13295
Thermal Compatibility Part 1: Freeze-Thaw	3.0 N/mm² (MPa)	≥ 2.0 N/mm² (MPa)	EN 13687-1
Coefficient of Thermal Expansion	13.1 $*10^{-6}$ m/m °C	Declared value	EN 1770
Capillary Absorption	0.07 $kg*m^{-2}*h^{-0.5}$	≤ 0.5 $kg*m^{-2}*h^{-0.5}$	EN 13057
Water-vapour transmission rate	S_D = 0.59 m Class I	Class I: S_D < 5 m Class II: S_D 5 m – 50 m Class III: S_D > 50 m	EN 7783-2
Liquid water transmission rate	0.09 $kg.m^{-2}.h^{-0.5}$	< 0.1 $kg.m^{-2}.h^{-0.5}$	EN 1062-3
Impact resistance	24.5 Nm Class III	Class I: ≥ 4 Nm Class II: ≥10 Nm Class III: ≥20 Nm	EN ISO 6272-1
Taber Abrasion Resistance	2693 mg	< 3000 mg	EN ISO 5470-1

Compressive Strength	~ 46.9 N/mm^2 after 28 days at +20°C and 50% r.h.	(SIA 162/1)
Flexural Strength	~ 6.4 N/mm^2 after 28 days at +20°C and 50% r.h.	(SIA 162/1)
Freeze / Thaw / De-Icing Salt Resistance	Resistance Factor WFT-99% (High)	(Method BE II acc. to D-R)
Sulphate Resistance	High Sulphate Resistance	(ASTM C 1012)

Resistance

Chemical Resistance

Sikagard-720® EpoCem® has improved chemical resistance over plain concrete in aggressive environments, but is not designed as a chemical protection. For specific chemical resistance, always overcoat with a suitable product of the Sikafloor® range. For occasional exposure or spillages, please consult.

System Information

System Structure

The system configuration as described must be fully complied with and may not be changed.

Primer indicated below is suitable for each of these substrates:

Green concrete (as soon as mechanical preparation is possible)
Damp concrete (> 14 days old)
Damp aged concrete (rising moisture)

Vertical or horizontal pore filling, repair and levelling:

Layer thickness: 0.5 - 3 mm
Primer: Water saturation with matt, damp appearance
Topping: Sikagard®-720 EpoCem®

Application Details

Consumption / Dosage

Primer:
Water dependent on substrate absorbency.

Screed / Mortar / Render:
~ 2.0 $kg/m^2/mm$

This figure is theoretical and does not include for any additional material required due to surface porosity, surface profile, variations in level or wastage, etc.

Substrate Quality	The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm^2) with a minimum pull off strength of 1.5 N/mm^2. The substrate must be damp but free of standing water and free of all contaminants such as oil, grease, coatings and surface treatments, etc.
Substrate Preparation	Concrete substrates must be prepared mechanically using abrasive blast cleaning or high pressure water jetting equipment to remove cement laitance, especially oil or wax containing layers and achieve an open textured surface. Weak concrete must be removed and surface defects such as blow holes and voids must be fully exposed. Repairs to the substrate, filling of blowholes/voids and surface levelling must be carried out using appropriate products from the Sikafloor®, Sikadur® and Sikagard® range of materials. High spots can be removed by 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.

Application Conditions / Limitations

Substrate Temperature	+8°C min. / +30°C max.
Ambient Temperature	+8°C min. / +30°C max.
Substrate Moisture Content	Can be applied on green or damp concrete, without any standing water. Although the product can be applied onto green concrete surfaces (> 24 hours), it is advised to allow at least 3 days for early shrinkage of concrete to occur in order to prevent concrete shrinkage cracks from appearing on the screed surface.
Relative Air Humidity	20% min. / 80% max.

Application instructions

Mixing	Part A : part B : part C - packaging size: 1.14 : 2.86 : 17 kg Mixing ratio: 1 : 2.5 : 14 - 15 (by weight)
Mixing Time	Prior to mixing, shake part A (white liquid) briefly until homogenous, then pour into the container of part B and shake vigorously for at least 30 seconds. When dosing out of drums, stir and homogenise first. Pour the mixed binder (A+B) into a suitable mixing container (capacity of about 30 litres) and gradually add part C while stirring with a power mixer. Mix thoroughly for 3 minutes until a uniform mix has been achieved.
Mixing Tools	Mix using a slow speed electric mixer (300 - 400 rpm) with helical paddle or other suitable equipment. Also suitable are single or counter rotating double mortar (basket type) and forced action (pan type) mixers. Free fall mixers must not be used.
Application Method / Tools	Place mixed Sikagard®-720 EpoCem® onto the matt-damp substrate and spread evenly to the required thickness with a trowel or spatula. When necessary, it may be finished with a moist neoprene sponge or brush. Application on to the surface can also be done using an Aliva Hopper gun, a Putzmeister S-5 or a Graco T-Max 405. Subsequent finishing by hand is required. Do not use additional water, which would disturb the surface finish and cause discolouration. Freshly applied Sikagard®-720 EpoCem® must be protected from rain for at least 24 hours. Once Sikagard®-720 EpoCem® is tack free it is possible to apply vapour permeable seal coats. Always verify that surface moisture < 4% when applying vapour tight coatings. A seamless finish can be achieved if a “wet” edge is maintained during application.

Cleaning of Tools

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

Potlife

21 kg unit

Temperature	Time
+10°C	~ 80 minutes
+20°C	~ 40 minutes
+30°C	~ 20 minutes

Waiting Time / Overcoating

Before any subsequent application when using vapour tight surface sealers on SikaGard®-720 EpoCem®, allow the surface moisture to fall below 4%, not earlier than:

Substrate temperature	Waiting time
+10°C	~ 60 hours
+20°C	~ 15 hours
+30°C	~ 8 hours

Note: Times are approximate at 75% r.h. and will be affected by changing ambient and substrate conditions, particularly temperature and relative humidity.

Notes on Application / Limitations

Always ensure good ventilation when using Sikagard®-720 EpoCem® in a confined space, to remove excess moisture.

Freshly applied Sikagard®-720 EpoCem® must be protected from damp, condensation and water for at least 24 hours.

For external applications, apply primer and Sikagard®-720 EpoCem® on a falling temperature. If applied during rising temperatures “pin holing” can occur.

Non moving construction joints require pre-treatment with a stripe coat of primer and Sikagard®-720 EpoCem®. Treat as follows:
Static Cracks: Prefill and level with Sikadur® or Sikafloor® epoxy resin.
Dynamic Cracks (> 0.4mm): To be assessed on site and if necessary apply a stripe coat of elastomeric material or design as a movement joint.

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

Colour variations can occur on unsealed Sikagard®-720 EpoCem® through exposure to direct sun light. This however, will not influence the mechanical properties.

When overlaying with PMMA screeds, the surface of Sikagard®-720 EpoCem® must be fully broadcast with sand 0.4 - 0.7 mm.

The TMB effect in EpoCem® is limited in time, without additional preparation. Always verify the surface moisture content if more than 5-7 days have passed since application.

Curing Details

Applied Product ready for use

Temperature	Full cure
+10°C	~ 14 days
+20°C	~ 7 days
+30°C	~ 4 days

Note: All cure times are approximate and will be affected by changing substrate and ambient conditions.

Construction

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