

Sikagard[®]-720 EpoCem[®]

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

Positioning 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	<ul style="list-style-type: none">• As a 0.5 - 3mm levelling layer over concrete and mortars on vertical or horizontal surfaces, in new works or repairs, particularly in aggressive chemical environments• As a Temporary Moisture Barrier (TMB) (min. 2mm thick) under Epoxy, Polyurethane and PMMA* resins, over high moisture content substrates, even green concrete.• As a pore sealer for the re-profiling, 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) <p>* See notes on Application / Limitations</p>
Advantages	<ul style="list-style-type: none">• 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
Approval / Standards	ITT reports for EN 1504-2, Ref. 09/343-946, dated May 6 th 2009 and EN 1504-3 Ref. 09/300-964 dated May 4 th 2009 by Applus Laboratory, Barcelona, Spain Qualification tests in accordance with Swiss Standard SIA 162/5, Ref. A-29'212-1E, dated September 26 th 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	
Appearance /Colours	Part A - resin: white liquid Part B - hardener: transparent yellow liquid Part C - filler: Aggregate powder Colour: grey Finish: matt
Packaging	Supplied in 21kg sets: Part A: 1.14kg plastic bottle Part B: 2.86kg plastic jerry can Part C: 17.0kg plastic pails

Construction



Storage & Shelf Life	Part A, part B:	Twelve (12) months
	Part C:	Twelve (12) 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.	
	Part A, part B:	Protect from frost
Part C:	Protect from humidity	

Technical Data

Chemical Base	Epoxy modified cementitious mortar.	
Density	Part A:	1.05kg/l (at +20°C)
	Part B:	1.03kg/l (at +20°C)
	Part C:	1.30kg/l (at +20°C)
	Mixed A+B+C:	2.00kg/l (at +20°C)
Layer Thickness	0.5mm minimum, 3.0mm maximum.	
	Isolated and confined small areas (< 0.01m ²) up to 5mm	
Carbon Dioxide Diffusion Coefficient (μCO₂)	μCO ₂ ≈ 7,000	
	Carbonation resistance for 1mm: R ≈ 7m	(SN EN 1062-6)
Fire Rating	Class A2 _(fl) S1	(EN 13501-1)
Service Temperature	-30°C to +80°C in continuous exposure.	

Mechanical / Physical Properties

Requirements Requirements as per EN 1504-3 (Class R4)

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

Compressive Strength	~ 46.9N/mm ² after 28 days at +20°C and 50% r.h.	(SIA 162/1)
Flexural Strength	~ 6.4N/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)
Chemical Resistance	The Sikafloor® EpoCem® product range 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 the Sika Technical Department.	



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 - 3mm

Primer: Water saturation. Substrate should have a matt, damp appearance (what is referred to as a saturated, surface dry condition).

Topping: Sikagard[®]-720 EpoCem[®]

Application Details

Consumption / Dosage

Primer: Consumption of water is dependent on substrate absorbency.

Screed / Mortar: ~ 2.0kg/m²/mm

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

Substrate Quality

- The concrete substrate must be sound and of sufficient compressive strength (minimum 25N/mm²) with a minimum pull off strength of 1.5N/mm².
- 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 Humidity

Can be applied on green or damp concrete, but there should not be 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: 1.14kg : 2.86kg : 17kg

Parts A : B : C = 1 : 2.5 : 14-15

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 - 400rpm) 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 sealer 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

21kg unit

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

Waiting Time / Overcoatability

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

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

Times are approximate at 75% r.h. and will be affected by changing ambient 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 extra 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” may 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 may lead to a reduced service life and reflective cracking.
- Colour variations may occur on unsealed Sikagard®-720 EpoCem® through direct sun radiation. This however, will not adversely influence the mechanical properties.
- When overlaying with PMMA screeds, the surface of Sikagard®-720 EpoCem® must be fully broadcast with sand 0.4 – 0.7mm.
- The Temporary Moisture Barrier effect in EpoCem is limited in time, without additional preparation. Always verify the surface moisture content if more than 5-7days 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.

Notes

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.

Local Restriction

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 product uses.

Health and 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 Material 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 harmonized European 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 based on methods “hydrophobic impregnation”, “impregnation” and “coating” for the various principles presented under EN 1504-9.

Products which fall under this specification have to be CE-labelled as per Annex ZA. 1, Tables ZA1a to ZA 1g according to the scope and relevant clauses there indicated, and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):

For flooring systems not dedicated to protect or reinstate the integrity of a concrete structure, EN 13813 applies. Products acc. EN 1504-2 used as flooring systems with mechanical loads also must fulfil EN 13813.

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	
Sika (NZ) Ltd PO BOX 19192 Avondale Auckland 1746	
09	
EN 1504-2	
Surface protection system for concrete, rigid coating	
Abrasion resistance (Taber Test)	Weight loss < 3000mg H22, 1000c, 1000gr
Permeability to water vapour	Class I: $S^D < 5m$ (permeable to water vapour)
Capillary absorption and permeability to water	$< 0.1kg.m^{-2}.h^{-0.5}$
Impact resistance	After loading no cracks or delamination Class III: $\geq 20Nm$
Adhesion strength by pull-off test	(horizontal with trafficking) $\geq 2.0N/mm^2$

1) Last two digits of the year in which the marking was affixed.
2) No performance determined
3) Tested as part of a full system



CE Labelling

The harmonized European Standard EN 1504-3 Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 3 : Structural and non-structural repair specifies the identification, performance (including durability) and safety of products and systems to be used to repair concrete surfaces (either building or civil engineering structures).

Products which fall under this specification have to be CE-labelled as per Annex ZA. 1, Tables ZA1, according to the scope and relevant clauses there indicated, and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):

For flooring systems not dedicated to protect or reinstate the integrity of a concrete structure, EN 13813 applies. Products acc. EN 1504-3 used as flooring systems with mechanical loads also must fulfil EN 13813.

Here below indicated are the performance classes achieved according to the standard. For the specific performance results of the product to the particular tests, please see the actual values above in the PDS

CE	
Sika (NZ) Ltd PO BOX 19192 Avondale Auckland 1746	
09	
EN 1504-3	
Concrete repair product for non-structural repair PCC mortar (based on polymer hydraulic cement mortar)	
Compressive strength	Class R4
Chloride ion content	≤ 0.05%
Adhesive bond	≥ 2.0MPa
Elastic Modulus	NPD
Restrained shrinkage / expansion	≥ 2.0MPa (bond str. after test)
Durability Carbonation resistance	Pass
Durability Thermal compatibility	≥ 2.0MPa (bond str. after test)
Skid resistance	Class III : > 55 units wet tested
Coefficient of thermal expansion	13.1 µm / m °C
Capillary absorption (water permeability)	≤ 0.5kg.m ⁻² .h ^{-0.5}
Reaction to fire	A2 _(fi) S1
Dangerous substances comply with 5.4	



- 1) Last two digits of the year in which the marking was affixed.
2) No performance determined
3) Tested as part of a full system



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