BUILDING TRUST

PRODUCT DATA SHEET

SikaTop® ES-108

2-Component Polymer modified high strength concrete repair for horizontal deck and floor repairs (maximum grain size 8 mm)

DESCRIPTION

SikaTop® ES-108 is a pre-batched mortar based on OPC and quartz aggregates that is used in combination with SikaTop® ES Additive-100K or SikaTop® ES Additive-100V liquid modified polymer dispersions.
SikaTop® ES-108 is a all low-chromate according to TRGS 613 [German Regulations for Hazardous Substances].

USES

Production of repair mortars and replacement concretes (PCC / RC) for horizontal decks and floors on bridges and civil engineering structures in accordance with ZTV-ING, part 3, section 4; area of application PCC I.

Permissible exposure classes:
XALL / XSTAT / XC1-4 / XD 1-3 / XS 1-3 / XF 1-4

CHARACTERISTICS / ADVANTAGES

- Corresponds to exposure stress Class M3 DAfStb guideline
- Low shrinkage and residual stress
- Good water retention capacity
- Resistant to freeze-thaw
- Repair and anode embedding mortar for cathodic corrosion protection (KKS)
- Polymer-modified cement-bound 2-component repair concrete (PCCI / RC)

APPROVALS / CERTIFICATES

- General building authority test certificate (P 2776/02-135), from the German Research Institute for Polymer Construction Materials.
- Listed certified materials and systems according to ZTV-ING, part 3, section 4.
- Exposure stress Class M3 test approvals for SikaTop ES-108.
- Independent system testing and approval as bedding mortars for anodes in “Cathodic protection" system installations.

PRODUCT INFORMATION

Packaging	40 kg bags and in bulk
Shelf life	9 months from date of production
Storage conditions	Store SikaTop ES-108 in undamaged, unopened, original sealed packaging in cool and dry conditions. Keep away from damp.
Density	ca. 2.37 kg/dm³
Maximum Grain Size	8 mm

TECHNICAL INFORMATION

Compressive strength	55.7 N/mm² after 28 days
Tensile Strength in Flexure	10.0 N/mm² after 28 days

SYSTEM INFORMATION

System Structure

- SikaTop® ES K&H-101 (Corrosion protection and bonding course)
- SikaTop® ES-108 (concrete repair)
- SikaTop® ES Additive-100 K / SikaTop® ES Additive-100 V (mixing liquid)

APPLICATION INFORMATION

Mixing Ratio

SikaTop® ES Additive-100K

Pre-batched dry mortar	SikaTop® ES-108
SikaTop ES Additive-100K mixing liquid: Water (RT/GT)	1 : 2 (1.13 : 2.27)
Mixing liquid per 40 kg dry mortar	3.40 l
Consistency	Stiff plastic

SikaTop® ES Additive-100V in bulk

SikaTop® ES-108 can also be supplied by bulk tanker. Installation is by machine. Please contact Sika Technical Services for details.

Consumption

Mixed concrete	23.5 kg/m²/cm
Dry mortar	21.5 kg/m²/cm
SikaTop ES® Additive-100K	0.61 kg/m²/cm
SikaTop ES® Additive-100V	1.84 kg/m²/cm

Layer Thickness

20 - 100 mm per working process

Ambient Air Temperature

Min. +5 °C / Max. +30 °C

Substrate Temperature

Min. +5 °C / Max. +30 °C

Pot Life

5°C	2 hours
23°C	1 hour
30°C	0.75 hours

Waiting Time / Overcoating

The respective curing / hardening times are shown in the table below, and according to temperature:
A (Time to pedestrian and vehicle traffic)
B (Time to surface preparation by blast cleaning)
C (Time to pull-off strength tests; expected value = 1.5 N/mm²)
D (Time to application of surface protection systems)
E (Time to installation of mastic asphalt protective layer)

	5°C	23°C	30°C
A	1 day	1 day	1 day
B	3 days	2 days	2 days
C	14 days	5 days	3 days
D	7 days	5 days	2 days
E	7days	5 days	2 days

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

SUBSTRATE CONDITION
The substrate must be clean, sound and free from any loose or friable particles. Any existing coating or sealant residues, and/or damaged concrete must be removed, together with any other substances that could prevent or reduce the adhesion of the mortars.

SUBSTRATE PREPARATION
The bond / adhesion of a PCC class I mortar is based on mechanical adhesion with the surface profile and roughness together with good penetration and surface saturation of the system in or onto the substrate. High strength concrete, vacuum formed surfaces and other extremely smooth and very dense concrete surfaces may need more intensive substrate preparation adapted to the individual conditions to create a suitable profile for this adhesion. The coarse aggregates in the matrix must be partially exposed after this preparation. Simply removing cement laitance from the concrete surface is not sufficient. In some situations a sample area should be prepared and trials undertaken to determine the necessary requirements for optimum adhesion of the PCC mortar to the concrete surface. Abrasive substrate preparation is always necessary.

In summary, the whole area must be given suitable surface preparation to obtain average pull-off strengths of 1.5 N/mm² (see ZTV-ING, part 3, section 4). Any exposed steel reinforcement must be fully exposed beyond its corroding length and prepared by blast cleaning techniques in accordance with EN ISO 12944, part 4, to a degree of cleanliness equivalent to SA 2½.

MIXING

SikaTop® ES Additive-100K
The mortar must be mixed with a compulsory mixer. Gravity fall mixers and hand mixing are not suitable methods for these materials. Do not mix for more than 3 minutes. This limit must be precisely adhered to, otherwise foaming can start. The following steps are required to produce the ready-to-use mortar:

1. Stir the SikaTop® ES Additive-100K.
2. Make up the mixing liquid consisting of SikaTop® ES Additive-100K and clean water. Stir /mix to a homogenised liquid.
3. Pour this liquid into the mortar mixing container and add the SikaTop® ES dry mortar, stirring slowly and continuously. Check the mixing ratios are maintained.

SikaTop® ES Additive-100V (1000 kg)
SikaTop® ES-modified mortar consists of SikaTop® ES Additive-100V mixing liquid and the bulk supplied SikaTop® ES-108/108 dry mortars are mixed in the machine hopper. The GigaMix or similar machine is set up for mixing and application.

APPLICATION

The exposed and prepared steel reinforcement must be given the anti-corrosion treatment layers before installing the replacement concrete. SikaTop ES K&H-101 is system tested according to German ZTV-ING standards. Before applying the PCC, repair / screed depth gauges should be adjusted and fixed to prevent them moving out of position when the mortar / concrete is placed and compacted.
To improve the adhesion of the modified cement mortar to the existing concrete substrate, always apply a bond coat.
The substrate must be pre-saturated (preferably submerged in water), preferably at least 24 hours before work starts. The surface must have then dried again until it appears slightly damp before applying the bond coat (SSD condition). Avoid ponding or standing water, as this would dilute the bond coat unacceptably.
The bond coat consists of SikaTop ES K&H-101 and water at the ratio of 4:1 in parts by weight. Maximum 3.75 litres of water are therefore required for each bag of SikaTop ES K&H-101 (15 kg bags).
The bond coat should have a soft consistency and be brushed well into the surface pores and profile of the substrate.
<u>Important</u>
Do not allow the bond coat to dry, apply the repair mortar / concrete ‘wet on wet’.
Embed the PCC mortar in the bond coat after prefilling any larger holes / defects. Spread the mixed mortar evenly, overfill the areas and then draw-off / screed-off any excess with a beam and vibrator, then fully compact. Final floating and finishing of the surface should be carried out to produce a fine-grained, sandpaper-like texture. Never add any additional water, SikaTop ES Additive-100K or SikaTop ES Additive-100V to the mix or the surfaces and do not sprinkle them with cement or any other materials.
Maintain only the joints that must be brought through from the substructure; additional joints are unnecessary and could damage the integrity of the system. Sikaflex elastic joint sealants are available for finally sealing the joints at the surface when required.
SikaTop ES-104 and108 can be installed manually. The use of a beam vibrator is usually recommended for larger applications.

CURING TREATMENT

Prevent the freshly applied material from drying out too quickly, e.g. due to direct sunlight or wind; follow standard rules for the curing of cement based mortars. Freshly applied and hardened surfaces must be kept damp by covering with suitable hessian matting / plastic sheeting and / or mist spraying with water. ZTV-ING, Part 3, Section 4 shall apply for the curing period. Avoid cold water shock on the surface.
Alternatively, the newly finished surfaces can be impregnated with Sikafloor-150 after 3-10 hours. Detailed information on this option is given on our separate system data sheet "Fresh Concrete Impregnation For Trafficked Structures".

CLEANING OF EQUIPMENT

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

BASIS OF PRODUCT DATA

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

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for the exact product data and uses.

ECOLOGY, HEALTH AND SAFETY

GISCODE: ZP 1

CE MARK
See Declaration of Performance

HEALTH & SAFETY
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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