

PRODUCT DATA SHEET

Sika MonoTop®-412 DE

Fire-resistant, polymer-modified repair mortar for the Sika MonoTop®-PCC system

DESCRIPTION

Sika MonoTop®-412 DE is a 1-component cement mortar dry mix with a coordinated grading curve, fibre-reinforced with polymer additives.

Sika MonoTop®-412 DE is low in chromate according to TRGS 613.

USES

Concrete repair in building construction, bridge construction and civil engineering as well as for the repair of hydraulic structures as concrete replacement according to ZTV-W LB 219. Sika MonoTop®-412 DE in the Sika MonoTop®-PCC system meets the requirements of ZTV-ING, Part 3, Section 4 for the PCC I and PCC II (RM) range. Can be used as SPCC (SRM) in concrete repair and as repair and anode embedding mortar for titanium mixed oxide mesh anodes in cathodic corrosion protection of reinforced concrete.

Permissible exposure classes:

XALL / XDYN / XSTAT / XBW1-2 / XW1-2

XC1-4 / XD 1-3 / XS 1-3 / XF 1-4 / XM 1 / XA1-2

FEATURES

- Corresponds to stress classes M2 and M3 according to DAfStb guideline
- Can be applied by hand and wet spraying
- Fire resistant according to standard temperature curve (ETK), fire resistance class F90/F120
- Tested for durability under water load according to ZTV-W (LB 219)
- Simple and easy application
- Very well suited for "overhead" work
- Fire behaviour classification according to DIN EN 13501-1
- Only water addition required
- Fibre-reinforced
- Reprofiling mortar under bonded waterproofing in swimming pools in accordance with the ZDB Schwanmbadbau (German Swimming Pool Construction Association) data sheet
- Repair and anode embedding mortar for cathodic corrosion protection (KKS)

CERTIFICATES AND TEST REPORTS

- Sika MonoTop® PCC-System is listed in the compilation of certified substances and substance systems and according to ZTV-ING, Part 3, Section 4
- Sika MonoTop®-412 DE meets the requirements of class R4 according to EN 1504-3
- Sika MonoTop®-412 DE is listed in the compilation of certified substances and substance systems and according to ZTV-ING, Part 3, Section 4 as concrete repair SPCC

PRODUCT INFORMATION

Composition	Cement, selected fillers and aggregates, special additive
Packaging	25 kg bag
Appearance and colour	Grey powder
Shelf life	12 months from date of production
Storage conditions	The product must be stored in original, unopened and undamaged sealed packaging in dry conditions. Always refer to packaging.
Density	~ 2,05 kg/l (fresh mortar)
Maximum grain size	$D_{\max} = 2 \text{ mm}$

TECHNICAL INFORMATION

Compressive strength	after 7 days: 42,0 N/mm ² (storage B) after 28 days: 52,3 N/mm ² (storage B) The specified technical characteristics are taken from the test report. For external monitoring, the technical characteristic values specified in abP apply.
Modulus of elasticity in compression	~24.800 N/mm ²
Flexural-strength	after 7 days: 5,9 N/mm ² (storage B) after 28 days: 9,9 N/mm ² (storage B) The specified technical characteristics are taken from the test report. For external monitoring, the technical characteristic values specified in abP apply.
Chloride ion diffusion resistance	chloride migration coefficient: $1,3 \cdot 10^{-12} \text{ m}^2/\text{s}$

APPLICATION INFORMATION

Mixing ratio	~ 3,25 - 3,50 litres of water per 25 kg sack Sika MonoTop®-412 DE : Water = 100 : 13/14 (parts by weight)						
Consumption	Sika MonoTop®-412 DE (mortar) = 20,3 kg/m ² /cm Sika MonoTop®-910 N (adhesive mortar) = 1,5 – 2,0 kg/m ² The cementitious, polymer-modified 1-component material Sika MonoTop®-910 N is used together with the Sika MonoTop® PCC-System as corrosion protection for exposed reinforcement during concrete repairs. Sika MonoTop®-910 N is also used as a high-tensile adhesive agent in the Sika MonoTop® PCC-System (refer to product data sheet Sika MonoTop®-910 N). When used as SPCC, Sika MonoTop®-910 N is used as corrosion protection.						
Layer thickness	10 mm minimum / 50 mm maximum (per working process)						
Ambient air temperature	+5 °C minimum / +35 °C maximum						
Substrate temperature	+5 °C minimum / +35 °C maximum						
Application time	<table><tr><td>~ 90 minutes</td><td>+5 °C</td></tr><tr><td>~ 60 minutes</td><td>+20 °C</td></tr><tr><td>~ 30 minutes</td><td>+30 °C</td></tr></table>	~ 90 minutes	+5 °C	~ 60 minutes	+20 °C	~ 30 minutes	+30 °C
~ 90 minutes	+5 °C						
~ 60 minutes	+20 °C						
~ 30 minutes	+30 °C						

By stirring without adding water, the original consistency can be restored within the specified processing time.

Waiting time to overcoating

	+5 °C / +20 °C / +30 °C
Adhesive mortar / Sika MonoTop®-412 DE	wet in wet
Sika MonoTop®-412 DE / Sika MonoTop®-412 DE (2nd working process)	24 h
Sika MonoTop®-412 DE / Levelling mortar	24 h

SYSTEM INFORMATION

System structure

Sika MonoTop® PCC-System:

- Sika MonoTop®-910 N
- Sika MonoTop®-412 DE
- Sika MonoTop®-723 DE
- Icoment®-520 Mörtel

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.

ECOLOGY, HEALTH AND SAFETY

GISCODE: ZP 1

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

Substrate must be sound, free from oil, grease, loose and friable particles. Laitance, delaminated, weak, damaged and deteriorated concrete must be removed by suitable preparation e.g. compressed air blasting with solid abrasive or high-pressure water blasting (~ 400 bar) until adhesive tensile strength $\geq 1.5 \text{ N/mm}^2$ is achieved.

Corroded reinforcement must be exposed in accordance with the recognised rules of technology and blasted to degree of preparation SA 2 ½ according to EN ISO 12944, Part 4. The concrete surface must be matt damp during processing, therefore pre-wetting is necessary before applying Sika MonoTop®-910 N adhesive mortar. Thoroughly pre-wet heavily dried-out concrete the previous day. ZTV-ING, Part 3, Section 4 applies.

In addition, the following applies to SPCC:

The bonding and adhesion of a SPCC mortar to a mineral substrate is based on a clinging via the roughness depth and a good penetration capacity (porosity) as well as wetting of the bonding bridge belonging to the system or to the substrate. High-strength concretes, vacuum-coated surfaces or extremely smoothed, very dense concrete surfaces require a more intensive substrate preparation adapted to the individual case. After preparation, the coarse grain structure must be exposed. The removal of the cement skin on the surface of the concrete is not sufficient. In individual cases, a test area must be created to determine the adhesion of the PCC mortar to the concrete surface. An ablative substrate preparation must always be carried out.

MIXING

Place 90 % of the correct amount of water into a suitable clean mixing container. Slowly add complete bag of Sika MonoTop®-412 DE into the water and continuously mix for 3 minutes by using a electric low speed mortar mixer or compulsory mixer to achieve a uniform and lump free consistency. The remaining residual amount of 10 % water may be required for consistency adjustment. Do not add more water than the maximum specified.

APPLICATION

As an adhesive mortar, Sika MonoTop®-910 N is to be brushed under pressure into the matt damp blowout spot, whereby as much material as possible must remain. Place Sika MonoTop®-412 DE in the still fresh adhesive mortar (wet in wet) and compact well. Avoid cavities. The maximum layer thickness per working process must not be exceeded. If necessary, apply Sika MonoTop®-412 DE in several layers, always in combination with adhesive mortar.

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Practically all wet spraying machines, such as PFT, Putzmeister, Mader, etc. are suitable. The specifications of the machine manufacturers regarding air, water and power supply must be observed. In order to achieve the best possible spraying results (high compaction, low rebound), the spraying angle should be 90 degrees. Our recommendation of processing equipment is based on tests with a device at the time of printing the product data sheet. Since such equipment is not manufactured and distributed by Sika and may be differently configured and/or equipped and/or modified, it is necessary to conduct your own research on machine configuration, usability and testing prior to final processing. Sika assumes no liability for success or failure in the use of the equipment.

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 applies to curing treatment.

Sika MonoTop®-723 DE and Icoment®-520 mortars are used as levelling mortars in the Sika MonoTop® PCC-System (refer to product data sheets). These can be coated with the following products: Sikagard®-680 S Betoncolor, Sikagard®-675 W ElastoColor, Sikagard®-550 W Elastic, Sikagard® Wallcoat T or Sikagard®-260 WPU. The product Sika MonoTop®-910 N is used as corrosion protection and high tensile strength bonding bridge in the Sika MonoTop® PCC-System.

CLEANING OF EQUIPMENT

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

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.

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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