

## PRODUCT DATA SHEET

# Sika MonoTop®-412 TH

### STRUCTURAL REPAIR MORTAR

#### DESCRIPTION

Sika® MonoTop®-412 TH is a 1-component, fibre reinforced, low shrinkage structural repair mortar in accordance with EN 1504-3 class-R4.

#### USES

- Suitable for restoration work (Principle 3, method 3.1 & 3.3 of EN 1504-9). Repair of spalling and damaged concrete in buildings, bridges, infrastructure and superstructure works.
- Suitable for structural strengthening (principle 4, method 4.4 of EN 1504-9). Increasing the bearing capacity of the concrete structure by adding mortar.
- Suitable for preserving or restoring passivity (principle 7, method 7.1 and 7.2 of EN 1504-9). Increasing cover with additional mortar and replacing contaminated or carbonated concrete.
- Tested application under live dynamic loading

#### CHARACTERISTICS / ADVANTAGES

- Superior workability
- Suitable for hand and machine application
- Can be applied up to 50 mm thick per application layer
- Class R4 of EN 1504-3
- Structural repair
- Sulphate resistant
- Very low shrinkage behaviour
- Does not require a bonding primer even when manually applied
- Low chloride permeability
- A1 fire rating

#### PRODUCT INFORMATION

|                     |   |
|---------------------|---|
| Composition         | Sulphate resistant cement, selected aggregates and additives                                      |
| Packaging           | 20 kg/bag   |
| Appearance / Colour | Grey Powder   |
| Shelf life          | 9 months from the date of production If stored properly in undamaged, original, sealed packaging. |
| Storage conditions  | Store in dry and cool conditions, protected from direct sunlight.                                 |
| Density             | ~ 2.10 kg/l (Fresh mortar)  |
| Maximum Grain Size  | D <sub>max</sub> : 2.0 mm   |

## TECHNICAL INFORMATION

|   |   |                           |                            |            |
|---|---|---------------------------|----------------------------|------------|
| <b>Compressive Strength</b>             | <b>1 day</b><br>~ 15 MPa                          | <b>7 days</b><br>~ 40 MPa | <b>28 days</b><br>~ 50 MPa | (EN 196-1) |
| <b>Tensile Strength in Flexure</b>      | <b>1 day</b><br>~ 4 MPa                           | <b>7 days</b><br>~ 6 MPa  | <b>28 days</b><br>~ 8 MPa  | (EN 196-1) |
| <b>Shrinkage</b>                        | ~500 µm/m @ 20°C 65% relative humidity at 28 days |                           |                            | (EN 52450) |
| <b>Coefficient of Thermal Expansion</b> | 10.5 10 <sup>-6</sup> m/m. (-6°C)                 |                           |                            | (EN 1770)  |

## SYSTEMS

|                         |   |  |  |  |
|-------------------------|---|--|--|--|
| <b>System Structure</b> | Sika® MonoTop®-412 TH is part of the range of Sika mortars complying with the relevant part of European Standard EN 1504 and comprising of :<br>Bonding primer/Corrosion Protection<br>SikaTop® Armatec® 110 EpoCem®<br>Repair mortar<br>Sika® MonoTop®-412 TH<br>Fairing coat:<br>Sika® Refit ranges of products |  |  | Demanding requirements<br>Structural hand & machine applied repair mortar (R4type)<br>Pore sealer and smoothing mortar |
|-------------------------|---|--|--|--|

## APPLICATION INFORMATION

|                                |   |
|--------------------------------|---|
| <b>Mixing Ratio</b>            | ~ 2.9 to 3.1 litres of water for 20 kg powder   |
| <b>Consumption</b>             | This depends on the substrate roughness and thickness of layer applied.<br>As a guide, ~ 18 kg of powder per cm thick per m <sup>2</sup><br>1 bag yields approximately 10.95 litres of mortar |
| <b>Layer Thickness</b>         | 6 mm min / 50 mm max.   |
| <b>Ambient Air Temperature</b> | +5°C min.; +35°C max.   |
| <b>Substrate Temperature</b>   | +5°C min.; +35°C max.   |
| <b>Pot Life</b>                | ~40 minutes (at +20°C)  |

## APPLICATION INSTRUCTIONS

### SUBSTRATE QUALITY / PRE-TREATMENT

Concrete : The concrete shall be free from dust, loose material, surface contamination and materials which reduce bond or prevent suction or wetting by repair materials. Delaminated, weak, damaged and deteriorated concrete and where necessary sound concrete shall be removed by suitable means.

Steel reinforcement : Rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion shall be removed. Surfaces shall be prepared using abrasive blast cleaning techniques or high pressure water-blasting. Reference shall be made to EN1504-10 for specific requirements.

### MIXING

Sika® MonoTop®-412 TH can be mixed with a low speed (< 500 rpm) hand drill mixer or for machine application, using a force action mixer 2 to 3 bags or more at once depending the type and size of mixer. In small quantity, Sika® MonoTop®-412 TH can also be manually mixed.

Pour the water in the correct proportion into a suitable mixing container. While stirring slowly, add the powder to the water. Mixed thoroughly at least for 3 minutes to the required consistency

### APPLICATION

Bonding primer : On a well prepared and roughened substrate a bonding primer is generally not required. When a bonding primer is not required pre-wet the surface.

The surface shall not be allowed to dry before application of the concrete repair mortar. The surface shall

achieve a dark matt appearance without glistening and surface pores and pits shall not contain water.

When a bonding primer is necessary apply the same product – Sika® MonoTop®-412 TH – mixed wetter than normally required, applied well on the substrate with a stiff brush.

The, subsequent application of the repair mortar shall be done wet on wet.

Reinforcement coating : Where a reinforcement coating is required as a barrier (e.g. in case of insufficient concrete cover), apply to the whole exposed circumference two coats of SikaTop® Armatec -110 EpoCem® (Refer to the relevant Product Data Sheet).

Sika® MonoTop®-412 TH can be applied either manually using traditional techniques or mechanically using wet spray equipment.

When a bonding primer is required, ensure it is still tacky when the repair material is pressed on (wet on wet technique). When applied manually, pressed the repair mortar with a trowel, pressing it well on the substrate.

Finishing for both hand and machine application, can be done with the relevant roughcast as soon as the mortar has started to stiffen.

### **CURING TREATMENT**

Protect the fresh mortar from early dehydration using the relevant curing method.

### **CLEANING OF EQUIPMENT**

Clean all tools and application equipment with water immediately after use.

Hardened material can only be mechanically removed.

### **IMPORTANT CONSIDERATIONS**

- Refer to the Method Statement for Concrete Repair using Sika® MonoTop® system for more information regarding substrate preparation or refer to the recommendations provided in EN 1504-10
- Avoid application in direct sun and/or strong wind.
- Do not add water over recommended dosage
- Apply only to sound, prepared substrate
- Do not add additional water during the surface finishing as this will cause discoloration and cracking
- Protect freshly applied material from freezing
- Overhead hand applications layer thickness 6 mm min / 30 mm max.

## 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

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) 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.