

# PRODUCT DATA SHEET

## Sika MonoTop<sup>®</sup>-614 F

### R4 FLOWABLE CEMENTITIOUS REPAIR MORTAR

#### PRODUCT DESCRIPTION

Sika<sup>®</sup> MonoTop -614F is a cement based, one component flowable repair mortar (High Flow) containing shrinkage compensators and high range water-reducing agents, meeting the requirements of Class R4 of BS EN 1504-3.

#### USES

- Horizontal or vertical repairs
- Bridges
- Marine structures
- Tunnels
- Buildings
- Fire damaged structures
- For exterior and interior use
- In place of R1, R2 & R3 mortars

#### CHARACTERISTICS / ADVANTAGES

- One component, ready to use
- Low shrinkage
- High mechanical properties
- Good flow properties
- Repair depths upto 150 mm in one application
- Can be poured or pumped
- Overcoatable with Sika reprofiling/levelling mortars and coatings
- Reduced dust during mixing

#### APPROVALS / STANDARDS

Conforms to the requirements of BS EN 1504-3 R4 Classification  
Complies generally with the Highways Agency specifications for repairs to highways structures.

#### PRODUCT INFORMATION

|                                     |  |               |
|-------------------------------------|--|---------------|
| <b>Chemical Base</b>                | Portland cement type Cem I, selected aggregates and additives.                                 |               |
| <b>Packaging</b>                    | 25kg bag   |               |
| <b>Appearance / Colour</b>          | Grey powder  |               |
| <b>Shelf Life</b>                   | 6 months   |               |
| <b>Storage Conditions</b>           | Store properly in original unopened, sealed and undamaged packaging in dry and cool conditions |               |
| <b>Density</b>                      | Cured mortar density: ~ 2300 – 2400 Kg/m <sup>3</sup>  | (BS EN 12190) |
| <b>Maximum Grain Size</b>           | D <sub>max</sub> : 4.0 mm  |               |
| <b>Soluble Chloride Ion Content</b> | ~ 0.01%  |               |

## TECHNICAL INFORMATION

|   |   |        |                |        |                          |
|---|---|--------|----------------|--------|--------------------------|
| <b>Compressive Strength</b>                 | 1 day (5°C)                                 | ~2MPa  | 1 day (20°C)   | ~25MPa | (BS EN 12190)            |
|   | 3 days (5°C)                                | ~30MPa | 3 days (20°C)  | ~55MPa |                          |
|   | 7 days (5°C)                                | ~50MPa | 7 days (20°C)  | ~70MPa |                          |
|   | 14 days (5°C)                               | ~65MPa | 14 days (20°C) | ~80MPa |                          |
| <b>Modulus of Elasticity in Compression</b> | ~41GPa                                      |        |                |        |                          |
| <b>Flexural Strength</b>                    | ~8MPa at 28 days                            |        |                |        |                          |
| <b>Tensile Adhesion Strength</b>            | ~3MPa*<br>*No primer                        |        |                |        |                          |
| <b>Coefficient of Thermal Expansion</b>     | ~ 14 x 10 <sup>-6</sup> m/m °C              |        |                |        | (BS EN 1770)             |
| <b>Reaction to Fire</b>                     | Class A1                                    |        |                |        |                          |
| <b>Capillary Absorption</b>                 | ~ 0.3 kg.m <sup>-2</sup> .h <sup>-0.5</sup> |        |                |        |                          |
| <b>Carbonation Resistance</b>               | dk ≤ control concrete                       |        |                |        |                          |
| <b>Electrical Resistivity</b>               | ~39 (kohm.cm)                               |        |                |        | (Wenner Test at 28 days) |

## APPLICATION INFORMATION

|                                |  |             |                 |                 |
|--------------------------------|--|-------------|-----------------|-----------------|
| <b>Mixing Ratio</b>            | Water : mortar powder = 0.093 parts by weight. (2.30 – 2.40litres of water per bag)  |             |                 |                 |
| <b>Yield</b>                   | This depends on the substrate roughness and thickness of layer applied. As a guide, 1 bag yields approximately 11.5 litres of mortar |             |                 |                 |
| <b>Layer Thickness</b>         | 15 mm min. / 150 mm max.   |             |                 |                 |
| <b>Consistency</b>             | Flow Properties  |             |                 |                 |
|                                | Temperature  | Time (mins) | Flow in 30 Secs | (BS EN 13395-3) |
|                                | 5°C  | 0           | ~690mm          |                 |
|                                | 5°C  | 20          | ~690mm          |                 |
|                                | 20°C   | 0           | ~970mm          |                 |
| 20°C                           | 20   | ~970mm      |                 |                 |
| <b>Ambient Air Temperature</b> | +5°C min. / +30°C max.   |             |                 |                 |
| <b>Substrate Temperature</b>   | +5°C min. / +30°C max.   |             |                 |                 |
| <b>Initial Set Time</b>        | ~4-5 hours (BS EN 13294)   |             |                 |                 |
| <b>Final Set Time</b>          | ~7-8 hours (BS EN 13294)   |             |                 |                 |

## 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.

#### Steel reinforcement

Rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion shall be removed to a minimum standard of SA2½.

Reference should also be made to BS EN1504-10:2003 for specific requirements.

#### Shutter/Formwork:

Where formwork is to be used, all formwork should be of adequate strength, treated with release agent and sealed to prevent leakage. Ensure formwork includes outlets for extraction of the pre-soaking water. A header box/hopper should be constructed on one side of the formwork so that a head of 150-200 mm can be maintained during the pouring operation.

#### Substrate Preparation

##### Concrete:

Delaminated, weak, damaged and deteriorated concrete and where necessary sound concrete shall be removed by suitable mechanical or very high pressure waterblasting [up to 110 mPa (16500 psi)] techniques. Tying wire fragments, nails and other metal debris em-

bedded in the concrete should be removed where possible.

The edges where concrete is removed should be cut at a minimum angle of 90° to avoid undercutting and a maximum angle of 135° to reduce the possibility of debonding with the top surface of the adjacent sound concrete and should be roughened sufficiently to provide a mechanical key between the original material and Sika® MonoTop -614F repair mortar.

Ensure sufficient concrete is removed from around reinforcement to allow coating and compaction of the repair material.

The concrete substrate should be pre-soaked with clean potable water continuously for 2 - 6 hours prior to repair mortar application.

Immediately before pouring repair mortar, remove all excess or standing water from within repair area, any formwork, cavities or pockets.

#### **Steel reinforcement:**

Surfaces should be prepared using abrasive blast cleaning techniques or high pressure waterblasting [up to 60 mPa (9000 psi)] techniques.

Where exposed reinforcement is contaminated with chloride or other material which may cause corrosion, the reinforcement shall be cleaned by low pressure waterblasting [up to 18 mPa (2700 psi)].

#### **Reinforcement corrosion protection coating:**

Where a coating is required as a barrier, apply to the whole exposed circumference two coats of Sika® MonoTop -610 or SikaTop® Armatec-110 EpoCem®. (Refer to the relevant Product Data Sheet).

Reference should also be made to BS EN1504-10:2003 for specific requirements.

#### **MIXING**

Place the water into a forced action mixer or in a clean drum. Slowly add complete bag of Sika® MonoTop -614F into the water and continuously mix for 3 minutes in mixer to achieve a uniform and lump free consistency. Alternatively use a slow speed drill (200-500 rpm) and spiral paddle mixer.

#### **APPLICATION**

Pour the mixed Sika® MonoTop -614F into the prepared repair area as soon as it has been mixed to maintain flow properties and no more than 30 mins to benefit from the shrinkage compensating properties. Ensure continuous mortar flow during the complete pouring operation to avoid trapping air.

For cold weather working consider using warm water to assist with achieving strength gain & other physical properties.

Reference shall be made to BS EN1504-10:2003 for specific requirements and any other guidelines that are specific to the structure.

#### **CURING TREATMENT**

It is essential to cure the repair mortar immediately after application for a minimum of 3 days to ensure full cement hydration and to minimise cracking. Use polythene sheeting taped down at the edges or other approved method.

Curing compounds shall not be used when they ad-

versely affect subsequently applied products and systems.

Reference shall also be made to BS EN1504-10:2003 for specific requirements.

#### **CLEANING OF TOOLS**

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

#### **LIMITATIONS**

- Refer to recommendations provided in BS EN 1504-10.
- Avoid application in direct sun and/or strong wind and/or rain.
- Pour or pump from one side only when using shutters / formwork
- Do not use vibrating pokers
- Do not add water over recommended dosage.
- Apply only to sound, prepared substrates.
- Do not add additional water during the surface finishing as this will cause discoloration and cracking.
- Protect freshly applied material from freezing.

#### **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.

#### **LOCAL RESTRICTIONS**

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 application fields.

#### **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 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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