BUILDING TRUST

PRODUCT DATA SHEET

Sika MonoTop®-438 R

Pourable / castable repair mortar

DESCRIPTION

Sika MonoTop®-438 R is a one component, pre-bagged, pourable, self-compacting fast hardening repair mortar meeting the requirements of class R4 of EN 1504-3.

USES

- Suitable for restoration work by recasting (Principle 3, method 3.2 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.
- Rapid repair of concrete on buildings and civil engineering structures for areas including beams, balconies, columns, stairs, decks, walls, etc.

CHARACTERISTICS / ADVANTAGES

- Class R4 of EN 1504-3
- Self compacting micro-concrete
- Very good flow properties
- Application up to 500 mm thickness (see notes on 'Layer Thickness')
- Rapid strength development
- Early removal of formwork (within ~4 hours at +20°C)
- Good adhesion
- Low shrinkage
- Finished surface can be painted after formwork is removed

APPROVALS / STANDARDS

- Identification and performance testing for concrete repair material according to AFNOR standard P 18-840. Reports of CEBTP, France 03/B114-6-494 and -499.
- Drinking Water AS/NZS 4020:2018, Eurofins | Certificate of Analysis ABI43629.

PRODUCT INFORMATION

Chemical Base	Cement blend, selected aggregate and additives.
Packaging	25 kg bag
Appearance / Colour	Grey powder
Shelf Life	Six (6) months from date of production when stored as stated.
Storage Conditions	Store in undamaged and unopened, original sealed containers, in dry conditions at temperatures between +5°C and +30°C.
Density	Fresh mortar density: ~ 2.3 kg/l (wet)
Maximum Grain Size	D_{max}: 5 mm maximum

TECHNICAL INFORMATION

Compressive Strength (EN 12190)

	+5°C	+20°C	+30°C
4 hours	-	~ 10 N/mm²	~ 20 N/mm²
1 day	~ 20 N/mm²	~ 25 N/mm²	~ 35 N/mm²
7 days	~ 35 N/mm²	~ 50 N/mm²	~ 50 N/mm²

~ 60 N/mm² after 28 days at 20°C

Flexural Strength (EN 12190)

	+5°C	**+20°C**	**+30°C**
4 hours	-	~ 4 N/mm²	~ 4 N/mm²
1 day	~ 4 N/mm²	~ 5 N/mm²	~ 5 N/mm²
7 days	~ 5 N/mm²	~ 6 N/mm²	~ 6 N/mm²

~ 7 N/mm² after 28 days at 20°C

Shrinkage ~700 µm/m at 28 days (+20°C / 60% r.h.) (EN 12617-4)

APPLICATION INFORMATION

Mixing Ratio ~ 3.25 litres of water for 25 kg powder

Consumption This depends on the substrate roughness and thickness of layer applied. As a guide, ~ 20kg of powder per cm thick per m²
1 bag yields approximately 12.3 litres of mortar.

Layer Thickness Minimum 15 mm, maximum 350 mm (500 mm when bulked out with 10 kg Sika Pea Metal per 25 kg bag of Sika MonoTop®-438 R)

Ambient Air Temperature +5°C min. / +30°C max.

Substrate Temperature +5°C min. / +30°C max.

Pot Life

+5°C	+20°C	+30°C
> 60 minutes	60 minutes	30 minutes

Only prepare the quantity of material that can be used within the stated pot-life!

SYSTEM INFORMATION

System Structure Sika MonoTop®-438 R is part of the Sika® MonoTop® repair range and system complying with the relevant parts of European Standard EN 1504 and comprising of:
Bonding primer and reinforcement corrosion protection:
- Sika® MonoTop®-910 N: Normal use

Repair mortars:
- Sika® MonoTop®-352 N: R3 light weight repair mortar
- Sika® MonoTop®-723 N: R3 Pore sealer and levelling mortar
- Sika MonoTop®-438 R: Pourable/castable repair mortar

BASIS OF PRODUCT DATA

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.

FURTHER DOCUMENTS

- For carbonation resistance use a coating complying with EN 1504-2
- Apply only to prepared sound surfaces
- Avoid application in direct sun and/or strong wind
- Do not add water over recommended dosage
- Only prepare quantity of material which can be handled within pot life time
- Do not use vibrators for compaction
- Protect freshly applied material from freezing
- Do not add additional water during the surface finishing as this will cause discoloration and cracking
- Refer to Qualified Engineer for any movement, expansion or cold joint positions
- Do not use a curing agent if coatings are to be applied
- Refer to the Method Statement for Concrete Repair using Sika MonoTop® system for more information regarding substrate preparation or refer to the recommendations in EN 1504-10

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.

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

QUALITY

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.Reference shall be made to EN1504-10 for specific requirements.

PREPARATION

Concrete:
Delaminated, weak, damaged and deteriorated concrete and where necessary sound concrete shall be removed by suitable means.
Steel reinforcement:
Surfaces shall be prepared using abrasive blast cleaning techniques or high pressure water-blasting to SA 2 (ISO 8501-1)
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 continuously for 2 - 6 hours with clean water. Immediately before casting remove all water from formwork. The surface shall not be allowed to totally 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.
Reinforcement Corrosion Protection:
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 Sika MonoTop®-910 N (Refer to the relevant Product Data Sheet).
Formwork:
Formwork necessary for casting shall be of adequate strength, non absorbent, treated with release agent and sealed to prevent mortar leakage. Use SikaSwell®-S2 hydrophilic sealant between any joints. Ensure the formwork design includes outlets for extraction of the pre-wetting water and air.

MIXING

Mix with a low speed (< 500rpm) hand drill mixer with helical paddle or using a forced pan action mixer. Pour potable water in the correct proportion into a suitable mixing container. While stirring, slowly add the powder to the water. Mix thoroughly at least for 3 minutes to achieve a uniform lump free consistency.

APPLICATION

Immediately after mixing pour into formwork ensuring continuous flow during the complete casting operation to avoid trapping air or creating ‘cold joints’.
Formwork Removal: As a guide, the formwork can be removed at the following times:

+5°C	+20°C	+30°C
~ 24 hours	~ 4 hours	~ 2 hours

Note: variable weather conditions may affect removal times.

CURING TREATMENT

Protect the fresh mortar from early dehydration using the relevant curing method. Cure for a minimum of 7 days to minimise cracking. Use a 90% efficient curing membrane or polythene sheeting taped down at the edges.

CLEANING OF TOOLS

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

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.

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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

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