

PRODUCT DATA SHEET

Sika MonoTop®-4400 MIC

Microbially induced corrosion resistant sewer repair mortar

DESCRIPTION

Sika MonoTop®-4400 MIC is a 1-part, ready to use, high performance, calcium aluminate mortar specifically designed for the repair and protection of new or existing sewer infrastructure from biogenic sulphuric acid corrosion.

USES

Sika MonoTop®-4400 MIC may only be used by experienced professionals.

Particularly suitable for the protection and refurbishment of:

- Sewer infrastructures
- Manholes
- Lift stations, pumping stations
- Main trunk sewers, collectors
- Sewer pipes
- Waste water treatment plants

Suitable for repair work (Principle 3 concrete restoration, method 3,1 & 3,3; Principle 4 structural strengthening, method 4,4 of EN 1504-9) in sewer and waste water treatment plant.

Suitable for concrete protection (Principle 2 moisture control, method 2,2; Principle 8 increase resistivity, method 8,2 & Principle 5 physical resistance, method 5,1).

PRODUCT INFORMATION

Composition	Calcium aluminate cement and calcium aluminate aggregates
Packaging	20 kg bags
Shelf life	15 months from date of production
Storage conditions	Product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5 °C and +35 °C. Always refer to packaging.
Appearance and colour	Grey powder

CHARACTERISTICS / ADVANTAGES

- Resistant to biogenic sulphuric acid corrosion
- Resistant to pure water, salt water, sulphated soils and several diluted acids
- Does not contain chlorides or other corrosion promoting additives
- Suitable for machine application (wet and dry spray technique)
- High bond strength
- High early compressive strength, class R4 of EN 1504-3
- Fast return to service (within 1 hour if Sikagard®-230 MIC surface hardener is used)

APPROVALS / CERTIFICATES

- CE Marking and Declaration of Performance to EN 1504-2 - Surface protection product for concrete - Coating - Sika MonoTop®-4400 MIC
- CE Marking and Declaration of Performance to EN 1504-3 - Concrete repair product for structural repair - Sika MonoTop®-4400 MIC
- Resistance to biogenic sulfuric acid corrosion, Fraunhofer Institute for Environmental, Safety and Energy Technology, report 20191108-01
- Biogenic acid concrete test, Lmdc Toulouse, report ET/19.064c

Maximum grain size D_{\max} : ~3,0 mm

TECHNICAL INFORMATION

Compressive strength	24 hours	28 days	(EN 14647)
	> 40 MPa	> 50 MPa	
Tensile strength in flexure	24 hours	28 days	(EN 14647)
	> 6 MPa	> 9 MPa	

APPLICATION INFORMATION

Mixing ratio	2,8–3,2 litres of water for 20 kg powder
Fresh mortar density	~2,2 kg/l
Consumption	~22 kg / 10mm thickness / m ²
Yield	20 kg of powder yields approximately 10,5 litre of fresh material
Layer thickness	Standard manholes: Minimum 15 mm Large structures such as wet wells or pumping stations: Minimum 25 mm.
Waiting time to overcoating	Minimum 12 hours at +20 °C

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.

IMPORTANT CONSIDERATIONS

- Sika MonoTop®-4400 MIC is only mixed with clean water. Do not add Portland cement or additional aggregates
- Spray equipment must be clean and free of Portland cement contamination to avoid premature setting and reduced corrosion resistance behavior
- Avoid application in direct sun and/or strong wind
- Do not add water over the recommended dosage
- Apply only to sound, prepared substrate
- Do not add additional water during the surface finishing as this will cause discolouration and cracking

ECOLOGY, HEALTH AND SAFETY

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

Concrete:

The concrete must have a minimum compressive strength of 25 MPa and minimum tensile adhesion strength of 1,5 MPa.

The concrete must be thoroughly clean, free from dust, loose material, surface contamination and material which reduce bond or prevent suction or wetting by repair materials. De-laminated, weak, damaged and deteriorated concrete and where necessary sound concrete must be removed by suitable means. Smooth concrete shall be mechanically prepared (e.g. wet sand blasting) to expose the aggregates and provide a suitable roughen surface.

Steel reinforcement:

Rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion must be removed. Surfaces must be prepared using abrasive blast cleaning techniques or high pressure water-blasting to Sa 2 (ISO 8501-1).

MIXING

Sika MonoTop®-4400 MIC can be mixed with a low speed (< 500 rpm) hand drill mixer or using a force action mixer.

Pour the minimum recommended water in a suitable mixing container. While stirring slowly, add powder to the water and mix thoroughly for at least 5 minutes adding additional water if necessary to the maximum specified amount and adjust to the required consistency. The consistency must be checked after every mix.

APPLICATION

Sika MonoTop®-4400 MIC can be applied mechanically using a low pressure wet-spray equipment, high pressure dry-spray equipment, progressive cavity type pump, spinning head or centrifugation method. Prepare the hose of the machine with a cement aluminate slurry or with a suitable chemical pump starter. Do not use Portland cement slurry.

Thoroughly pre-wet the prepared substrate a recommended 12 hours before application. Keep the surface wet and do not allow to dry. Before application remove excess water e.g with a clean sponge. The surface must appear a dark matt appearance without glistening and surface pores and cavities must not contain water.

The repair mortar must be applied onto the pre-wetted substrate between the minimum and maximum layer thicknesses without the formation of voids.

Where layers are to be built up, to prevent sagging or slumping, each layer must be allowed to stiffen before applying subsequent layers "wet on wet".

Finishing must be carried out to the required surface texture as soon as the mortar has started to stiffen. Do not overwork the finishing layer.

CURING TREATMENT

If the application takes place in a live sewer environment, replacing the access covers as soon as the spraying and finishing is complete should ensure adequate moisture for good hydration and curing.

For environments with low humidity or with exposure to direct sunlight and/or strong air movement. To minimize rapid moisture evaporation and surface cracking, water curing must be applied as soon as practical after installation in addition to replacing the access covers.

Once the surface finishing is complete. To accelerate the hardening process and at the same time to provide adequate curing, apply Sikagard®-230 MIC surface hardener with low pressure spraying equipment. Conventional curing compounds are not recommended.

CLEANING OF EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened 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 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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ISO 9001: Sika UAE LLC,
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ISO 14001: Sika UAE LLC,
Sika Gulf B.S.C. (C),
Sika Saudi Arabia Limited,
Sika International Chemicals LLC,
ISO 45001: Sika UAE LLC,
Sika Gulf B.S.C. (C),
Sika International Chemicals LLC.

All products are supplied under
a management system certified
to conform to the requirements
of the quality, environmental
and occupational health &
safety standards ISO 9001,
ISO 14001 and ISO 45001.

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