BUILDING TRUST

PRODUCT DATA SHEET

Sika MonoTop®-3130 Ultra Rapid

Fast-setting Cementitious Class R4 Concrete Repair Mortar with Corrosion Inhibitors

PRODUCT DESCRIPTION

Sika MonoTop®-3130 Ultra Rapid is a one-part, cementitious, fast-setting, Class R4 structural concrete repair mortar. It is usually manually applied (can also be dry sprayed), offers sulphate-resistance and is fibre reinforced. It contains corrosion inhibitors that improve the resistance to steel reinforcement corrosion, negating the need for a separate corrosion inhibitor slurry, and is CE Marked in accordance with EN 1504 part 3 and part 7.

USES

Fast return to service repairs to all types of reinforced concrete structures and elements for:

- Buildings.
- Civil engineering structures.
- Car parking structures.
- Marine structures.
- Dams.
- Water retaining structures.
- Substructures.
- Hydraulic structures.

Suitable for:

- Conservation or restoration of passivation (Principle 7, method 7,1 of EN 1504-9).
- Restoration work (Principle 3, method 3,1 and 3,3 of EN 1504-9).
- Structural reinforcement (Principle 4, method 4,4 of EN 1504-9).
- Control of anodic areas (Principle 11, method 11,1 of EN 1504-9).

CHARACTERISTICS / ADVANTAGES

- Fast-setting, enabling early overcoatability (only 2 hours at +20 °C).
- Rapid return to service - ideal for limited possession works.
- Includes FerroGard® corrosion inhibitor technology.
- Smooth surface finish for coating (no need for a separate smoothing / levelling / fairing coat).
- Good tensile adhesion / bond strength, removing the need for a bonding primer.
- Sulphate and carbonation resistant.
- Supplied ready to mix with water.
- Easy to use and apply.
- Freeze-thaw resistant.
- Reaction to fire Euroclass A1.
- Layer thickness 5 to 70 mm.
- High pH and FerroGard® corrosion inhibitor protects steel reinforcement from corrosion, and removes the need for a separate corrosion inhibitor slurry.
- '3-in-1': does not require a bonding primer, corrosion inhibitor slurry, or smoothing / levelling / fairing coat.

APPROVALS / STANDARDS

- CE Marking and Declaration of Performance to EN 1504-3 - Concrete repair product for structural repair.
- CE Marking and Declaration of Performance to EN 1504-7 - Reinforcement corrosion protection.

PRODUCT INFORMATION

Chemical Base	Sulphate resistant cement, fibres, selected aggregates and synergystic additives
Packaging	25 kg bag
Appearance / Colour	Grey powder
Shelf Life	12 months from date of production
Storage Conditions	The product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5 °C and +35 °C. Always refer to packaging.
Product Declaration	▪ Complies with the general requirements of EN 1504-3: Class R4. ▪ Complies with the general requirements of EN 1504-7: Reinforcement corrosion protection.
Maximum Grain Size	D_{max}: 2 mm
Soluble Chloride Ion Content	≤ 0.01 % (EN 1015-17)

TECHNICAL INFORMATION

Compressive Strength	Class R4 (EN 12190)

Time	Compressive Strength
2 hours	≥ 18 MPa
1 days	≥ 20 MPa
7 days	≥ 40 MPa
28 days	≥ 45 MPa

Note: Values determined at +20 °C.

Modulus of Elasticity in Compression	≥ 20 GPa (EN 13412)
Flexural Strength	(EN 196-1)

Time	Tensile Strength in Flexure
1 day	≥ 4 MPa
2 days	≥ 5 MPa
7 days	≥ 7 MPa
28 days	≥ 8 MPa

Note: Values determined at +20 °C.

Thermal Compatibility	≥ 2.0 MPa (Part 1 Freeze-Thaw) (EN 12687-1)
Reaction to Fire	Euroclass A1 (EN 13501-1)
Capillary Absorption	≤ 0.5 $kg \cdot m^{-2} \cdot h^{-0.5}$ (EN 13057)
Carbonation Resistance	Pass: d_k ≤ control concrete (MC (0.45)) (EN 13295)

APPLICATION INFORMATION

Mixing Ratio	4.0 to 4.2 litres of water for a 25 kg bag
Consumption	~2.1 kg/m²/mm **Note:** This figure is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations.
Layer Thickness	▪ **Horizontal:** 5.0 mm minimum / 70 mm maximum ▪ **Vertical:** 5.0 mm minimum / 70 mm maximum ▪ **Overhead:** 5.0 mm minimum / ~50 mm maximum ▪ **Reinforcement corrosion protection:** minimum ~2 mm. **Note:** Unsuitable for volume application (unless dry sprayed).
Ambient Air Temperature	+5 °C minimum / +30 °C maximum
Substrate Temperature	+5 °C minimum / +30 °C maximum
Pot Life	~10 minutes
Waiting Time / Overcoating	**Note:** Times are approximate and will be affected by changing ambient conditions particularly temperature and relative humidity. The below times are based on +20 °C and 60 % relative humidity. **Quick System**

Layer Number	Description	Subsequent Waiting Time
1	Reinforcement Corrosion Protection Coating (initial ~2 mm application should be allowed to become 'fingernail hard'): Sika MonoTop®-3130 Ultra Rapid	~30 minutes
2	Concrete Repair Mortar: Sika MonoTop®-3130 Ultra Rapid	~2 hours
3	Primer for Concrete Protective Coatings: Sikagard®-552 W Aquaprimer.	~1 hour
4	Anti-Carbonation Coating: Sikagard®-675 W GB ElastoColor	~1 hour
5	Anti-Carbonation Coating: Sikagard®-675 W GB ElastoColor	Not applicable*

* = Final drying: ~24 hours at +20 °C.

Initial set time	~20 minutes
Final set time	~30 minutes
Fresh mortar density	~2.15 kg/l

SYSTEM INFORMATION

System Structure

Note: Apply concrete repair mortar 'wet-on-dry' onto reinforcement corrosion protection (allow to become at least 'fingernail hard').
Note: Apply concrete repair mortar 'wet-on-wet' onto bonding primer or scratch coat.

Rapid System

Reinforcement Corrosion Protection Coating

Sika MonoTop®-3130 Ultra Rapid	Fast build-up
Sika MonoTop®-1010	Normal use
SikaTop® Armatec®-110 EpoCem®	Demanding requirements

Bonding Primer (optional)

Sika MonoTop®-1010	Normal use
SikaTop® Armatec®-110 EpoCem®	Demanding requirements

Concrete Repair Mortar
Sika MonoTop®-3130 Ultra Rapid
Concrete Protection Coating Primer
Sikagard®-552 W Aquaprimer
Sikagard®-675 W GB ElastoColor diluted with ~15 % water
Concrete Protection Coating
Sikagard®-675 W GB ElastoColor

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.

FURTHER DOCUMENTS

- Recommendations provided in EN 1504-10.
- Sika® Method Statement: MS 850-32-01 Repairing Concrete Using Sika Ready To Use Mortars.

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

NOTES ON INSTALLATION

- The open time is reduced during high temperatures.
- Use only for patch repair (unless dry spraying).
- Avoid application in direct sun and / or strong winds.
- 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 discolouration and / or cracking.
- Protect freshly applied material from freezing.

EQUIPMENT

Select the most appropriate equipment required for the project:

Substrate Preparation Equipment
- Mechanical handheld tools.
- High- / ultra-high pressure water blasting equipment.

Steel Reinforcement Preparation Equipment
- Abrasive blast cleaning equipment.
- High pressure water blasting equipment.
- Low pressure power washing equipment.

Mixing Equipment
- Suitable mixing container.
- Small quantities: low speed electric single paddle mixer (< 500 rpm) with spiral, helix, hoop, basket or impeller paddle.

Application Equipment
Manual application:
- Plasterers hawk.
- Trowel.
- Protective gloves.

Finishing Equipment
- Trowel (stainless steel, steel, PVC or wooden).
- Sponge.
- Protective glove.

SUBSTRATE QUALITY / PRE-TREATMENT

Substrate Preparation Equipment
- Mechanical handheld tools.
- High- / ultra-high-pressure water blasting equipment.

Steel Reinforcement Equipment
- Abrasive blast cleaning equipment.
- High pressure water blasting equipment.
- Low pressure power washing equipment.

Concrete
- The substrate must be thoroughly clean, free from dust, loose material, surface contamination and material which may reduce adhesion or prevent suction or wetting by repair materials.
- Remove delaminated, weak, damaged and deteriorated concrete and, where necessary, sound concrete

using appropriate equipment from the list above.
- Make sure sufficient concrete is removed from around the corroded reinforcement to allow cleaning, corrosion protection coating (where required) and compaction of the concrete repair mortar.
- Remove tying wire fragments, nails and other metal debris embedded in the concrete.
- Repair sections must be prepared to provide simple square or rectangular layouts to avoid shrinkage stress concentrations and cracking while the repair material cures. This can also avoid structural stress concentrations from thermal movement and loading during the service life.

Steel Reinforcement

Note: Method and choice of preparation equipment must take into account the type of materials to be removed from the reinforcement bars, bar congestion, contact between bars, and proximity to the concrete substrate.

1. Remove rust, scale, mortar, concrete, dust and other loose and deleterious material which may reduce adhesion, or contributes to corrosion.
2. Prepare the surfaces to bright steel finish.
3. Where exposed reinforcement is contaminated with chlorides or other material which may cause corrosion, clean the reinforcement using low pressure power washing [up to 18 MPa (2700 psi)] techniques to wash away contaminants.

MIXING

Note: Mix only as much material as can be processed (maximum 25 kg).
Requirement: low speed electric single paddle mixer (< 500 rpm) with spiral, helix, hoop, basket or impeller paddle.

1. Pour the minimum recommended clean, potable water quantity into a mixing container / equipment.
2. While stirring slowly, add the powder to the water.
3. Mix thoroughly for at least 2 minutes until a smooth, homogeneous consistency is reached. Add additional water if necessary, up to the maximum specified amount.

APPLICATION

Strictly follow installation procedures as defined in the Sika Method MS 850-32-01 Repairing Concrete Using Sika Ready To Use Mortars and adjust to the actual site conditions.
Requirement:
- Plasterers hawk.
- Trowel.
- Protective gloves.
- Protective glasses.

Reinforcement Corrosion Protection Coating

- Immediately after surface preparation, apply the appropriate product to the whole exposed reinforcement circumference. Refer to the 'System Structure' and individual Product Data Sheets for equipment and application details.

Bonding Primer

Note: A bonding primer is normally required for structural repairs to achieve high adhesion values and for application in high temperatures.

1. Pre-wet the prepared concrete substrate with clean, potable water (at least 2 hours recommended).
2. Keep the surface wet and do not allow to dry.
3. Remove excess water from within the surface pores and cavities (e.g. with a clean sponge).
4. Apply the appropriate bonding primer over the complete substrate surface to form a thin layer to fill surface pores or cavities. Refer to the 'System Structure' and individual Product Data Sheets for equipment and application details.

Concrete Repair Mortar with Bonding Primer
Manual Application

Apply the repair mortar without delay after mixing, onto the bonding primer 'wet-on-wet' using a protective gloved hand or trowel at the minimum and maximum layer thicknesses without the formation of voids. Prevent sagging or slumping of 'built up' repair mortar layers. For subsequent layers, wait until the previous layer is hard enough to accept the next layer without any deformation.

Concrete Repair Mortar without Bonding Primer
Manual Application

The final pre-wetted surface must achieve a dark matt appearance (i.e. saturated surface dry).
Apply a first thin scratch coat layer of Sika MonoTop®-3130 Ultra Rapid with pressure and without delay after mixing. Apply subsequent layers with pressure. Prevent sagging or slumping of 'built up' repair mortar layers. For subsequent layers, wait until the previous layer is hard enough to accept the next layer without any deformation.

1. Thoroughly pre-wet the prepared substrate (at least 2 hours recommended).
2. Keep the surface wet and do not allow to dry.
3. Remove excess water from within the surface pores and cavities (e.g. with a clean sponge).
4. Apply the repair mortar onto the concrete substrate using a protective gloved hand or trowel between the minimum and maximum layer thicknesses without the formation of voids. If a bonding primer is used, apply Sika MonoTop®-3130 Ultra Rapid 'wet-on-wet' onto the bonding primer.

Surface Finishing

IMPORTANT
Do not add water during the surface finishing as this can cause discolouration and / or cracking.

1. Allow mortar to surface harden (~5 minutes after application).
2. Surface finish to the required surface texture using a stainless steel, steel, PVC or wooden float.

Cold Weather Working

Consider storing bags in a warm environment and using warm water to assist with achieving strength gain and maintaining physical properties.

Hot Weather Working

Consider storing bags in a cool environment and using cold water to ensure sufficient open time, to reduce cracking and maintaining physical properties.

CURING TREATMENT

- Protect fresh mortar immediately from premature drying using an appropriate curing method (e.g. curing compound, moist geotextile membrane, polythene sheet, etc.).
- Curing compounds must not be used when they could adversely affect subsequently applied products

and systems.

CLEANING OF TOOLS

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

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.

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