BUILDING TRUST

PRODUCT DATA SHEET

SikaTop®-500

Two-part polymer modified, cementitious, structural concrete repair mortar

PRODUCT DESCRIPTION

SikaTop®-500 is a 2-part concrete repair mortar for structural and non-structural repairs of concrete elements in buildings as well as in civil engineering projects.

USES

SikaTop®-500 is used for:
- Repairs of spalling and damaged concrete in buildings, bridges, infrastructure and superstructure works
- Increasing the bearing capacity of the concrete structure by adding mortar
- Increasing cover with additional mortar and replacing contaminated or carbonated concrete
- Large repair areas with a high build-up
- Repairs on vertical and overhead surfaces
- Repairs under live dynamic loading
- Repairs in conjunction with cathodic protection systems

CHARACTERISTICS / ADVANTAGES

- Same aesthetic as concrete
- Class R4 of EN 1504-3
- Application by hand or by machine
- Easy to apply
- Application up to 100 mm in one layer
- Very low shrinkage
- Does not require a bonding primer
- Provides a temporary vapour barrier
- Sulphate-resistant

APPROVALS / STANDARDS

- CE marking and declaration of performance based on EN 1504-2:2004 Products and systems for the protection and repair of concrete structures — Surface protection systems for concrete — Coating
- CE marking and declaration of performance based on EN 1504-3:2005 Products and systems for the protection and repair of concrete structures — Structural and non-structural repair
- CE marking and declaration of performance based on EN 1504-7:2006 Products and systems for the protection and repair of concrete structures — Reinforcement corrosion protection

PRODUCT INFORMATION

Chemical Base	Selected cements, selected aggregates and additives
Packaging	Selected cements, selected aggregates and additives Part A 4.6 L Part B 25 kg Refer to the current price list for available packaging variations.
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 the packaging. Refer to the current Safety Data Sheet for information on safe handling and storage.		
Appearance / Colour	Part A	White liquid	
	Part B	Grey powder	
Maximum Grain Size	2 mm		
Soluble Chloride Ion Content	≤ 0.05 %		(EN 1015-17)

TECHNICAL INFORMATION

Compressive Strength	Class R4		(EN 1504-3)
	Conditioned 24 h at +20 °C	25 MPa	(EN 196-1)
	Conditioned 7 d at +20 °C	50 MPa	
	Conditioned 28 d at +20 °C	55 MPa	
Modulus of Elasticity in Compression	Cured 28 d at +21 °C	> 20 GPa	(EN 13412)
Flexural Strength	Conditioned 24 h at +20 °C	4 MPa	(EN 196-1)
	Conditioned 7 d at +20 °C	6 MPa	
	Conditioned 28 d at +20 °C	7 MPa	
Tensile adhesion strength	≥ 2.0 MPa		(EN 1542)
Shrinkage	Cured at +20 °C and 65 % relative humidity at 28 days	350 µm/m	(EN 12617-4)
Restrained Shrinkage / Expansion	≥ 2.0 MPa		(EN 12617-4)
Coefficient of Thermal Expansion	10×10^{-6} 1/k		(EN 1770)
Electrical Resistivity	< 100 kΩ·cm		(ISO 12696)
Thermal Compatibility	Part 1 - Freeze-Thaw	≥ 2.0 MPa	(EN 13687-1)
Capillary Absorption	≤ 0.1 $kg \cdot m^{-2} \cdot h^{-0.5}$		(EN 13057)
Chloride Ion Diffusion Resistance	Very low < 1000 Coulombs		(ASTM C1202)
Carbonation Resistance	dk ≤ control concrete MC (0.45)		(EN 13295)
Reaction to Fire	Class A1		(EN 13501-1)

APPLICATION INFORMATION

Fresh mortar density	2.1 kg/l	
Consumption	2.1 kg/m² per mm of thickness Note: Consumption data is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply the Product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.	
Yield	14.14 L of mortar per mixed unit	
Layer Thickness	Maximum	100 mm
	Minimum	6 mm

Product Temperature	Maximum	+35 °C
	Minimum	+5 °C
Ambient Air Temperature	Maximum	+35 °C
	Minimum	+5 °C
Mixing Ratio	Pre-batched mortar. Mix only complete sets.	
Substrate Temperature	Maximum	+35 °C
	Minimum	+5 °C
Pot Life	At +20 °C	50 minutes
	Pot life depends on temperature Note: Pot life will be shorter at higher temperatures. Pot life will be longer at lower temperatures.	

VALUE BASE

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

FURTHER DOCUMENTS

- Concrete repair site handbook

ECOLOGY, HEALTH AND SAFETY

Local safety regulations must be observed and it advisable to wear PPI when working with this product with particular attention paid to cutting and handling. Transportation Class: The product is not classified as hazardous good for transport. Disposal: The material is recyclable. Disposal must be according to local regulations. Please contact your local Sika sales organisation for more information.

APPLICATION INSTRUCTIONS

EQUIPMENT

Select the most appropriate equipment required for the project.
SUBSTRATE PREPARATION EQUIPMENT
- Mechanical hand-held tools for spot repairs
- High or ultra-high pressure water blasting equipment

STEEL REINFORCEMENT EQUIPMENT
- Abrasive blast cleaning equipment
- High pressure water blasting equipment

MIXING EQUIPMENT
- Clean mixing containers
- Small quantities: low-speed electric single or double-paddle mixer (< 500 rpm).
- Large quantities: forced action mixer

APPLICATION EQUIPMENT
- Hand-applied: plasterers hawk, trowel

FINISHING EQUIPMENT
- Trowel (PVC or wooden)
- Sponge

Also refer to Site Handbook ‘Repair of Concrete Structures – Patch Repair and Spray Applications’

SUBSTRATE PREPARATION

CONCRETE
1. Clean the substrate thoroughly so it is free from dust, loose material, surface contamination and material which reduces adhesion, prevents suction or wetting by the repair materials.
2. Remove delaminated, weak, damaged and deteriorated concrete and where necessary, sound concrete. Remove using mechanical hand-held tools, high or ultra-high-pressure water blasting equipment.
3. Remove sufficient concrete from around corroded reinforcement to allow cleaning, application of a corrosion protection coating (where required) and compaction of the concrete repair mortar.
4. Prepare repair surface areas in 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
1. Remove rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion.
2. Prepare surfaces to bright steel, Sa 2 (ISO 8501-1), using abrasive blast cleaning or high-pressure water blasting equipment.

MIXING

1. Pour the Part A (liquid) into a suitable clean mixing container or equipment.
2. Gradually add the Part B (powder) to the Part A while stirring slowly.
3. IMPORTANT Do not add any water to the mix. Mix thoroughly for at least for 3 minutes until a uniform consistency is achieved.
4. Check the consistency after every mix.

APPLICATION

IMPORTANT

Strictly follow installation procedures

Strictly follow installation procedures as defined in Method Statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

IMPORTANT

Risk of cracking due to exposure to frost

1. Protect freshly applied material from freezing and frost.

IMPORTANT

Risk of cracking due to application in direct sun or strong winds

1. Do not apply the Product in direct sun, strong winds or both.

REINFORCEMENT CORROSION PROTECTION COATING

1. Apply Sika MonoTop®-1010 or SikaTop® Armatec®-110 EpoCem® to the whole exposed circumference of the reinforcement. Refer to the individual Product Data Sheets.

BONDING PRIMER

On a well-prepared and roughened substrate, a bonding primer is generally not required. When a bonding primer is required to achieve the required adhesion values:

1. Apply Sika MonoTop®-1010 or SikaTop® Armatec®-110 EpoCem® to the prepared substrate. Refer to the individual Product Data Sheets.

REPAIR MORTAR – MANUAL APPLICATION

IMPORTANT

Poor Product performance due to insufficient substrate pre-wetting

Insufficient substrate saturation prior to application will cause the mortar to not gain its full mechanical properties.

1. Only apply the Product to stable, prepared substrates.
2. Thoroughly pre-wet the prepared substrate for a minimum of 2 hours before application.
3. Keep the surface wet and do not allow to dry.
4. The final pre-wetted surface must achieve a dark matt appearance (saturated surface dry).

IMPORTANT

Sagging or slumping of built up layers

Allow each layer to slightly harden and remain wet before applying subsequent layers.

1. Remove excess water from within the surface pores and cavities with a clean sponge.
2. Make a scratch coat using the repair mortar.
3. Apply the scratch coat over the complete substrate surface to form a thin layer to fill surface pores or cavities.
4. IMPORTANT Do not apply as a "feather edge". Apply the repair mortar onto the scratch coat ‘wet on wet’ between the minimum and maximum layer thicknesses without the formation of voids.

SURFACE FINISHING

IMPORTANT

Risk of discolouration and cracking due to adding water during surface finishing

1. Do not add water during the surface finishing.

IMPORTANT

Surface cracking due to rapid moisture loss

In draughty areas, open spaces, at temperatures less than +10 °C or in very dry climates early plastic shrinkage cracks may occur.

1. Confirm substrate moisture content, product, substrate and air temperatures prior to application.
1. Allow mortar to surface harden.
2. Surface finish to the required surface texture using a stainless steel, steel, PVC or wooden float.

COLD WEATHER WORKING

Store the Product in a warm environment to assist with achieving strength gain and maintaining physical properties.

HOT WEATHER WORKING

Store the Product in a cool environment to assist with controlling the exothermic reaction to reduce cracking and maintaining physical properties.

CURING TREATMENT

- Protect fresh mortar immediately from premature drying using an appropriate curing method, such as curing compound, moist geotextile membrane or polythene sheet.
- Do not use curing compounds if 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 removed mechanically.

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.

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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