BUILDING TRUST

PRODUCT DATA SHEET

Sika MonoTop®-3400 Abraroc

HIGH ABRASION RESISTANT CONCRETE REPAIR MORTAR (FORMERLY SIKA® ABRAROC® SR)

DESCRIPTION

Sika MonoTop®-3400 Abraroc is a 1-part, cementitious hand or machine applied structural concrete repair mortar with very high resistance to hydraulic abrasion.

USES

- For new and refurbishment of structures subject to hydraulic abrasion (sewer pipes, sewage treatment plants, dams and maritime structures)
- Water retaining structures containing water (pH > 4)
- Abrasion resistant protective mortar layer
- Structures subjected to heavy abrasion or mechanical loads (Storage or loading bays, Silo floors, Industrial floors etc.
- Suitable for the environments XC1-XC4, XD1-XD3, XS1-XS3, XF1- XF4, XA1-XA3 according to the standard EN 206.
- Restoration work (Principle 3, method 3.1 and 3.3 of EN 1504-9). Repair of spalling and damaged concrete in infrastructure and superstructure works.
- Structural strengthening (Principle 4, method 4.4 pf EN 1504-9). Increasing the bearing capacity of the concrete structure by adding mortar.
- 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

CHARACTERISTICS / ADVANTAGES

- Ready to mix with water
- High abrasion resistance (A6 classification)
- High hydraulic abrasion resistance (equivalent to granite)
- Resistant to sea water and aggressive water conditions
- Applied up to 50 mm thick in one layer on vertical and horizontal applications
- Applied manually or mechanically (dry spray)

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 13813 - Cementitious screed material for use internally in buildings. Insert local reports herehere
- Guideline Maintenance of accesible sewers TED Directive 1, LPM report A-33609-1, 18.08.2009

PRODUCT INFORMATION

Chemical Base	Sulphate resistant cement, fibres, additives and selected abrasive resistant aggregates
Packaging	25 kg bag
Appearance / Colour	Grey powder
Shelf Life	12 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.
Maximum Grain Size	D_{max}: 2,6 mm
Soluble Chloride Ion Content	≤ 0,05 % (EN 1015-17)
Product Declaration	EN 1504-3: Class R4.EN 13813: - Cementitious screed material for use internally in buildings.

TECHNICAL INFORMATION

Compressive Strength (EN 12190)

1 day	2 days	7 days	28 days
~30 MPa	~45 MPa	~65 MPa	~85 MPa

C70 (EN 13892-2)

Modulus of Elasticity in Compression ≥ 20 GPa (EN 13412)

Tensile Strength in Flexure (EN 12190)

1 day	2 days	7 days	28 days
~6 MPa	~7,5 MPa	~8,5 MPa	~11 MPa

F10 (EN 13892-2)

Tensile Adhesion Strength ≥ 2,0 MPa (EN 1542)

Shrinkage ~500 µm/m at +20 °C 65 % relative humidity after 28 days (EN 12617-4)

Restrained Shrinkage / Expansion ≥ 2,0 MPa (EN 12617-4)

Abrasion Resistance

Wear Resistance Böhme	< 6 $cm^3/50\ cm^2$	(EN 13893)
Wear Resistance	A6	(EN 13892-3)

Material	Resistance Index	(CNR)[1]
Sika MonoTop®-3400 Abraroc	0,5–0,6 at 28 days	
Granite	0,35–0,8 at 7 days	
Glass	1 (reference)	

1 Compagnie Nationale du Rhône test method for wet abrasion

Thermal Compatibility ≥ 2,0 MPa (Part 1 Freeze-Thaw) (EN 12687-1)

Reaction to Fire Class A1 (EN 13501-1)

Capillary Absorption ≤ 0,5 $kg \cdot m^{-2} \cdot h^{-0,5}$ (EN 13057)

Water Penetration under Pressure 5 mm (EN 12390-8)

Carbonation Resistance d_k ≤ control concrete (MC (0,45)) (EN 13295)

SYSTEM INFORMATION

System Structure

Reinforcement Corrosion Protection	
Sika MonoTop®-910 N	Coating: Normal Use
SikaTop® Armatec®-110 EpoCem®	Coating: Demanding requirements

Bonding Primer
SikaLatex® / SikaTop®-121 for green concrete
Sikadur®-32 LP for existing concrete (28 days)
Concrete Repair Mortar
Sika MonoTop®-3400 Abraroc

APPLICATION INFORMATION

Mixing Ratio 2,75 litres of water for 25 kg powder.

Fresh Mortar Density ~2,25 kg/l

Consumption	This depends on the substrate roughness and thickness of layer applied. As a guide, ~21 kg of powder per m^2 per cm of layer thickness.
Yield	25 kg of powder yields approximately 12,3 litres of mortar
Layer Thickness	min. 10 mm / max. 50 mm
Product Temperature	+5 °C minimum / +30 °C maximum
Ambient Air Temperature	+5 °C minimum / +30 °C maximum
Substrate Temperature	+5 °C minimum / +30 °C maximum
Application Time	+5 °C ~20 minutes; +20 °C ~15 minutes; +30 °C ~10 minutes
Waiting Time / Overcoating	Minimum 24 hours at 20 °C

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

Concrete
The substrate shall 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 substrate and where necessary sound substrate shall be removed by suitable means. Ensure sufficient concrete is removed from around corroded reinforcement to allow cleaning, corrosion protection coating (where required) and compaction of the repair material.
Repair surface areas should 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
Rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion shall be removed. Surfaces shall be prepared using abrasive blast cleaning techniques or high pressure water-blasting to Sa 2 (ISO 8501-1).

MIXING

Hand Application
Sika MonoTop®-3400 Abraroc can be mixed with a low speed (<500 rpm) hand drill mixer or for machine application, using a force action mixer 2 to 3 bags or more at once depending the type and size of mixer. For small quantities, product can be manually mixed. Pour the minimum recommended water in a suitable mixing container. While stirring slowly, add the powder to the water and mix thoroughly for at least for 3 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.
Dry Spray Application
The amount of water added to the Sika MonoTop®-3400 Abraroc is controlled by the nozzleman at the nozzle.

APPLICATION

Reinforcement Corrosion Protection Coating
Where a reinforcement coating is required, apply to the whole exposed circumference Sika MonoTop®-910 N or SikaTop® Armatec® 110 EpoCem® (Refer to Product Data Sheets).
Bonding Primer
For sprayed application, a bonding primer is generally not required. For manual application, over green concrete use SikaLatex® or SikaTop®-121. Over a well prepared and roughened 28 days concrete use Sikadur®-32 LP
Hand Application:
Thoroughly pre-wet the prepared substrate (2 hours recommended) 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 shall appear a dark matt appearance without glistening and surface pores and cavities shall not contain water.
When manually applying by hand, apply bonding primer. Ensure the whole surface to be repaired is covered by the suitable primer. The repair mortar shall be applied onto the wet scratch coat 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 should be allowed to stiffen before applying subsequent layers “wet on wet”.
Sprayed Application - Dry Spray:
The dry Sika MonoTop®-3400 Abraroc shall be placed into the spraying equipment. The amount of water added is controlled by the nozzleman and should be sufficient to prevent dust and slumping. Apply onto the pre-wetted substrate. Spray 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 should be allowed to stiffen before applying subsequent layers “wet on wet”. Rebound will be increased with a dry mixture and thin layers.
Finishing
After 1 hour, the mortar surface can be finished with a damp sponge. This removes any entrained air pores and further compacts the surface. This also creates a rough sand-paper like texture. A smooth finish can be obtained by finally smoothing the surface with a suitable trowel or flat spreading brush.
If the product is spray applied, finishing of the surface with a trowel can be carried out immediately after

spraying.

CURING TREATMENT

Protect fresh mortar immediately from premature drying using an appropriate curing method, e.g. curing compound, moist geotextile membrane, polythene sheet, etc.

CLEANING OF TOOLS

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

LIMITATIONS

- Avoid application in direct sun and/or strong winds.
- Do not add water over recommended dosage.
- Apply only to sound, prepared substrate.
- Do not add additional water during the surface finishing as this can cause discolouration and cracking.
- Protect freshly applied material from freezing.

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.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the declared data for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data.

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.

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.

Sika India Pvt. Ltd.
620, Diamond Harbour Road
Commercial Complex II
Kolkata - 700 034
Tel : +91 33 24472448
Fax : +91 33 23978688
Mail : info.india@in.sika.com