

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 / CERTIFICATES

- 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

Product declaration	EN 1504-3: Class R4.EN 13813: - Cementitious screed material for use internally in buildings.
Composition	Sulphate resistant cement, fibres, additives and selected abrasive resistant aggregates
Packaging	25 kg bag
Shelf life	12 months from date of production

Storage conditions	Product must be stored in original, unopened, and undamaged sealed packaging in dry, shaded conditions at temperatures above +5°C.		
Appearance and colour	Grey powder		
Maximum grain size	D _{max} : 2,6 mm		
Soluble chloride ion content	≤ 0,05 %	(EN 1015-17)	

TECHNICAL INFORMATION

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					
Compressive strength	1 day	2 days	7 days	28 days	(EN 12190)
	~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	1 day	2 days	7 days	28 days	(EN 12190)
	~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)	
Thermal compatibility	≥ 2,0 MPa (Part 1 Freeze-Thaw)			(EN 12687-1)	
Capillary absorption	≤ 0,5 kg·m ⁻² ·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)	
Reaction to fire	Class A1			(EN 13501-1)	

SYSTEM INFORMATION

System structure	Reinforcement Corrosion Protection	
	Sika MonoTop®-610 T	Coating: Normal Use
	SikaTop® Armatec®-110 EpoCem®	Coating: Demanding requirements
	Bonding Primer (for horizontal hand application)	
Sikadur®-32 TH epoxy bonding agent primer with open time adapted to the site conditions, for existing concrete.		
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		
Material 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
	Only applicable for horizontal hand application (wet application) (*) Please refer to mixing instructions		
Waiting time to overcoating	Minimum 24 hours at 20 °C		

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.

IMPORTANT CONSIDERATIONS

- 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.

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 Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

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 (horizontal 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 (<5 kg), 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.

In case of application where ambient and surface temperature are expected to be higher than 30 °C, add to the measured water 40 to 60 ml / 25 kg bag of Sika-ment®-F2 as plasticizer (or equivalent – preliminary trial is recommended).

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®-610 T or SikaTop® Armatec® 110 EpoCem® (Refer to Product Data Sheets).

Bonding Primer (for horizontal hand application)

Over a well prepared and roughened concrete use Sikadur®-32 TH epoxy bonding agent primer. Application of Sikadur®-32 TH can take place once the base prepared concrete exhibit > 1.5 N/mm² as tensile strength.

Hand Application (horizontal application)

When manually applying Sika MonoTop®-3400 Abraroc, apply Sikadur®-32 TH bonding primer by stiff brush.

Ensure the whole surface to be repaired is covered by the bonding agent.

The repair mortar, Sika MonoTop®-3400 Abraroc, shall be applied during the open time of the Sikadur®-32 TH (refer to PDS for open time).

Sika MonoTop®-3400 Abraroc can be hand, spatula or trowel patched in layers between the minimum and maximum layer thicknesses without the formation of voids.

Where layers are to be built up in thickness thicker than 50 mm, each layer should be allowed to stiffen before applying subsequent layers.

The receiving layer shall be well prewetted prior the application of the next layer.

If the next layer is to be applied once the receiving layer has already cured (> 12 hours), then Sikadur®-32 TH should be applied onto the dry receiving layer.

Sprayed Application - Dry Spray (refer to Method statement for more details) :

The application of Sika MonoTop®-3400 Abraroc by spraying implies that the spraying machine shall be a rotor type machine with an out-put imperatively limited to 1.1 m³/h and with the relevant equipment set-up recommended by the machine manufacturer. The dry Sika MonoTop®-3400 Abraroc shall be poured into the hopper of the spraying equipment. The amount of water added is controlled by the nozzleman and should be sufficient to prevent dust and slumping of the sprayed mortar.

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 EQUIPMENT

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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