Construction

Sika® MonoTop® Dynamic

High-strength fibre reinforced structural repair mortar

Product Description

General Information

Sika MonoTop Dynamic is a ready mixed polymer modified repair mortar, with high thixotropy and balanced shrinkage properties, used for re-building up layers from 1 to 3 cm in thickness.
It contains modified cements with synthetic polymers, silica fume, selected aggregates and synthetic fibres.

Sika MonoTop Dynamic can be mixed with Sika Modulo Blitz, to accelerate setting and hardening times.

EN 1504

Sika MonoTop Dynamic meets the requirements for the performance charactheristics of class R4 of EN 1504-3

Areas of application

- suitable for restoration work (Principle 3, method 3.1 & 3.3 of EN 1504-9). Repair of spalling and damaged concrete in buildings, bridges, infrastructure and superstructure works;
- suitable for structural strenghtening (Principle 4, Method 4.4 of 1504-9). Increasing the bearing capacity of the concrete structure by adding mortar;
- quick thickness repair and thin surface finishing of reinforced concrete;
- repair and finish of pre-cast concrete units.

Advantages

- can be used for high thickness repair and thin finishing: substantial reduction of working times;
- curing and setting times can be adjusted on site, according to the specific work or environmental requirements, by means of the specific Sika Modulo Blitz;
- excellent workability, high thixotropy;
- good mechanical strengths and adhesion onto most commonly used building materials (concrete, stone, bricks, etc.).

Product Data

Appearance/Colour

Grey powder

Packaging

25 kg bags

Shelf life/Storage

12 months from the date of production, if stored properly in undamaged original sealed packaging, in dry and cool conditions.

Technical Data

Chemical Base

Portland cement, selected aggregates, fibres and additives

Specifig gravity

Fresh mortar density: ~1.9 - 2.0 kg/L

Grading

D_{max}: 1.2 mm

Mechanical Properties

Flexural strenghts	1 day:	7 days:	28 days
(EN 196-1)	≥ 4.3 N/mm²	≥ 7.4 N/mm²	≥ 9.2 N/mm²

Requirements as per EN 1504-3 Class R4 (admixed only with water, 16% w/p ratio)

	Test Method	Results	Requirements (R4)
Compressive strength	EN 12190	51.5 N/mm²	≥ 45 N/mm²
Chloride Ion content	EN 1015-17	0.03%	≤ 0.05%
Adhesive Bond	EN 1542	2.43 N/mm²	≥ 2 N/mm²
Carbonation resistance	EN 13295	no penetration	lower than control (MC 0.45)
Elastic Modulus	EN 13412	23.10 GPa	≥ 20 GPa
Thermal Compatibility part 1: Freeze-thaw	EN 13687-1	2.01 N/mm²	adhesion after 50 cycles ≥ 2 N/mm²
Capillary absorption	EN 13057	0.423 kg $m^{-2}h^{-0.5}$	≤ 0.5 kg $m^{-2}h^{-0.5}$
Chloride Ion Ingress	EN 13396	0.01%	≤ 0.05%
Dangerous substances (Chromium VI)	EN 196-10	< 0.0002%	< 0.0002%
Reaction to fire	EN 13501-1	A1	Euroclass

Application Details

Consumption

as a guide, 1.75 - 1.85 kg/m²/mm, in dependence of the substrate roughness.

Substrate quality

Concrete:
The substrate must be structurally sound and free from dust, dirt, loose material, surface contamination as oil or grease, cement laitance.
The concrete “Pull off” (tensile) strength must be > 1.5 N/mm²

Steel reinforcement:
Steel surface must be clean from rust products, oil, grease, dust and other loose materials which may reduce bond or may contribute to corrosion.

Substrate preparation/ Priming

Concrete:
The substrate should be prepared by suitable mechanical preparation techniques, such as high water pressure or grit blasting, mechanical or maual breakers. Non impact/vibrating cleaning methods are preferred. Aggregates should be clearly visible on the surface of the prepared area. The edges of the repair area must be cut-vertically (90° degree angle) to a minimum depth of 5 mm.
Pre-wet the surface up to saturation. The wetted surface should achieve a dark matt appearance, without glistening: no liquid water must be present on the surface.

Steel reinforcement:
Surfaces must be prepared using approved abrasive blast cleaning techniques, to a minimum standard of SA 2½ .
When the reinforcement is contaminated by chlorides or other materials which may cause corrosion, the reinforcement shall be cleaned by low pressure waterblasting.

Priming on concrete:
On a well prepared and roughened substrate a bonding primer is generally not required. When required, priming can be done either using Sika bonding bridge products (refer to the relevant Product Data Sheet). The subsequent application of the repair mortar should be done wet on wet.

Reinforcement coating:
If required, apply around the whole exposed circumference two coats of Sika MonoTop 610 (refer to the Product Data Sheet)

Application Conditions / Limits

Substrate Temperature

min. + 5°C; max. + 35°C

Ambient Temperature

min. + 5°C; max. + 35°C

Application Instructions

Mixing ratio

~ 4.0 - 4.5 L of water for 25 kg powder bag

Mixing

Product mixing: normal setting
Sika MonoTop Dynamic can be mixed with a low speed (~ 500 r.p.m.) electic drill mixer. In small quantities, the mortar can also be manually mixed.
Pour the water in the correct proportion into a suitable mixing container. While stirring slowly, add the powder to the water. Mix thoroughly at least for 3 minutes, until the homogeneous lump-free required consistency is reached.

Product mixing: accelerated setting
Whenever accelerated product setting and curing is required, mix a 25 kg mortar bag with a liquid mix composed by 50% water + 50% Modulo Blitz, until the required consistency is achieved.
This Modulo Blitz / water mixing ratio is the maximum advisable for generally-trained operators. Under some particular jobsite conditions, higher Modulo Blitz concentrations are allowed; for further information about this possibility, please apply to our Technical Department. However, mix only the quantity of material that can be placed before than setting starts.

Product mixing: intermediate-rate setting
Mix a 25 kg bag of the product with Modulo Blitz diluted by the 60%, 70%, 80% ratios with water as a function of the required setting rate, until the required workability is achieved. The higher is the Modulo Blitz concentration, the quicker is the mortar setting and curing.

Application Method

Sika MonoTop Dynamic can be applied either manually using traditional techniques, or mechanically using wet spray equipment.

Apply Sika MonoTop Dynamic by means of a trowel onto the subgrade dampened up to saturation, exerting a good pressure and compacting well on the subgrade. For the covering of large surfaces the application can be executed also by spraying by means of standard spraying machines (e.g. Turbosol, Putzmeister).

The application thickness layer must be comprised between 0.5 and 3.0 cm. Higher thickness must be built in subsequent layers when the mortar starts setting (tack free).
A good surface finishing can be achieved making use of a plastering trowel or timber float, as soon as the mortar has started to stiffen.

Cleaning of tools

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

Pot Life @ 20°

~ 60 min.

Curing treatment

protect the fresh mortar from early dehydration using the relevant curing methods.

Notes of application / Limits

- CE marking performances are obtained by mixing Sika Monotop Dynamic only with water;
- do not add water over recommended dosage;
- do not add cement or other substances that could affect the properties of the mortar;
- do not add water or fresh mortar to a mortar mix which has already started setting.
- avoid application in direct sun and/or strong wind;
- appy only to sound, prepared substrate;
- protect freshly applied material from freezing

Healt and safety Information

Precautions

For further information and advices regarding safety rules, uses and storage of the chemical product users should refer to the latest Safety Data Sheet, in which are explained physical, toxicological and environmental information along with safety behaviours.
Eyes and hands should be protected. In case of accidental contact with skin or eyes, rinse with plenty water.

Ecology

Do not dispose unused product and empty packaging into the environment. See the latest Safety Data Sheet for further information.

Construction

CE Labelling

The harmonized European Standard EN 1504-3, “Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 3: Structural and non-structural repair” gives specifications for products and systems used as methods for the various principles presented under EN 1504-9
Products which fall under this specification have to be CE labelled as per Annex ZA1, according to the scope and relevant clauses there indicated, and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):
Here below indicated are the minimum performance requirements set by the standard. For the specific performance results of the product to the specific tests, please see the actual values above in the PDS.

CE	
1305	
Sika Italia S.p.A. via Einaudi 6 20068 Peschiera Borromeo (MI)	
08	
1305 - CPD - 0807	
EN 1504-3	
Concrete repair product for structural repair PCC mortar (based on hydraulic cement)	
Compressive strength:	≥ 45 N/mm^2
Chloride ion content:	≤ 0.05%
Adhesive Bond:	≥ 2 N/mm^2
Carbonation resistance	lower than control
Elastic modulus	≥ 20 GPa
Thermal compatibility part 1 freeze-thaw cicles	≥ 2 N/mm^2
Capillary absorption	≤ 0.5 kg m^{-2} h$^{-0.5}$
Chloride ion ingress	≤ 0.05%
Dangerous substances (Chromium VI)	< 0.0002% according to 5.4
Reaction to fire	A1

Legal notes

The information, and, in particular, the recommendations relating to the application and en-use of Sika products, are given in good faith based on Sika’s current knowledge and experience of the products when properly stored, hanlied and applied under normal conditions within their shelflife. 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 relathionship whatsoever, can be inferred aither from this information, or from any written recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users thould always refer to the most recent issue of the Technical Data Sheet for the product concerned, copies of which will be supplied on request.

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