

PRODUCT DATA SHEET

Sika MonoTop®-412 NFG

Structural repair mortar with corrosion inhibitor

DESCRIPTION

Sika MonoTop®-412 NFG is a 1-component, polymer modified, fibre reinforced, low shrinkage structural repair mortar with corrosion inhibitor meeting the requirement of class R4 of EN 1504-3.

USES

Restoration work. Repair of spalling and damaged concrete buildings, bridges, infrastructure and superstructure works (3.1 and 3.3 of EN 1504-9).

Preserving or restoring passivity. Increasing cover with additional mortar and replacing contaminated or carbonated concrete (7.1 and 7.2 of EN 1504-9).

CHARACTERISTICS / ADVANTAGES

- Polymer modified for increased durability
- Superior workability and finishing
- Suitable for hand and machine application
- Can be applied up to 20 mm thick per on overhead application layer
- Structural repair
- Sulphate resistant
- Very low shrinkage behaviour
- Contains corrosion inhibitor
- Low permeability
- A1 fire rating

APPROVALS / CERTIFICATES

JG/T 336-2011 Polymer Modified Cement Mortars for Concrete Structures Repair.

PRODUCT INFORMATION

Composition	Cement, corrosion inhibitor, selected aggregates and polymer modified.
Packaging	25 kg bags
Shelf life	9 months from the date of production.
Storage conditions	Store properly in undamaged original sealed packaging, in dry cool conditions.
Appearance and colour	Grey powder
Maximum grain size	D _{max} : 2.5 mm
Density	~2.2 kg/l
Soluble chloride ion content	≤ 0.05% (EN 1504-3)

TECHNICAL INFORMATION

Compressive strength	Class R4	
	7 d (water : powder = 12%)	≥ 35 MPa (JG/T 336-2011)
	28 d (water : powder = 12%)	≥ 50 MPa
	Bonding strength*	
	No treatment	28 d ≥ 1.5 MPa
Water immersion	28 d ≥ 1.0 MPa	
Freeze-thaw 25 time	28 d ≥ 1.0 MPa	
*) with primer Sika® MonoTop®-910 N		
Modulus of elasticity in compression	≥ 20 GPa	(EN 1504-3)
Tensile strength in flexure	7 d (water : powder = 12%)	≥ 6 MPa (JG/T 336-2011)
	28 d (water : powder = 12%)	≥ 10 MPa
Shrinkage	≤ 0.1 (water : powder = 12%)	(JG/T 336-2011)
Thermal compatibility	≥ 2.0 MPa (Part 1: Freeze- Thaw)	(EN 1504-3)
Capillary absorption	≤ 0.5 kg/(m ² .h ^{0.5})	(EN 1504-3)
Chloride ion diffusion resistance	≤ 0,05%	(EN 1504-3)
Carbonation resistance	Pass	(EN 1504-3)
Reaction to fire	Euro class A1	(EN 1504-3)

SYSTEM INFORMATION

System structure	Sika MonoTop®-412 NFG is part of the range of Sika mortars complying with the relevant part of European Standard EN 1504 and comprising of:		
	Bonding Primer / Reinforcement		
	Corrosion Protection		
	Sika MonoTop®-910 N	Normal Use	
	SikaTop® Armatec® 110 EpoCem®	Demanding requirements	
	Repair Mortar		
	Sika MonoTop®-412 NFG	Structural repair mortar (Class R4)	
	Fairing coat		
	Sika MonoTop®-723 N	Pore sealer and levelling mortar	

APPLICATION INFORMATION

Mixing ratio	3.0 to 3.5 litres of water for 25 kg powder		
Consumption	1 bag yields approximately 13.3 litres of mortar.		
	Sika MonoTop®- 412 NFG	1.89 kg	25.0 kg
	Water	0.23 kg	3 kg
	Mortar mix	1.00 L	13.3 L
			1.00 m³
For a 1mm layer of mortar approx. 1.89 kg powder/m ² is required (actual consumption will vary depending on the substrate roughness).			
Layer thickness	Vertical: 8 mm (minimum) to 50 mm (maximum)		
	Overhead: 8 mm (minimum) to 20 mm (maximum)		
Ambient air temperature	+5 °C min. /+30 °C max.		
Substrate temperature	+5 °C min. /+30 °C max.		

Pot Life	~ 30 minutes at +23°C	
Initial set time	45 min (water : powder = 12%)	(JG/T 336-2011)
Final set time	≤ 9h (water : powder = 12%)	(JG/T 336-2011)

BASIS OF PRODUCT DATA

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

IMPORTANT CONSIDERATIONS

- Refer to the Method Statement for Concrete Repair using Sika MonoTop® system for more information regarding substrate preparation or refer to the recommendations provided in EN 1504-10
- Avoid application in direct sun and/or strong wind.
- Do not add water over recommended dosage
- Apply only to sound, prepared substrate
- Do not add additional water during the surface finishing as this will cause discolouration and cracking
- Protect freshly applied material from freezing
- Overhead hand applications layer thickness 8 mm minimum and 20 mm maximum.

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

SUBSTRATE QUALITY / PRE-TREATMENT

Substrate Quality

Concrete:

The concrete shall be thoroughly clean, free from dust, loose material, surface contamination and materials which reduce bond or prevent suction or wetting by repair materials. De-laminated, weak, damaged and deteriorated concrete and where necessary sound concrete shall be removed by suitable means.

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).

Substrate Preparation / Priming

Concrete:

Delaminated, weak and deteriorated concrete and where necessary sound concrete shall be removed by suitable means.

Steel reinforcement:

Surfaces shall be prepared using abrasive blast cleaning techniques or high pressure water-blasting.

Bonding primer:

On a well prepared and roughened substrate a bonding primer is generally not required. When a bonding primer is not required pre-wet the surface. The surface shall not be allowed to dry before the application of the concrete repair mortar. The surface shall achieve a dark matt appearance without glistening and surface pores and pits shall not contain water.

Reinforcement corrosion protection:

Where a reinforcement coating is required as a barrier (e.g. in case of insufficient concrete cover), apply to the whole exposed circumference two coats of Sika® MonoTop®-910 N (Refer to the relevant Product Data Sheet).

MIXING

Sika MonoTop®-412 NFG can be mixed with a low speed (400 ~ 600 rpm) electric 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.

Pour the recommended water in a suitable mixing container. While stirring slowly, add the powder to the water and mix thoroughly at least for 5 minutes to the required consistency.

APPLICATION

Sika MonoTop®-412 NFG can be applied either manually using traditional techniques or mechanically using wet spray equipment.

When a bonding primer is required, ensure it is still

tacky when the repair material is pressed on (wet on wet technique). When applied manually, pressed the repair mortar with a trowel, pressing it well on the substrate.

Finishing for both hand and machine application, can be done with the relevant roughcast as soon as the mortar has started to stiffen.

CURING TREATMENT

Protect the 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

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 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.

