BUILDING TRUST

PRODUCT DATA SHEET

Sika MonoTop®-436 N

R4 HIGH PERFORMANCE, POURABLE MICRO-CONCRETE REPAIR MORTAR

DESCRIPTION

Sika MonoTop®-436 N is a 1-component pre-bagged, pourable, self-compacting repair mortar meeting the requirements of class R4 of EN 1504-3.

USES

- Suitable for restoration work by recasting (Principle 3, method 3.2 of EN 1504-9).Repair of spalling and damaged concrete in buildings, bridges, infrastructure and superstructure works.
- Suitable for structural strengthening (principle 4, method 4.4 of EN 1504-9). Increasing the bearing capacity of the concrete structure by adding mortar.
- Suitable for 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.

Repair of concrete on buildings and civil engineering structures for areas including:

- Beams
- Balconies
- Columns
- Stairs
- Decks
- Walls etc.

CHARACTERISTICS / ADVANTAGES

- Class R4 of EN 1504-3
- Very good flow properties
- Self compacting micro-concrete
- Placed from 20mm to 300mm in one pour
- Chloride Free
- Carbonation Resistant
- Excellent adhesion to host Concrete
- Low water and chloride permeability
- Low shrinkage
- Finished surface can be painted after formwork is removed
- Compatible with Sika Ferrogard Sacrificial Anode system

APPROVALS / CERTIFICATES

- Qld Roads (TMR) Section 5. Registered and Conforming Products. Part 5.34 Repair Mortars
- Potable Water approved to AS4020:2005 - Testing of products for use in contact with drinking water
- RTA Rapid Mortar Bar Test RTA T363 - Alkali Reactive Particles <0.1% (Non-Reactive).

PRODUCT INFORMATION

Composition	Portland cement, selected aggregates and special additives
Packaging	20 kg bags
Appearance / Colour	Grey powder
Shelf life	9 months
Storage conditions	Store properly in undamaged original sealed packaging, in dry cool conditions.
Density	Fresh mortar density: ~ 2.3 kg/l

Maximum grain size	D_{max}: 4.0 mm	
Soluble chloride ion content	≤ 0.05%	(EN 1015-17)

TECHNICAL INFORMATION

Compressive strength	1 day	> 15 MPa	(AS 1478.2:2005)
	7 days	> 50 MPa	
	28 days	> 70 MPa	
	Material and curing conditions at 23°C / 50% r.h. *Above results based on 50mm x 50mm cubes @ 2.5 litres water per 20kg bag*		
Modulus of elasticity in compression	44.5 GPa at 56 days		(AS 1012.17)
Tensile strength in flexure	1 day	> 4 MPa	(ASTM C 348)
	7 days	> 10 MPa	
	28 days	> 11 MPa	
Splitting tensile strength	6.5 MPa at 28 days		(AS 1012.10)
Tensile adhesion strength	> 2.0 MPa		(EN 1542)
Shrinkage	< 500 microstrains at 28 days		(AS 1012.13:2015)
Restrained shrinkage / expansion	> 2.0 MPa		(EN 12617.4:2002)
Electrical resistivity	7 days	~ 16,000 Ω.cm	(Wenner Probe FM5-578) *50mm Probe Spacing*
	28 days	~ 33,000 Ω.cm	
	56 days	~ 44,000 Ω.cm	
	90 days	~ 54,000 Ω.cm	

SYSTEM INFORMATION

System structure

Sika MonoTop®-436 N is a part of system for concrete repair:

Bonding Primer / Reinforcement Corrosion Protection	
Sika MonoTop® -910N	Normal use
SikaTop® Armatec ® 110 EpoCem®	Demanding requirements
Repair Mortar	
Sika MonoTop®-436 N	Structural hand & machine applied repair
Levelling Mortar	
Sika MonoTop®-723 N	Normal use
Sikagard®-720 EpoCem®	Demanding requirements

APPLICATION INFORMATION

Mixing ratio	2.5 to 2.7 litres of water for 20 kg powder	
Yield	20 kg of powder yields approximately 9.8 litres of mortar	
Layer thickness	20mm min. / 300 mm max.	
Flowability	> 600mm (Flow trough)	(AS 1478.2:2005)
Pot Life	~ 40 minutes at +20°C	
Initial set time	~ 4.5 hours	
Final set time	~ 7.5 hours	

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

- For carbonation resistance use a coating complying with EN 1504-2
- Apply only to prepared sound surfaces
- Avoid application in direct sun and/or strong wind
- Do not add water over recommended dosage
- Only prepare quantity of material which can be handled within pot life time
- Do not use vibrators for compaction
- Protect freshly applied material from freezing
- Do not add additional water during the surface finishing as this will cause discoloration and cracking
- Refer to Qualified Engineer for any movement, expansion or cold joint positions
- Do not use a curing agent if coatings are to be applied
- Refer to the Method Statement for Concrete Repair using Sika MonoTop® system for more information regarding substrate preparation or refer to the recommendations in EN 1504-10

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.

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

Concrete:
The concrete shall be free from dust, loose material, surface contamination and materials which reduce bond or prevent suction or wetting by repair materials. Delaminated, weak, damaged and deteriorated concrete and where necessary sound concrete shall be removed by suitable means.
Steel:
Steel reinforcement surface must be free from rust products, mill scale, mortar, concrete residues, oil, grease, dust and other loose materials which may reduce bond or may contribute to corrosion. In case of rust, clean uniformly the whole circumference of the steel bars (where applicable) by using abrasive blast cleaning techniques or high pressure waterblasting to Sa 2 in accordance with ISO 8501. Protect cleaned bars from further contamination, prior to application of the mortar.
Formwork:
Formwork necessary for casting shall be of adequate strength, non absorbent, treated with release agent and sealed to prevent mortar leakage. Use SikaSwell®-S2 hydrophilic sealant between any joints. Ensure the formwork design includes outlets for extraction of the pre-wetting water and air.

MIXING

Sika MonoTop®-436 N can be mixed with a low speed (~500 r.p.m.) electrical hand drill mixer with vertical axis for 1 to 2 bags taking care not to entrap air in the mix, or using a force action pan mixer for 2 to 3 bags - or more - at once, depending on the type and size of mixer. Pour the water in the correct desired proportion into a suitable mixing container. While stirring slowly, add the powder gradually in the water and mix thoroughly at least for 3 minutes, adding additional water during the mixing time if necessary up to the maximum specified amount, until the required homogeneous and lump-free consistency is achieved. For larger mixes the mixing time could be extended (up to 5 minutes or as necessary) until the mortar is homogenously mixed with no lumps and no remaining dry powder. Mix full bags for best results. 20 kg of Sika MonoTop®-436 N powder is mixed with 2.5 - 2.7 L of water depending on the required consistency.

APPLICATION

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 continuously for 2 - 6 hours with clean water. Immediately before casting remove all water from formwork. The surface shall not be allowed to totally dry before 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 (saturated surface dry-SSD) condition.

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 or SikaTop® 110 EpoCem® (Refer to the relevant Product Data Sheet).

Pouring / Filling:
The product should be poured directly on the wet mat substrate or inside the formwork prepared for the casting. By using more than one mixer and with the proper organization, you can pour the fresh material reducing construction joints. After mixing Sika MonoTop®-436 N, leave the mortar to stand for ~1-2 minutes; stir again with a trowel and then pour immediately into sealed, rigid - stable prepared formworks. To make optimum use of the product's expansion properties apply the mortar as quickly as possible (within max. 15 minutes). Pot life shall also be taken into consideration, adjusting for weather conditions, when planning the work duration.

CURING TREATMENT

Protect the fresh mortar from early dehydration using the relevant curing method.
Cure for a minimum of 7 days to minimise cracking.
Use a 90% efficient curing membrane or polythene sheeting taped down at the edges.

CLEANING OF EQUIPMENT

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

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.

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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