

PRODUCT DATA SHEET

Sikacrete[®]-503

Dry spray applied repair mortar

DESCRIPTION

Sikacrete[®]-503 (formerly Sikacrete[®] Gunit-103) is a cementitious one component repair mortar containing microsilica and super plasticisers to enhance application and performance properties. The formulation is designed to match the requirements for a dry process gunitite / shotcrete applied mortar. It gives early strength with reduced rebound creation. Sikacrete[®]-503 does not contain set accelerators and is sprayed applied by dry shotcrete machine.

USES

Sikacrete[®]-503 is an ideal product for use in all general applications where large volume repair work is to be carried out using the mechanically applied dry spray system. Typical uses for Sikacrete[®]-503 are:

- Large volume repairs to reinforced concrete structures.
- Concrete repairs requiring early strength.
- Thick layer concrete repair work to large areas such as slab soffits.
- When form / pour repair techniques cannot be implemented.
- Tunnel linings and shaft repair relining.
- Retaining structures for ground stabilisation.

FEATURES

- One component mortar - ready for use.
- Rapid strength development without use of accelerators.
- Layer thicknesses up to 100mm in vertical applications and 50mm in overhead applications.
- Improved sulphate resistance.
- High density, excellent compaction.
- Low rebound, minimum waste.
- Good adhesion to existing concrete.
- Greatly reduced labour, scaffolding and formwork costs.
- Increased speed and efficiency of repair work.
- Can be trowelled and screeded after application.
- Application can be stopped or started at any time.
- Ideal for use in conditions where access is difficult.
- Factory manufactured to give a consistent and assured level of performance.

PRODUCT INFORMATION

Composition	Cement, aggregates and special additives.
Packaging	25 kg bag
Shelf life	6 months from date of production when stored in original unopened packaging.
Storage conditions	Store in dry conditions below +35°C and protected from direct sunlight.
Appearance and colour	Grey powder.
Maximum grain size	3 mm
Density	Dry powder ~ 1.7 kg / litre. Sprayed mix ~ 2.1 - 2.2 kg / litre.

TECHNICAL INFORMATION

Compressive strength	<u>1 day</u>	<u>> 20 MPa</u>	(laboratory result as per ASTM C109. W/P 8%)
	<u>7 days</u>	<u>> 35 MPa</u>	
	<u>28 days</u>	<u>> 45 MPa</u>	
Modulus of elasticity in compression	~ 32,000 MPa approx.		
Tensile adhesion strength	~ 2-3 MPa approx. (depending on condition of substrate)		
Yield	25-27 kg of powder per 1 m ² @ 1 cm thickness.		
Layer thickness	Minimum thickness per coat: 10 mm		
Ambient air temperature	+ 5°C - + 35°C (Application temperature: Not below + 5°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.

LIMITATIONS OF USE

- Any rebound material that falls to the floor during the spray process should not be reused.
- As with all concrete and mortars, it is essential to protect Sikacrete[®]-503 from water evaporation during the crucial early age curing period. We recommend the use of Sika Antisol curing membranes for this purpose. Refer to the Sika Antisol Data Sheet for further information.
- In vertical applications layer thicknesses of Sikacrete[®]-503 are only limited by heat of hydration and subsequent thermal contraction. Areas and layer thickness, both vertical and overhead should follow good concrete practice in this respect.

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

EQUIPMENT

Sikacrete[®]-503 can be applied through most types of conventional dry spray equipment (rotor capacity up 1.1 m³/h, hose diameter (ID) 32 or 38 mm, nozzle diameter as per conveying hose ID). It is advised that the spraying device is a "back inlet" type. Meaning, added water introduction 2.5 m behind the nozzle.

SUBSTRATE QUALITY / PRE-TREATMENT

- All concrete, mortar and rock / stone substrates must be sound, clean and free from oils, grease, dust and other surface contaminants. All loose material and surface laitance must be removed preferably by grit blasting or scabbling.

- The prepared substrate should be thoroughly soaked with clean water until uniformly saturated. Immediately before the application of Sikacrete[®]-503 remove excess water from the substrate surface, to achieve a "saturated surface dry" condition.
- In case of corroded steel reinforcements, they should be cleaned and coated with Sika MonoTop[®]-610 T. Refer to separate data sheet for further information.

MIXING

Sikacrete[®]-503 has been formulated to ensure that spraying can only be achieved when using the correct water/cement ratio of 0.35 - 0.40. Too little water will result in excessive amounts of dust, whereas too much water will cause excessive slumping and non-adhesion of the mortar.

APPLICATION

Observe and implement Safety measures when working with the dry spraying equipment. Please refer to Equipment Manufacturer's instructions.

Application steps:

- All conveying hoses are connected from the machine to the spraying devices.
- Air from the compressor is supplied to the air machine – valve closed.
- Nozzleman hold the spraying device.
- Machine operator open air and adjust "air resistance empty".
- Machine operator start the water booster pump and Nozzleman adjust the water flow accordingly at the nozzle thanks to the valve on the spraying device.
- Machine operator instructs to tip the dry Sikacrete[®]-503 mortar straight into the hopper of the machine.
- Machine operator starts the machine. Meaning rotor is turning and the Sikacrete[®]-503 is conveyed into the conveying hose.
- The required water is added and adjusted at the nozzle by the nozzleman.
- Application should be carried out by an experienced nozzleman to ensure that satisfactory results are achieved.
- Immediately after application the mortar can be screeded and trowelled to the desired finish and shall be cured.

CLEANING OF EQUIPMENT

Remove non-hardened Sikacrete®-503 from tools and equipment with water. Hardened material can only be removed mechanically. To clean the dry spray machine simply blow through with compressed air.

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.

Sika (Thailand) Limited

700/37 Moo 5 Amata City Chonburi
Industrial Estate, T. Klong Tamhru
A. Muang, Chonburi 20000, Thailand
Tel : +66 3810 9500
E-mail : sikathai@th.sika.com
Website: tha.sika.com



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