

## PRODUCT DATA SHEET

# SikaCem<sup>®</sup>-133 S Gunitite

### R4 DRY SPRAYED MICRO REPAIR CONCRETE

#### PRODUCT DESCRIPTION

SikaCem<sup>®</sup>-133S Gunitite ( formerly SikaCem<sup>®</sup>-133 Gunitite) is a cement based, polymer modified one component repair mortar containing silica fume and high range water-reducing agents, meeting the requirements of Class R4 of BS EN 1504-3. Formulated for machine applications using the dry process without set accelerators, repairs may be profiled and trowel finished where necessary.

#### USES

- Large volume repairs
- Bridges
- Marine structures
- Tunnels
- Facades
- For exterior and interior use
- In place of R1, R2 & R3 mortars

#### CHARACTERISTICS / ADVANTAGES

- One component, ready to use micro concrete
- Non silica aggregates
- Low rebound losses and dust formation during the spraying process
- Layer thicknesses in one application overhead up to 150mm are possible without any additional mesh reinforcement
- Rapid strength gain without set accelerators
- Very low shrinkage
- Can be finished to a high standard
- Overcoatable with Sika reprofiling/levelling mortars and coatings

#### APPROVALS / STANDARDS

- Approved for potable water contact
- Resistivity: Mott MacDonald Report No. 37423/DA/001.Rev A
- Conforms to the requirements of BS EN 1504-3 R4 Classification

#### PRODUCT INFORMATION

<b>Chemical Base</b>	Portland cement, polymer redispersable powder, selected aggregates, silica fume and additives
<b>Packaging</b>	25 kg bag
<b>Appearance / Colour</b>	Grey powder
<b>Shelf Life</b>	6 months
<b>Storage Conditions</b>	Store properly in original unopened, sealed and undamaged packaging in dry and cool conditions
<b>Density</b>	Fresh mortar density: ~ 2.2 kg/l
<b>Maximum Grain Size</b>	D <sub>max</sub> : 3.0 mm
<b>Soluble Chloride Ion Content</b>	< 0.007%

#### TECHNICAL INFORMATION

<b>Compressive Strength</b>	1 day	~ 15 MPa	(EN 12190)
	7 days	~ 45 MPa	
	28 days	~ 60 MPa	
(Air cured cores RH 50%)			
<b>Modulus of Elasticity in Compression</b>	~ 23GPa		(EN 13412)
<b>Flexural Strength</b>	~10MPa (28 days)		(EN 12190)
<b>Tensile Adhesion Strength</b>	~ 2.5 MPa		
<b>Coefficient of Thermal Expansion</b>	8 x 10 <sup>-6</sup> m/m °C		
<b>Freeze Thaw De-Icing Salt Resistance</b>	106% good resistance with no visible change after 400 cycles* *to SN 640461 - Resistivity factor WFT-L		
<b>Diffusion Resistance to Water Vapour</b>	μ - 1,000		
<b>Capillary Absorption</b>	0.14 kg.m <sup>-2</sup> .h <sup>-0.5</sup>		(EN 13057)
<b>Chloride Ion Diffusion Resistance</b>	600 – 700 x 10 <sup>-15</sup> m <sup>2</sup> /s		
<b>Lap Shear Strength</b>	μ - 60,000		
<b>Electrical Resistivity</b>	(4 point Wenner)		
	<b>RH%</b>	<b>Resistivity (kohm.cm)</b>	
	100	133	
	81	249	
	45	308	
	44	397	

Mott MacDonald Report No. 37423/DA/001.Rev A

## APPLICATION INFORMATION

<b>Consumption</b>	This depends on the substrate roughness and thickness of layer applied. As a guide, ~ 2.2 kg/m <sup>2</sup> /mm.
<b>Layer Thickness</b>	10 mm min. / 150 mm max.
<b>Ambient Air Temperature</b>	+3°C min. / +30°C max.
<b>Substrate Temperature</b>	+3°C min. / +30°C max.

## APPLICATION INSTRUCTIONS

### SUBSTRATE QUALITY / PRE-TREATMENT

#### 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 mechanical or very high pressure waterblasting techniques. Tying wire fragments, nails and other metal debris embedded in the concrete should be removed where possible.

The edges where concrete is removed should be cut at a minimum angle of 90° to avoid undercutting and a maximum angle of 135° to reduce the possibility of debonding with the top surface of the adjacent sound concrete and should be roughened sufficiently to provide a mechanical key between the original material and Sika® Repair material.

Ensure sufficient concrete is removed from around the full circumference of the reinforcement to allow application of the reinforcement corrosion protection coating (If required) and compaction of the repair material.

#### 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 or high pressure water-blasting techniques to a minimum standard of SA 2 (ISO 8501-1) If these types of techniques are not permissible contact Sika® Ltd for alternative options using hand preparation techniques and Galvanic Anodes.

Where exposed reinforcement is contaminated with chloride or other material which may cause corrosion, the reinforcement shall be cleaned by low pressure waterblasting.

Reference shall be made to EN1504-10 for specific requirements.

## MIXING

SikaCem® -133S Gunitite is fed into the dry process spraying machine which should be of suitable size for the repair areas to reduce wastage and rebound. The amount of water added is controlled by the nozzleman at the nozzle and should be sufficient to prevent slump and dust. Rebound will be increased with unsuitably sized spraying machine, compressor, nozzle type, dry mixture and thin layers.

## APPLICATION

### Reinforcement Corrosion Protection:

Where a reinforcement coating is required the application of the repair mortar shall be applied when the the reinforcement coating has cured ( Minm finger nail hard). Refer to the System Information above for compatible Sika products and refer to the relevant Product Data Sheet

for more detailed information about the reinforcement corrosion product.

The sprayed repair mortar shall be placed onto the pre-wetted substrate between the minimum and maximum layer thicknesses without the formation of voids and loose rebound material. 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". When layers cannot be applied "wet on wet", pre-wet surface and allow to surface dry to a dark matt appearance.

SikaCem® -133S Gunitite is finished by leaving 'as shot' or striking off with a straight edge and closing the surface with a wooden/plastic float or damp sponge to achieve the desired surface texture.

Reference shall be made to BS EN1504-10:2003 for specific requirements, the Code of Practice for sprayed concrete issued by the Concrete Society and any other guidelines that are specific to the structure.

## CURING TREATMENT

It is essential to cure the repair mortar immediately after application for a minimum of 3 days to ensure full cement hydration and to minimise cracking. Use polythene sheeting taped down at the edges or other approved method.

Curing compounds shall not be used when they adversely affect subsequently applied products and systems.

Reference shall also be made to BS EN1504-10:2003 for specific requirements.

## CLEANING OF TOOLS

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

## LIMITATIONS

- Refer to recommendations provided in BS EN 1504-10.
- Avoid application in direct sun and/or strong wind and/or rain.
- Do not add water over recommended dosage.

- Apply only to sound, prepared substrates.
- Do not add additional water during the surface finishing as this will cause discoloration and cracking.
- Protect freshly applied material from freezing.
- Do not over work final finish as this can cause surface cracking
- Rebound, slump and overhead layer thickness will be affected by the w/c ratio, type of spraying equipment, presence of reinforcement and air pressure used to convey material to the nozzle. A balance should be achieved to optimise material usage by adjusting water and air pressure and number of passes to achieve thickness build up relevant to the repair size.

## VALUE BASE

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.

## 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.

## 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.

## 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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**Product Data Sheet**  
SikaCem®-133 S Gunite  
February 2020, Version 01.02  
020302030100000008

SikaCem-133SGunite-en-GB-(02-2020)-1-2.pdf