BUILDING TRUST

PRODUCT DATA SHEET

SikaCem®-133 Rapid Gunite

R4 FAST SETTING DRY SPRAYED MICRO REPAIR CONCRETE

PRODUCT DESCRIPTION

SikaCem®-133 Rapid Gunite is a cement based, polymer modified one component fast setting repair mortar containing silica fume and high range water-reducing agents, meeting the requirements of Class R4 of EN 1504-3. Formulated for machine applications using the dry spray process with set accelerators.

USES

- Large volume repairs.
- Bridges.
- Marine structures.
- Tunnels.
- Buildings.
- Fire damaged structures.
- For exterior and interior use.
- In place of R1, R2 and R3 mortars.

CHARACTERISTICS / ADVANTAGES

- One component, ready to use.
- Non silica aggregates.
- Low rebound losses and dust formation during the spraying process.
- Layer thicknesses in one application overhead up to 100mm are possible.
- Rapid strength gain.
- Fast Initial and final set times.

APPROVALS / STANDARDS

Conforms to the requirements of EN 1504-3 R4 Classification.

PRODUCT INFORMATION

Chemical Base	Portland cement, polymer redispersable powder, selected aggregates, silica fume and additives	
Packaging	25 kg bag	
Shelf Life	6 months	
Storage Conditions	Store properly in original unopened, sealed and undamaged packaging in dry and cool conditions	
Appearance / Colour	Grey powder	
Maximum Grain Size	~ 2mm	
Density	Cured mortar density: ~2300 kg/m³	(EN 12190)
Soluble Chloride Ion Content	<0.01	(EN 1015-17)

TECHNICAL INFORMATION

Compressive Strength		(EN 12190)
	1 day	~35MPa
	3 days	~45MPa
	7 days	~50MPa
	28 days	~60MPa
Modulus of Elasticity in Compression	~33 GPa	(EN 13412: 2006)
Flexural Strength	~8-9MPa at 28 days	
Tensile adhesion strength	~2.0MPa	(EN 1542:1999)
Coefficient of Thermal Expansion	13.5 × 10-6/°C	(EN 1770:1998)
Electrical Resistivity	~16 KΩ/cm	(4 point wenner @ 28 days)
Capillary Absorption	~0.36 $kg.m^{-2}.h^{-0.5}$	(EN 13057:2002)
Freeze Thaw De-Icing Salt Resistance	Good resistance with no visible change after 50 cycles	(EN 13687-1:2002)
Reaction to Fire	Euroclass A1	

SYSTEM INFORMATION

System Structure	SikaCem®-133 Rapid Gunite is part of the range of Sika® mortars complying with the relevant part of European Standard EN 1504 and comprising of: **Reinforcement Corrosion Protection:** Sika MonoTop®-610/Sika MonoTop®-1010 for carbonated concrete SikaTop® Armatec® 110 EpoCem® for chloride contaminated concrete **Repair Mortar:** SikaCem®-133 Rapid Gunite **Smoothing Coat / Levelling Mortar / Pore Filler:** Sika MonoTop®-620/Sika MonoTop®-3020 **Anti-Carbonation Concrete Protective Coating:** All Sikagard® Anti- Carbonation protective coatings **Ancillary Products** **Corrosion Management:** Sika FerroGard®-903+ Liquid Corrosion Inhibitor Sika Margel VPI 580 Capsule Corrosion Inhibitor Sika Galvashield® Galvanic Anodes Sika Ebonex® Cathodic Protection Anodes

APPLICATION INFORMATION

Consumption	This depends on the substrate roughness and thickness of layer applied. As a guide, ~2.2 – 2.3 kg/m²/mm.	
Layer Thickness	15 mm min. / 150 mm (Vertical) 100mm (Overhead) max.	
Ambient Air Temperature	+3°C min. / +30°C max.	
Substrate Temperature	+3°C min. / +30°C max.	
Initial set time	~12 mins	(EN 13294)
Final set time	~16 mins *Typical set time @ 20°C*	(EN 13294)

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.

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.

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. Delaminated, 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 SikaCem®-133 Rapid Gunite.
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 waterblasting techniques to a minimum standard of SA 2 (ISO 8501-1). If these techniques are not permissble, 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 EN 1504-10 for specific requirements.

MIXING

SikaCem®-133 Rapid Gunite 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 (minimum finger nail hard). Refer to the System Information above for compatible Sika products and refer to the relevant Product Data Sheet(s) for more detailed information about the reinforcement corrosion product(s).

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 the surface and allow to surface dry to a dark matt appearance.
SikaCem®-133 Rapid Gunite is finished by leaving ‘as shot’ or striking off with a straight edge and closing the surface with a semi stiff damp brush (thereby creating a 'brush finish').
Reference shall be made to EN 1504-10 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 SikaCem®-133 Rapid Gunite 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 EN 1504-10 for specific requirements.

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.

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