BUILDING TRUST

PRODUCT DATA SHEET

SikaCem®-133

MACHINE-APPLIED, POLYMER-MODIFIED, SILICA FUME ENHANCED, CEMENTITIOUS MORTAR

PRODUCT DESCRIPTION

SikaCem®-133 is a high performance, ready-to-use, non-accelerated, cementitious, polymer-modified, silica fume enhanced mortar with a dust control agent. SikaCem®-133 is formulated for machine applications using dry or wet process shotcrete equipment.

USES

SikaCem®-133 is particularly suitable for structural repairs in large area applications; for structures such as bridges, viaducts, retaining walls, parking structures, tunnels, galleries, industrial and residential buildings, piers, off-shore platforms, etc.

- Use on grade, above, and below grade on concrete and mortar.
- Use on vertical, overhead and horizontal surfaces.

CHARACTERISTICS / ADVANTAGES

- One-component, ready to use mortar.
- Excellent adhesion to currently prepared, sound substrates.
- High compressive and flexural strength, rapid strength development.
- Excellent freeze/thaw durability and resistance to deicing salts.
- Tested for application during dynamic load (under traffic conditions).
- Increased density and durability - can be used as a thin overlay for additional protection of reinforcement.
- High resistance to the diffusion of carbon dioxide (carbonation).
- Constant modulus of elasticity in a wide temperature range.
- Formulated to minimize dust formation.
- Low in rebound, extremely economical in use.
- Low water cement ratio, very low shrinkage.
- Can be troweled and screed after application.

PRODUCT INFORMATION

Packaging	55 lb (25 kg) bag	
Appearance / Color	Gray powder	
Shelf Life	12 months from date of production if stored properly in original, unopened and undamaged sealed packaging	
Storage Conditions	Store dry at 40–95 °F (4–35 °C) Condition material to 65–75 °F before using Protect from moisture. If damp, discard material	
Density	137 lb/ft^3 (2.2 kg/l)	(ASTM C-138)

TECHNICAL INFORMATION

Compressive Strength	2 days	4,000 psi (27.6 MPa)	(ASTM C-109) 73 °F (23 °C) 100 % R.H.
	7 days	6,000 psi (41.1 MPa)	
	28 days	8,000 psi (55.2 MPa)	
Modulus of Elasticity in Compression	28 days	$3.5x10^6$ psi (24 GPa)	(ASTM C-469)
Flexural Strength	7 days	1,250 psi (8.6 MPa)	(ASTM C-293) 73 °F (23 °C) 100 % R.H.
	28 days	1,630 psi (11.2 MPa)	
Tensile Strength	7 days	630 psi (4.3 MPa)	(ASTM C-496) 73 °F (23 °C) 100 % R.H.
	28 days	800 psi (5.5 MPa)	
Pull-Out Resistance	28 days	290-580 psi (2.0-4.0 MPa) Substrate failure	(ASTM C-1583)
	* Mortar scrubbed into substrate at 73 °F (23 °C) and 50 % R.H.		
Coefficient of Thermal Expansion	$4.4x10^{-6}$/F ($8x10^{-6}$/C)		(ASTM C-531)
Freeze-Thaw Stability	300 cycles	100 %	(ASTM C-666)
Chloride Ion Diffusion Resistance	28 days	<500 C	(ASTM V-1202 AASHTO T-277)
Lap Shear Strength	µCO2	20,000	(BS EN 1062-6)

APPLICATION INFORMATION

Mixing Ratio	5-6 pts (2.4-2.8 L) per bag		
Coverage	Overhead	0.42 ft^3 (0.01 m^3)	
	Vertical	0.45 ft^3 (0.01 m^3)	
	Horizontal	0.48 ft^3 (0.01 m^3)	
	(Yield in service will vary according to amount of water utilized in the shotcreting process)		
Layer Thickness		**Min.**	**Max.**
	Large areas	1/3" (8 mm)	2" (50 mm)
	Local application	1/4" (6 mm)	6–10" (150–250 mm)
Ambient Air Temperature	> 40 °F (4 °C)		
Substrate Temperature	> 40 °F (4 °C)		

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

- Surface must be clean and sound. Remove all deteriorated concrete, dirt, oil, grease, and other bond-inhibiting materials from the area to be repaired.
- Steel reinforcement must be clean and free from any rust.
- Be sure repair area is not less than 1/4" (6.4 mm) in depth.
- Preparation work should be done by high pressure water blast, scabbler or other appropriate mechanical means to obtain an exposed aggregate surface profile (CSP-6).
- To ensure optimum repair results, the effectiveness of decontamination and preparation should be assessed by a pull-off test.
- Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application.

PRIMING

- Reinforcing steel: Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be high pressure washed with clean water after mechanical cleaning. For priming of reinforcing steel use Sika® Armatec® 110 EpoCem (consult PDS).

- Concrete Substrate: When applying on critical substrates, the use of Sika® Armatec® 110 EpoCem as a bonding agent is advised.

APPLICATION

- Apply SikaCem®-133 mortar by spraying or trowelling for repairing vertical or overhead surfaces.
- Shoot perpendicular (90°) to the surface. This minimizes rebound, creates the smoothest pattern (reduces 'bumps') and properly encases the rebars.
- The velocity of the material is sufficient if, at a distance of 18 to 24" (457 to 609 mm), the material pattern flattens out on contact with the surface and the rebars are encased.
- After applying the material, allow it to stiffen for about 10 minutes before removing bumpy areas with a trowel.
- Before applying the next layer, allow the material to reach initial set. This will take anywhere from 2-4 hours, depending on mix consistency, mix and ambient temperature, wind conditions and humidity.
- Begin and finish a given patch on the same day.

Dry Process

- SikaCem®-133 is applied by conventional dry spray shotcrete equipment.
- Generally, do not use equipment with high rotor capacity.
- Apply SikaCem®-133 in accordance with ACI 506-R85, "Guide to Shotcrete". Important factors to observe during shotcreting are nozzle distance (2–6 ft.), angle to substrate (90 °), and consistency of mortar.
- Immediately after application and before set, mortar consistency should be plastic, like a firm jelly.

Wet Process

- Conventional wet-process spray equipment such as the Mayco ST-45 or C-30HD machine should be used.
- Set up wet-process equipment; then add the water (5-6 pts per bag) directly into mixer.
- Start the mixer in motion and add the SikaCem®-133 mortar while continuing to mix.
- Mix for 3 minutes to uniform consistency.

Natural gun finish

- If a gun-finish is too rough, special finishes may be applied.
- Approximately 5–10 min. after initial set, excess material should be sliced off with a sharp-edged cutting screed. The surface may then be finished to your requirements:
- Broomed for a rough texture
- Wood-floated for a granular texture
- Steel-trowelled for a smooth finish

CURING TREATMENT

- As per ACI recommendations for Portland cement concrete, curing is required.
- Moist cure with wet burlap and polyethylene, a fine mist of water or a water based* compatible curing compound.
- Curing compounds adversely affect the adhesion of following lifts of mortar, leveling mortar or protective coatings.
- Moist curing should commence immediately after finishing.
- Protect freshly applied mortar from direct sunlight, wind, rain and frost.

* Pretesting of curing compound is recommended.

LIMITATIONS

- Do not use solvent-based curing compounds.
- As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential area of contact by coating aluminum bars, rails, posts, etc. with an appropriate epoxy such as Sikadur® Hi-Mod 32.
- Not a vapor barrier.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

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 the exact product data and uses.

ECOLOGY, HEALTH AND SAFETY

Keep container tightly closed. Keep out of reach of children. Not for internal consumption. For industrial use only. For professional use only. For further information and advice regarding transportation, handling, storage and disposal of chemical products, users should refer to the actual Safety Data Sheets containing physical, ecological, toxicological and other safety related data. Read the current actual Safety Data Sheet before using the product. In case of emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

DIRECTIVE 2004/42/CE - LIMITATION OF EMISSIONS OF VOC

0 g/l (EPA method 24)

LEGAL DISCLAIMER

KEEP CONTAINER TIGHTLY CLOSED •KEEP OUT OF REACH OF CHILDREN •NOT FOR INTERNAL CONSUMPTION •FOR INDUSTRIAL USE ONLY •FOR PROFESSIONAL USE ONLY

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SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.** Sale of SIKA products are subject to the Terms and Conditions of Sale which are available at https://usa.sika.com/en/group/SikaCorp/termsandconditions.html or by calling 201-933-8300.

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