

PRODUCT DATA SHEET

SikaEmaco® S 466

(formerly MEmaco S 466)

Pumpable, free flowing, shrinkage compensated micro-concrete for grouting and repair

PRODUCT DESCRIPTION

SikaEmaco® S 466 is a flowable, shrinkage-compensated repair concrete. It is designed for large volume repairs, including structural elements in applications from 25 mm (1 in) to full depth. It has a unique formulation that provides excellent bond, resistance to sulfates and chlorides, high electrical resistivity, low permeability, high-compressive strengths, and protection from corrosion.

WHERE TO USE

SikaEmaco® S 466 precision micro-concrete is used for repair and grouting in various applications such as:

- Interior and exterior
- Large volume structural repairs
- Columns in precast construction
- Casting sections or members where the volumes required are too large for conventional grouts, and too small and inaccessible for normal concreting applications
- Cavities, gaps and recesses
- Re-profiling of damaged concrete members and reprofiling of pile tops using formwork for both pouring and pumping techniques

PRODUCT INFORMATION

Composition / Manufacturing	Portland cement, selected fillers and aggregates, special additives
Packaging	25 kg (55 lb) bag
Appearance / Colour	Grey powder
Shelf Life	12 months minimum from date of production. 3 months for bulk bags.

CHARACTERISTICS / ADVANTAGES

SikaEmaco® S 466 is an easy to use precision microconcrete requiring only the addition of water. It offers the following beneficial properties:

- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Easy to mix
- Low-dusting for added worker comfort and safety
- Only requires the addition of potable water
- High compressive strength
- Excellent freeze/thaw resistance for durability in cold, wet environments
- Abrasion resistant for repairs requiring protection from vehicular traffic
- Flowability makes it ideal for placement by pumping or pouring into congested locations
- Shrinkage compensated, minimizing cracking from drying shrinkage reducing stress at the bond line

APPROVALS / CERTIFICATES

- Ministère des Transports et de la Mobilité Durable du Québec (MTMD) approved
- Meets MTO specification for patching materials

Storage Conditions	Store in original unopened packaging in a cool and dry condition between 4 °C (40 °F) and 32 °C (90 °F). Protect from direct sunlight, heat and moisture.		
Maximum Grain Size	9.5 mm (3/8 in)		

TECHNICAL INFORMATION

Compressive Strength	1 day	17.2 MPa (2500 psi)	(ASTM C109)
	7 days	41.4 MPa (6000 psi)	
	28 days	55.2 MPa (8000 psi)	
Modulus of Elasticity in Compression	40.7 GPa (5.9 x 10 ⁶ psi)		(ASTM C469)
Tensile Strength in Flexure	28 days	5.3 MPa (770 psi)	(ASTM C348)
Shrinkage	0.06 %* <i>*76 x 76 x 254 mm (3 x 3 x 10 in) prisms, air cured</i>		(ASTM C157)
Pull-Off Strength	7 days	1.8 MPa (260 psi)	(ACI 503R) Appendix A
	28 days	2.3 MPa (340 psi)	
Freeze Thaw De-Icing Salt Resistance	2; slight to moderate	50 cycles	(ASTM C672)
Sulfate Resistance	< 0.05 %* <i>*length change @ 6 months</i>	High sulfate resistance	(ASTM C1012)
Chloride Ion Diffusion Resistance	650 Coulombs	Very low	(ASTM C1202) (AASHTO T 277)
Shear Adhesion Strength	7 days	14.8 MPa (2150 psi)	(ASTM C882) (SSD; Scrub coat)
	28 days	22.8 MPa (3300 psi)	
Freeze thaw resistance	97 %	RDM @ 300 cycles	(ASTM C666, Proc A)
Splitting Tensile Strength	1 day	2.1 MPa (300 psi)	(ASTM C496)
	7 days	3.8 MPa (550 psi)	
	28 days	4.8 MPa (700 psi)	

APPLICATION INFORMATION

Mixing Ratio	1.5 - 2.3 L (0.40 - 0.60 US gal.) per 25 kg (55 lb) bag		
Yield	12.2 L (0.43 ft ³) per 25 kg (55 lb) bag		
Layer Thickness	200 mm (8 in) neat. For deeper applications, extend with appropriate ASTM C33-compliant aggregate.		
Ambient Air Temperature	4 °C (40 °F) min. - 32 °C (90 °F) max		
Substrate Temperature	4 °C (40 °F) min. - 32 °C (90 °F) max		
Pot Life	~ 90 min @ 23 °C (73 °F)		
Initial Set Time	4 hours		(ASTM C266)
Final Set Time	6 hours		(ASTM C266)
Fresh Mortar Density	2275 kg/m ³ (142 lb/ft ³)		

BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

LIMITATIONS

- Do not mix partial bags.
- Do not add plasticizers, accelerators, retarders, or other additives.
- Vibrating is recommended for larger placements.
- For professional use only; not for sale to or use by the general public.
- Proper application is the responsibility of the user. Field visits by Sika® personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

ENVIRONMENT, HEALTH & 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.

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

Concrete:

1. Substrate must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of 25 mm (1 in).
3. Refer to current ICRI Guideline no. 310.2R for surface prep requirements to permit proper bond.

The application of a suitable bonding agent, such as Sikadur®-32 Hi-Mod, or SikaTop® Armatec®-110 EpoCem®, will improve adhesion on large areas or where particularly dense concrete substrates are involved.

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 techniques or high pressure water-blasting. Embedded steel reinforcing should be treated with a suitable anticorrosion coating such as SikaTop® Armatec®-110 EpoCem® or SikaEmaco®-8100 AP.

MIXING

1. Precondition material to 21 ± 3 °C (70 ± 5 °F) before mixing.
2. Add 1.5–2.3 L (0.40–0.60 US gal.) of potable water for each 25 kg (55 lb) bag of SikaEmaco® S 466. Mix mechanically using a slow speed drill (400–600 rpm) and a Jiffy paddle or mix in an appropriately sized mortar mixer.
3. Pour approximately 90 % of the mix water into the mixing container, then charge the mixer with the SikaEmaco® S 466. Add the remaining mix water as required to obtain desired consistency. Add enough water to the mixing container to obtain a slump of 100–150 mm (4–6 in), approximately 2.3 L (0.60 US gal.) per bag. Maximum recommended slump is 180 mm (7 in).
4. Mix until a homogeneous consistency is achieved, approximately 3–5 minutes. Do not mix longer than 5 minutes.
5. For applications greater than 200 mm (8 in), add up to 11.3 kg (25 lb) of 13–19 mm (1/2–3/4 in) rounded, high-density, washed, SSD coarse aggregate for each 25 kg (55 lb) of SikaEmaco® S 466. Contact Sika® Technical Service for questions regarding appropriate aggregate for extension.
6. Aggregate must comply with the requirements of ASTM C33.

APPLICATION

FORMED APPLICATIONS

1. Build forms in accordance with ACI 347R. Keep the unrestrained surface area of the repair to a minimum.
2. Saturate the prepared concrete substrate by filling the prepared formwork with clean water 8 hours before placement.
3. Immediately before the placement of SikaEmaco® S 466, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.
4. In jobsite circumstances where the formwork cannot be filled with water to achieve an SSD surface, the prepared concrete substrates must be thoroughly hosed down with clean water to achieve an equal level of saturation. Apply the repair material with sufficient pressure to ensure intimate contact with the substrate.
5. Immediately after mixing, pump or pour the SikaEmaco® S 466 into the formed area.
6. Follow ACI 305 and 306 for hot or cold weather guidelines.

HORIZONTAL APPLICATIONS

1. After removing all standing water, thoroughly scrub a thin layer of bond coat into the saturated surface with a stiff-bristled broom or brush. Do not dilute the bond coat with water. Do not apply more of this bond coat than can be covered with mortar before the bond coat dries. Do not retemper the bond coat.
2. Immediately place the repair mortar from one side of the prepared area to the other. Work the material firmly into the bottom and sides of the patch to ensure good bond. Level the SikaEmaco® S 466 and screed it to the elevation of the existing concrete. Apply the appropriate finish.
3. Finish the completed repair, as required, taking care not to overwork the surface.
4. A maximum of 90 minutes should be allowed to mix, place, and finish SikaEmaco® S 466 at 21 °C (70 °F). Follow ACI 305 and 306 for hot or cold weather.

CURING TREATMENT

1. Leave the formwork in place until the compressive strength reaches 17.2 MPa (2500 psi) or a strength specified by the engineer.
2. Cure with an approved curing compound compliant with ASTM C309 or preferably ASTM C1315. If the repair area will receive a coating, wet curing is recommended.

CLEAN UP

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

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 exact product data and uses.

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 recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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 or may be downloaded from our website at: www.sika.ca

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Product Data Sheet

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