



PRODUCT DATA SHEET

SikaEmaco® 440

(formerly MEmaco S 440)

Low-dust, pourable and pumpable, pre-exetended, self-consolidating repair mortar

PRODUCT DESCRIPTION

SikaEmaco® 440 is a low-dust, one-component, shrinkage-compensated, self-consolidating repair mortar. It is designed for large volume repairs, including structural elements in applications from 38 mm (1.5 in) to full depth.

WHERE TO USE

- Interior and exterior
- Large-volume structural repairs
- Repair or replacement of concrete elements
- Formed horizontal, vertical, and overhead repairs

Substrates

- Concrete

CHARACTERISTICS / ADVANTAGES

- The dual expansion system compensates for shrinkage in plastic and hardened states
- Low-dusting for added worker comfort and safety
- High early strength allows early form removal
- Low permeability protects against carbon dioxide and chloride intrusion
- Excellent freeze/thaw resistance for durability in cold, wet environments
- Flowability makes it ideal for placement by pumping or pouring into congested locations
- Self-consolidation minimizes honeycombing without vibration

TECHNICAL INFORMATION

Compressive Strength	51 mm (2 in) cubes		
	1 day	17.2 MPa (2500 psi)	(ASTM C109)
	7 days	34.5 MPa (5000 psi)	
	28 days	41.4 MPa (6000 psi)	
	76 mm x 152 mm (3 in x 6 in) cylinders		
	28 days	34.5 MPa (5000 psi)	(ASTM C39)
Tensile Strength in Flexure	28 days	7.9 MPa (1150 psi)	(ASTM C348)
Shear Strength	28 days	20.7 MPa (3000 psi)	(ASTM C882, (modified ¹))

Shrinkage	28 days	0.035 % (350 μ strain)	(ASTM C157, (unmodified))
	21 days	0.0611 % (611 μ strain)	(ASTM C157, (modified))
Coefficient of Thermal Expansion	9.9 cm/cm/°C x 10 ⁻⁶ (5.5 in/in/°F x 10 ⁻⁶)		(CRD C39)
Design Considerations	Dust reduction for SikaEmaco® 440 vs. control	70 %	(DIN55992-2)
	Potential Alkali-Silica Reactivity	< 0.10 % Aggregate (Innocuous expansion)	(ASTM C1260)
Freeze thaw resistance	100 % RDM	(ASTM C666)	
Splitting Tensile Strength	28 days	3.4 MPa (500 psi)	(ASTM C496)

PRODUCT INFORMATION

Composition / Manufacturing	Proprietary blend of cement, graded aggregate, shrinkage-compensating agents, and additives		
Packaging	25 kg (55 lb) polyethylene-lined bags		
Shelf Life	1 year when properly stored		
Storage Conditions	Store in unopened containers in cool, clean, dry conditions		
Density	Fresh wet density 2,275 kg/m ³ (142 lb/ft ³) (ASTM C138)		

APPLICATION INFORMATION

Yield	Approx. 0.012 m ³ (0.43 ft ³) per 25 kg (55 lb) bag		
Flowability	Slump Flow*	635 mm (25 in)	(ASTM C1611)
	Visual Stability Index	0 (Highly Stable - No Bleeding)	
	J-Ring Slump Flow*	625 mm (24.5 in)	(ASTM C1621)
	Passing Ability	10 mm (0.5 in) No visible blocking	
*2.6 L (0.68 US gal) water per 25 kg (55 lb) bag, with minimum water addition			

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

SikaEmaco® 440 is designed 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.

- Minimum ambient, surface, and material temperature is 4 °C (40 °F) and rising.
- Do not mix for longer than five (5) minutes.
- Minimum application thickness is 38 mm (1.5 in). When the depth is less than 38 mm (1.5 in), use SikaEmaco® 440 MC.
- Do not mix partial bags.
- Do not use to make overlay repairs where the surface

of fresh, wet SikaEmaco® 440 will remain unrestrained during cure.

- Do not vibrate
- Do not add plasticizers, accelerators, retarders, or other additives.

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

Concrete must be structurally sound and fully cured (28 days). Saw cut the perimeter of the area being repaired into a square with a minimum depth of 13 mm (½ in). Refer to current ICRI Guideline no. 310.2R for surface preparation requirements to permit proper bond.

Reinforcing Steel

Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R. For additional protection from future corrosion, coat the prepared reinforcing steel with SikaTop® Armatech® 110 EpoCem®.

MIXING

Ensure that SikaEmaco® 440 is thoroughly mixed; a forced-action mixer is essential. Mixing in a suitably sized container using an appropriate paddle with a slow-speed (400–500 rpm) heavy-duty drill is acceptable. Do not use free-fall mixers.

Measure 2.6 L (0.68 US gal) of potable water and pour 2.3 L (0.61 US gal) into the mixer. With the machine in operation, add one (1) full 25 kg (55 lb) bag of SikaEmaco® 440 and mix for one (1) minute before adding the rest of the water. Always add powder to the water. The quantities mixed may be scaled up as required. Mix for an additional 2–3 minutes to obtain a smooth consistency. When using the drill-and-paddle mixing method, place the complete 2.6 L (0.68 US gal) of water in the mixing drum. With the paddle rotating, add one (1) full 25 kg (55 lb) bag of SikaEmaco® 440 and mix for three (3) minutes to reach a smooth, even consistency.

Note: Depending on the ambient temperatures and the desired consistency, additional water may be added. The total water content should not exceed 2.7 L (0.71 US gal) per 25 kg (55 lb) bag.

APPLICATION

Build forms in accordance with ACI 347R. Keep the unrestrained surface area of the repair to a minimum. Saturate the prepared concrete substrate by filling the prepared formwork with clean water 24 hours before placement. Immediately before the placement of SikaEmaco® 440, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining. 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. A long open-time bonding agent such as SikaEmaco® P 124 may be used in place of a saturated substrate. In such a case, place the SikaEmaco® 440 before the bonding agent becomes tack-free. Immediately after mixing, pump or pour the SikaEmaco® 440 into the formed area. The material does not require vibrating. The recommended application range of SikaEmaco® 440 is from 4 to 29 °C (40 to 85 °F). Follow ACI 305 and 306 for hot or cold weather guidelines.

CURING TREATMENT

Leave the formwork in place until the compressive strength reaches 17.2 MPa (2500 psi) or a strength specified by the engineer. 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.

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

Product Data Sheet

SikaEmaco® 440

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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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