BUILDING TRUST

PRODUCT DATA SHEET

SikaEmaco® T 1100 TIX

(formerly MEmaco T 1100TIX)

Rapid-setting and hardening, extra-high-strength, shrinkage-compensated, thixotropic traffic repair mortar

PRODUCT DESCRIPTION

SikaEmaco® T 1100 TIX is a one-part, fast-setting and fast-hardening thixotropic repair and bedding mortar. It meets the requirements of class R4 in accordance with EN 1504-3. It is ready-to-use, has rapid strength gain even at sub-zero temperatures, very good durability, and very low drying shrinkage.
When mixed with water, SikaEmaco® T 1100 TIX forms a plastic or thixotropic mortar which can be easily applied in a layer thickness of 10 mm to 150 mm.

USES

SikaEmaco® T 1100 TIX is used for:
- Bedding small to medium manhole frames
- Bedding curb stones and pavement stones
- Horizontal patch repair areas
- Inclined patching areas
- Cold conditions, including cold store rooms
- Situations where very short traffic disruption periods are required
- Concrete exposure classes XC 1-4, XF 1-4, XD 1-3, XS 1-3 and XA 1-2 as described in EN 206

SikaEmaco® T 1100 TIX is used for interior and exterior applications.
Please note:
- The Product may only be used by experienced professionals.

CHARACTERISTICS / ADVANTAGES

- Ultra-rapid strength build-up, can be opened to all traffic after just 2 hours at +20 °C
- Easy to mix and apply
- Possibility to increase layer thickness by adding aggregate
- Can be applied in sub-zero temperatures
- Very good early and final strength
- Very good adhesion to concrete and steel
- Very good durability
- Very low shrinkage
- Minimised cracking due to constrained shrinkage by PAN fibres
- Very good freeze-thaw de-icing salt resistance
- Very good reinforcement protection due to very low water absorption and good carbonation resistance
- Rough surface finish provides very good skid resistance, even in wet conditions
- Good resistance to hydrocarbon oils

ENVIRONMENTAL INFORMATION

- Environmental Product Declaration (EPD) in accordance with EN 15804. EPD independently verified by Institut für Bauen und Umwelt e.V. (IBU)

APPROVALS / STANDARDS

- CE marking and declaration of performance based on EN 1504-3:2005 Products and systems for the protection and repair of concrete structures — Structural and non-structural repair

PRODUCT INFORMATION

Chemical Base	Portland cement, hydraulic binders, well-graded sands, selected polyacrylonitryl (PAN) fibres, and special additives

Packaging	Standard bag	25 kg	
	Refer to the current price list for available packaging variations.		
Colour	Grey		
Shelf Life	Refer to product packaging.		
Storage Conditions	The Product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5 °C and +35 °C. Always refer to the packaging. Refer to the current Safety Data Sheet for information on safe handling and storage.		
Maximum Grain Size	4.0 mm		
Soluble Chloride Ion Content	≤ 0.05 %		(EN 1015-17)
Colour	Powder		

TECHNICAL INFORMATION

Compressive Strength (EN 12190)

Time	At +20 °C[1)]	At +5 °C[2)]	At -5 °C[3)]
2 hours	≥ 20 N/mm²	–	–
3 hours	–	≥ 10 N/mm²	≥ 8 N/mm²
4 hours	≥ 30 N/mm²	≥ 15 N/mm²	≥ 12 N/mm²
1 day	≥ 40 N/mm²	≥ 40 N/mm²	≥ 40 N/mm²
7 days	≥ 70 N/mm²	≥ 65 N/mm²	≥ 65 N/mm²
28 days	≥ 80 N/mm²	≥ 80 N/mm²	≥ 80 N/mm²

[1)] Curing, water and powder temperature: +20 °C
[2)] Curing, water and powder temperature: +5 °C
[3)] Curing at -5°C; water and powder temperature: +20 °C

Modulus of Elasticity in Compression	35,000 N/mm²		(EN 13412)
Flexural Strength	2 hours	≥ 4 N/mm²	(EN 196-1)
	4 hours	≥ 5 N/mm²	
	1 day	≥ 6 N/mm²	
	7 days	≥ 7 N/mm²	
	28 days	≥ 8 N/mm²	
Shrinkage	28 days	≤ 0.3 mm/m	(EN 12617-4)
Tensile adhesion strength	28 days	≥ 3.0 N/mm²	(EN 1542)
Reaction to Fire	Class A1		(EN 13501-1)
Freeze Thaw De-Icing Salt Resistance	Adhesion to concrete after freeze-thaw (50 cycles with salt)	≥ 3.0 N/mm²	(EN 13687-1)
Capillary Absorption	≤ 0.5 kg·m^{-2}·h$^{-0.5}$		(EN 13057)
Carbonation Resistance	dk ≤ control concrete MC (0.45)		(EN 13295)
Service Temperature	Maximum	+80 °C	
	Minimum	-30 °C	
Ring test	Coutinho ring	No cracking after 180 days	

APPLICATION INFORMATION

Mixing Ratio	Thixotropic consistency	3.1–3.6 L water per 25 kg bag
Consumption	Approx. 1950 kg powder is needed to prepare 1 m³ of fresh mortar. Note: Consumption data is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply the Product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.	
Yield	Fresh material per standard bag	12.9 L
	Note: Consumption data is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply the Product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.	
Layer Thickness	Maximum	150 mm
	Minimum	10 mm
Product Temperature	Maximum	+30 °C
	Minimum	+5 °C
Ambient Air Temperature	Maximum	+35 °C
	Minimum	-5 °C
Substrate Temperature	Maximum	+30 °C
	Minimum	0 °C
Pot Life	At +20 °C	15 minutes
	Pot life depends on temperature Note: Pot life will be shorter at higher temperatures. Pot life will be longer at lower temperatures.	
Applied Product Ready for Use	Open to light traffic (at +20 °C)	60 minutes
	Open to heavy traffic (at +20 °C)	120 minutes
	Note: Times are approximate and will be affected by changing ambient conditions, particularly temperature and relative humidity.	
Fresh mortar density	Approx. 2.2 kg/L	

VALUE BASE

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

ECOLOGY, HEALTH AND SAFETY

Local safety regulations must be observed and it advisable to wear PPI when working with this product with particular attention paid to cutting and handling. Transportation Class: The product is not classified as hazardous good for transport. Disposal: The material is recyclable. Disposal must be according to local regulations. Please contact your local Sika sales organisation for more information.

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

CONCRETE
1. Clean the substrate thoroughly so it is free from dust, loose material, surface contamination and material which reduces adhesion, prevents suction or wetting by the repair materials.
2. Remove delaminated, weak, damaged and deteriorated concrete, and where necessary, sound concrete. Remove using mechanical hand-held tools, high or ultra-high-pressure water blasting equipment.
3. Remove sufficient concrete from around corroded reinforcement to allow cleaning, application of a corrosion protection coating (where required) and compaction of the concrete repair mortar.
4. Prepare repair surface areas in simple square or rectangular layouts to avoid shrinkage stress concentrations and cracking while the repair material cures. This can also avoid structural stress concentrations from thermal movement and loading during the service life.

SURFACE ROUGHENING
1. Roughen the surface using mechanical tools such as a chisel or scarifier, or using grit blasting or high-pressure water blasting equipment.

Aggregate is clearly visible on the surface of the concrete structure after surface preparation.

STEEL REINFORCEMENT
1. Remove rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion.
2. Prepare surfaces to bright steel, Sa 2 (ISO 8501-1), using abrasive blast cleaning or high-pressure water blasting equipment.

REPLACEMENT OF STEEL REINFORCEMENT
1. Replace heavily damaged rebar that no longer fulfils safety or structural requirements.
2. Ensure the distance between the rebar and the surface is at least 2 cm.

PRE-WETTING

Proper pre-wetting prevents the substrate from absorbing water from the mortar.

Preconditions

The water absorbency of the substrate is known and the pre-wetting has been scheduled accordingly.
1. Saturate the substrate with clean, low-pressure water or a wet sponge up to 24 hours before application.
2. Constantly pre-wet the substrate for at least 2 hours before application.
3. Ensure that all pores and pits are thoroughly wet.
4. Just before application, remove excess surface water using a clean sponge or oil-free pressurised air.

The substrate is saturated-surface-dry (SSD): it has a dark matt appearance without standing water or glistening, and surface pores and pits do not contain water.

DEFROSTING

Although the Product can be applied when the ambient air temperature is below 0 °C, the substrate temperature must be above 0 °C. Refer to the Application information section for the precise temperature ranges.
1. Defrost frozen substrates, including metal parts such as steel reinforcement and manhole frames.
2. Keep the temperature uniform during application and hardening.

MIXING

IMPORTANT

Risk of reduced strength gain and impaired physical properties in cold weather

Take the following measures in cold weather:
1. Store bags in a warm environment.
2. Use warm mixing water.

IMPORTANT

Risk of cracking and impaired physical properties in hot weather

Take the following measures in hot weather:
1. Store bags in a cool environment.
2. Use cold mixing water to assist with controlling the exothermic reaction.

ELECTRIC SINGLE OR DOUBLE-PADDLE MIXER (SMALL TO MEDIUM VOLUMES) OR FORCED-ACTION MIXER (LARGE VOLUMES)

Preconditions

The bags of SikaEmaco® T 1100 TIX are full, unopened and undamaged.
1. Mix only as much material as can be used within its pot life.
2. Pour the recommended quantity of clean water for the consistency required into a suitable mixing container.
3. Stir the water slowly (max. 400 rpm).
4. Slowly and continuously add two-thirds of the bag of SikaEmaco® T 1100 TIX.
5. Mix for 1 minute.
6. Add the rest of the bag of SikaEmaco® T 1100 TIX and mix for a total time of 3–4 minutes.
7. Add more water as required, up to the maximum specified, and mix.

The mixture is lump-free and homogenous.

ADDITION OF AGGREGATE

For applications over 150 mm, add up to 30 % clean, well-graded aggregate. Select aggregates with the following features:
- Non-reactive
- Rounded, clean, well-graded
- 4–8 mm or 8–16 mm depending on the layer thickness

1. Use up to 30 % coarse aggregate by weight of SikaEmaco® T 1100 TIX, for example, up to 7.5 kg aggregate for a 25 kg bag of SikaEmaco® T 1100 TIX.
2. Add the aggregate to the mixing container after adding the water and powder.

Do not add cement or any other materials which may affect the properties of the Product.

APPLICATION

APPLICATION AS REPAIR MORTAR
Preconditions
The ambient air temperature is not expected to fall below -5 °C within 24 hours of application.

1. Mix a bonding slurry of diluted SikaEmaco® T 1100 TIX. Apply it with a brush, working it into the concrete substrate.
2. Apply the mixed SikaEmaco® T 1100 TIX wet-on-wet on to the bonding slurry.
3. Spread evenly to the required layer thickness.
4. Compact using a trowel. Do not use vibrating equipment.
5. Level the surface using a straightedge.
6. Rub down the surface with a wooden float.
7. Smooth the surface with a finishing trowel.
8. Do not add water or fresh mortar to a mortar mix which has already begun to set.

APPLICATION AS BEDDING MORTAR
Preconditions
The ambient air temperature is not expected to fall below -5 °C within 24 hours of application.

1. Mix a bonding slurry of diluted SikaEmaco® T 1100 TIX. Apply it with a brush, working it into the concrete substrate.
2. Place the mixed SikaEmaco® T 1100 TIX wet-on-wet, overfilling to allow for compaction.
3. Gently lower the manhole frame, curb or pavement stone into the fresh mortar and set to the required level.
4. Ensure full adhesion (no spot-application).
5. Smooth the surface with a finishing trowel.
6. Do not add water or fresh mortar to a mortar mix which has already begun to set.

CURING TREATMENT

The Product is self-curing. Do not wet-cure.
Protect from wind, rain, frost, and direct sunlight during curing.
When working at sub-zero temperatures, cover the Product with insulation materials or dry cloths until sufficiently hardened, preferably for 24 hours or until the area is to be opened for traffic.

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use. Hardened material can only 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 the 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 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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