STABILCEM T

One-component pre-blended shrinkage-compensated thixotropic mortar for anchoring tie rods and bolts in all types of substrates by injection





CE EN 1504-6

IN COMPLIANCE WITH EUROPEAN STANDARD EN 1504-6 MAPEI ANCHORING STEEL REINFORCEMENT BARS

WHERE TO USE

· Anchoring tie rods and bolts in tunnels.
· Filling cavities.
· Rigid sealing of structural joints.

Some application examples

· Casting iron in riveted joints of any length in tunnels, also in the presence of water and/or fractured and unstable rock masses.
· Anchoring reinforcement steel rods in tunnels.
· Anchoring structural bars in concrete elements.
· Filling cavities between rock and concrete coverings.
· Filling and sealing rigid structural joints in prefabricated structures.

TECHNICAL CHARACTERISTICS

Stabilcem T is a one-component pre-blended chloride-free injection mortar composed of high-strength cements, micro-silica fume, expansive agents, fine-graded aggregates in granulometric curve and special additives formulated by MAPEI Research & Development laboratories. After mixing with water **Stabilcem T** acquires a thixotropic consistency and can be easily applied by injection on horizontal, inclined or overhead sections without slumping or bleeding.Thanks to its rheological properties and the absence of bleeding, **Stabilcem T** can penetrate through morphologically difficult grounds, completely filling very limited spaces.

Stabilcem T remains workable for approximately 1.5 h at +20°C, therefore users can easily manage sudden interruptions that can occur on a building site. **Stabilcem T** hardens without shrinkage and thanks to its remarkable bonding to rock, concrete and steel, it represents an effective solution for anchoring bolts and tie rods during consolidation, even if they undergo considerable stress.

Stabilcem T meets all the main criteria for the EN 1504-9 standards ("*Products and systems for the protection and repair of concrete structures: definitions, requirements, quality control and conformity assessment. General principles for the use of products and systems*") and the minimum requirements for EN 1504-6 ("*Anchoring of reinforcing steel bar*").

RECOMMENDATIONS

· Do not add cement or additives to **Stabilcem T** mortar.
· Do not use more than the recommended amount of water for the preparation of **Stabilcem T** mortar because the mechanical characteristics could be modified, the expansion values may diminish and bleeding can occur.
· Do not use **Stabilcem T** as a hydraulic binder to prepare concrete, use instead **Stabilcem**

APPLICATION PROCEDURE

Preparation of the substrate

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Before injecting the product, carefully clean the cavity with water or compressed air. This will remove any loose material left in the cavity during drilling. If the substrate is particularly unstable, cleaning could cause subsidence, therefore use compressed air with limited pressure for cleaning.

Preparation of the product

Usually the mixing and placing is carried out with a worm screw pump under continual mixing. In this specific case, in order to ensure that the recommended amount of water is used for the mixture, is to adjust the machine manometer until the water capacity is between 19% and 21% by weight of **Stabilcem T**. If other pumps are used (for example hand pumps, render sprayers, etc.), the mixture must be prepared with a drill equipped with a whisk. Pour 5 litres of water into a clean bucket, while mixing, slowly add 25 kg of **Stabilcem T**. Therefore 100 parts of **Stabilcem T** with 19-21 parts of water (approximately 4.75-5.25 l of water per 25 kg).
Mix for 2-3 minutes until a lump-free and homogeneous paste is obtained. Scrap any unmixed powder off the sides of the bucket and remix for another 2 minutes.
The consistency obtained is usually enough so that the mortar can be pumped. If it is necessary to have a slightly more fluid mixture for the type of equipment used, at this last phase add another 0.5 litre of water. Following the same procedure, if desired, the mixture can also be prepared with a vertical axis mixer for mortar. After mixing, **Stabilcem T** remains workable for approximately 1.5 h at +20°C without needing to add more water.

Applying the product

After having placed the tie rods, pump the mortar applying a pressure relative to the depth and size of the cavity.
In order to direct the mortar correctly into the injection cavity, it is recommended to use flexible rubber tubes that are resistant to high pressure and have a diameter between 25 mm and 50 mm (1-2 inches). After 24 hours, in normal temperature conditions, the anchoring can be tensioned (tighten the bolt completely).

CONSUMPTION

Approximately 1.75 kg of **Stabilcem T** per litre of cavity to be filled 1750 kg/m^3.

PACKAGING

Stabilcem T is available in 25 kg paper bags and in 1000 kg big bags.

STORAGE

Stabilcem T can be stored for 12 months, in original sealed packaging in a sheltered and dry place.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website www.mapei.com.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)	
PRODUCT IDENTITY	
Type:	CC
Consistency:	powder
Colour:	grey
Maximum diameter of aggregate (mm):	0.4
Dry solids content (%):	100
Chloride ions content – minimum requirements ≤ 0.05% according to EN 1015-17 (%):	≤ 0.05
APPLICATION DATA	

Colour of mix:	grey
Mixing ratio:	100 parts of **Stabilcem T** with 19-21 parts of water (approximately 4.75-5.25 l of water per 25 kg)
Mix consistency:	thixotropic
Density of the fresh mortar (kg/m³):	2150
Application temperature:	from +5°C to +40°C
Workability time of mix:	1.5 h at +20°C
Setting time at +20°C (+68°F) EN 196/3 (h):	beginning > 3 / final < 7
Setting time at +5°C (+41°F) EN 196/3 (h):	beginning > 8 / final < 16

FINAL PERFORMANCE (20% mixing water)

Performance characteristic	Test method	Requirements according to EN 1504-6	Product performance
Compressive strength at +20°C (MPa):	EN 12190	> 80% of the value declared by the manufacturer	≥ 20 (after 24 h) ≥ 40 (after 7 days) ≥ 50 (after 28 days)
Mechanical characteristics at +5°C:	EN 12190	Not required	≥ 5 MPa (after 24 h) ≥ 35 MPa (after 7 days) ≥ 45 MPa (after 28 days)
Pull-out strength of the steel rods - movement under a 75 kN load (mm):	EN 1881	≤ 0.6	< 0.6
Reaction to fire:	EN 13501-1	Euroclass	A1

Pull-out strength with a mixture with 21% of mixing water:
Tests were carried out in a newly constructed motorway tunnel, built on steel bars type Fe B 44 K with improved bonding, with a 24 mm diameter and the applied pulling force was equal to 20 m-ton for 7 minutes. The 20 m-ton were achieved progressively in four 5 m-ton phases, increased every 5 minutes. The loss of load at the end of 7 minutes, for the test to be considered valid, must not be more than 3 m-ton.

1 day on a 4.5 m (14,8 ft) bar with improved bonding at +20°C:	10 m-ton	pull out of bars during the III phase of increase
3 days on a 4.5 m (14,8 ft) bar with improved bonding at +20°C:	30 m-ton	breaking of the treaded bolt head
7 days on a 4.5 m (14,8 ft) bar with improved bonding at +20°C:	30 m-ton	breaking of the treaded bolt head
28 days on a 4.5 m (14,8 ft) bar with improved bonding at +20°C:	30 m-ton	breaking of the treaded bolt head

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.
Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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