

STABILCEM

Very fluid, expanding cementitious binder for injection or anchoring slurries, micro-concrete and concrete



WHERE TO USE

- Preparation of precision anchoring slurries for repairing masonry.
- Preparation of high-strength, pumped, shrinkage-compensated concrete.

Some application examples

- Slurry for precision anchoring.
- Filling cavities and cracks in rocks stone and damaged brickwork by pouring or injection.
- Preparing shrinkage-compensated concrete for under foundations.
- Preparing shrinkage-compensated non-segregating concrete and micro-concrete for filling rigid joints.

TECHNICAL CHARACTERISTICS

Stabilcem is a powdered, cement-based binder with special admixtures, that can be used for replacing ordinary cement to prepare high quality slurries, mortars and concrete.

Stabilcem may be used for preparing:

- non-segregating fluid mortars and concrete with a low water-cement ratio;
- concrete with high compressive strength, including after short curing cycles;
- concrete, provided they are carefully cured in moist conditions for the first 2-3 days;
- slurry with no bleeding with no bleeding or shrinkage;
- slurry for precision anchoring.

Stabilcem does not contain metal aggregates.

Slurries prepared with **Stabilcem** comply with the principles defined in EN 1504-9 (*"Products and systems for the protection and repair of concrete structures: definitions, requirements, quality control and evaluation of conformity. General principles for use of products and systems"*), and the minimum requirements of EN 1504-6 (*"Anchoring of reinforcing steel bar"*).

RECOMMENDATIONS

Do not use **Stabilcem** if packaging is damaged.

APPLICATION PROCEDURE

TECHNICAL INFORMATION FOR THE APPLICATION

Composition of mix:

SLURRY
100 kg of **Stabilcem**
32 kg water
MICRO-CONCRETE and **CONCRETE**
See Table N. 1

Application temperature range:

Environmental and substrate temperature from +5°C to +35°C

Preparation of the substrate

When casting with **Stabilcem** binder remove all deteriorated, detaching or contaminated concrete until a rough, sound and resistant substrate is obtained. Remove any previous repair work or coating if not perfectly adhering to the substrate, using suitable tools (mechanical demolishing, hydroscarifying etc.).

Clean concrete from previous scarifying works and clean reinforcing rods from dust, cement laitance, rust, grease, oil, paint and other contaminants through sandblasting and high-pressure water jets. After preparation, the concrete surface to be repaired must be rough, with irregularities at least 5 mm deep and inert fraction exposed to allow correct adhesion of the mortar to the substrate.

Before casting, the substrate must be saturated with water.

When injected into walls to consolidate them, after drilling the holes, wash the internal porosity with plenty of water, starting from the top of the wall, so that all the dust and, loose particles are washed out from the holes below.

This cleaning process must be repeated until all of the internal surfaces are completely clean.

Preparing the mix

- *Injection or anchoring slurries:* Pour into a concrete mixer 6.4 litres of water and, while mixing, add a 20 kg bag of **Stabilcem**. Mix for a few minutes until a fluid lump-free slurry is obtained.
- *Micro-concrete and concrete:* In a concrete mixer, add a suitable amount of water in order to obtain the required consistency, **Stabilcem** and aggregates. Mix until a homogeneous mix is obtained.

Instructions for the preparation of the product for Lab testing samples can be found in the TECHNICAL DATA section.

Application of the mix

- *Injection slurries:* Check that the wall is structurally stable to resist the injection pressure (if not, strengthen the masonry). Inject the **Stabilcem** slurry at low pressure through the injectors installed, starting from the lowest holes until all the cavities are filled.
- *Anchoring slurries:* Pour the slurry prepared with **Stabilcem** into a suitably prepared hole, so that the space between the bar to be anchored and the edges of the hole is of approximately 5 mm.
- *Micro-concrete and concrete:* According to the type of work and the consistency chosen, the product can be applied on a substrate saturated with water in ssd condition (Saturated Surface Dry) either traditionally (by pouring or with a trowel etc.), or using a concrete pump. In order to achieve the best results from the expansive action of **Stabilcem**, the mixture should be applied as quickly as possible. Surfaces that remain exposed after casting must be protected from rapid water evaporation to avoid the formation of superficial microcracks, by spraying water continuously on the fresh concrete and immediately covering the surface with waterproof sheets during the first days of curing, especially in hot and/or windy weather.

CLEANING

Tools used for the preparation and application of slurries, concrete and micro-concrete made with **Stabilcem** can be cleaned with water before setting occurs.

Once hardened cleaning must be carried out by removing the product mechanically.

CONSUMPTION

Slurries for injection or anchoring: approx. 1.5 kg/l of cavity to be filled.

Micro-concrete: 350-550 kg/m³.

Concrete: 400 kg/m³.

PACKAGING

20 kg bags.

STORAGE

Stored in a dry place in unopened packaging **Stabilcem** is stable for at least 12 months.

The special 20 kg vacuum-packed polyethylene bags offer better protection of the product from rainfall.

Some characteristics of the product are heavily influenced by storage conditions. It is advisable to stock the product in a dry and covered area at a temperature between +5°C and +35°C, in its original unopened packaging.

SAFETY INSTRUCTIONS FOR THE 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.

PRODUCT IDENTITY

Consistency:	powder
Colour:	grey
Ion chloride content according to EN 1015-17: (minimum requirement according to EN 1504 \leq 0.05%)	\leq 0.05 %

SLURRY

TECHNICAL INFORMATION FOR THE PREPARATION OF THE PRODUCT

Composition of mix:	100 parts by weight of Stabilcem with 32% water
Preparation of the mix:	Add 3/4 of the total water while mixing and then add gradually the product together with remaining water. Mix under high shear strength for at least 2 minutes until the product is completely blended.
Conditions of curing:	CC (according to Annex A – EN 12190)

CHARACTERISTICS OF FRESH MIX (at +20°C - 50% R.H.)

Performance characteristic	Test method	Requirements EN 447	Product performance
Colour of mix:	-	-	grey
Consistency of mix:	-	-	super fluid
Flow-cone flowability: - after mixing	EN 445 4.3.1	$t_0 \leq 25$	16 seconds
Density of mix:	-	-	2040 kg/m ³
Bleeding after 3 hours:	EN 445 4.3.5	$\leq 0.3 \%$	$\leq 0.3 \%$
Start setting:	EN 196-3	≥ 3 h	≥ 3 h
End of setting:	EN 196-3	≤ 24 h	≤ 24 h
Volume variation after 24 h:	EN 445 4.3.5	between -1% e +5%	between -1% e +5%

FINAL PERFORMANCE

According to curing defined in test methods

Performance characteristic	Test method	Requirements EN 1504-6	Product performance
Compressive strength: - 1 day - 7 days - 28 days	EN 12190	Not required	30 MPa 60 MPa 75 MPa
Flexural strength: - 1 day - 7 days - 28 days	EN 196-1	Not required	4 MPa 7 MPa 11 MPa
Bond strength by pull-off:	EN 1542	≥ 2.0 MPa	> 2.5 MPa
Contrasted expansion (24 hours):	UNI 8147 method A	Not required	> 300 $\mu\text{m/m}$
Pull-out strength of steel rebar – 75 kN load:	EN 1881	≤ 0.6 mm	< 0.6 mm
Pull-out strength of steel rebar – tension of adhesion:	RILEM-CEB- FIP RC6-78	Not required	16 MPa
Reaction to fire:	EN 13501-1	Euroclass	A1

NOTES:

Preparation of test samples: pour mortar in the moulds without settling.

CONCRETE

TECHNICAL INFORMATION FOR THE PREPARATION OF THE PRODUCT

Mixing ratio:	water (max): 200 kg/m ³ Stabilcem : 400 kg/m ³ Gravel 0-15: 1,717 kg/m ³
Preparation of the mix:	Mix using a concrete mixer until the product is completely blended. Conditions of curing, mixing and sample preparation according to EN 12190.

CHARACTERISTICS OF FRESH MIX (at +20°C - 50% R.H.)

Colour of mix:	grey
Consistency class according to EN 12350-2:	S5
Density of mix:	2230 kg/m ³

FINAL PERFORMANCE

According to curing defined in test methods

Performance characteristic	Test method	Product performance
Compressive strength: <ul style="list-style-type: none">- 1 day- 7 days- 28 days	EN 12390-3	22 MPa 38 MPa 52 MPa
Flexural strength: <ul style="list-style-type: none">- 1 day- 7 days- 28 days	EN 12390-5	2.5 MPa 4.5 MPa 5.5 MPa
Compressive modulus of elasticity:	EN 12390-13	30 GPa
Bond strength by pull-off:	EN 1542	> 2.5 MPa
Contrasted expansion (24h):	UNI 8148 method A	> 300 µm/m
Resistance to accelerated carbonation:	EN 13295	Carbonation depth ≤ than reference concrete
Compatibility to freeze-thaw cycles with de-icing salts according to EN 13687-1 measured as adhesion (EN 1542):	EN 13687-1	> 2.5 MPa
Impermeability to water – penetration depth:	EN 12390-8	5 mm
Capillary absorption:	EN 13057	0.20 kg/m²·h^{0.5}
Pull-out strength of steel rebar – tension of adhesion	RILEM-CEB-FIP RC6-78	17 MPa

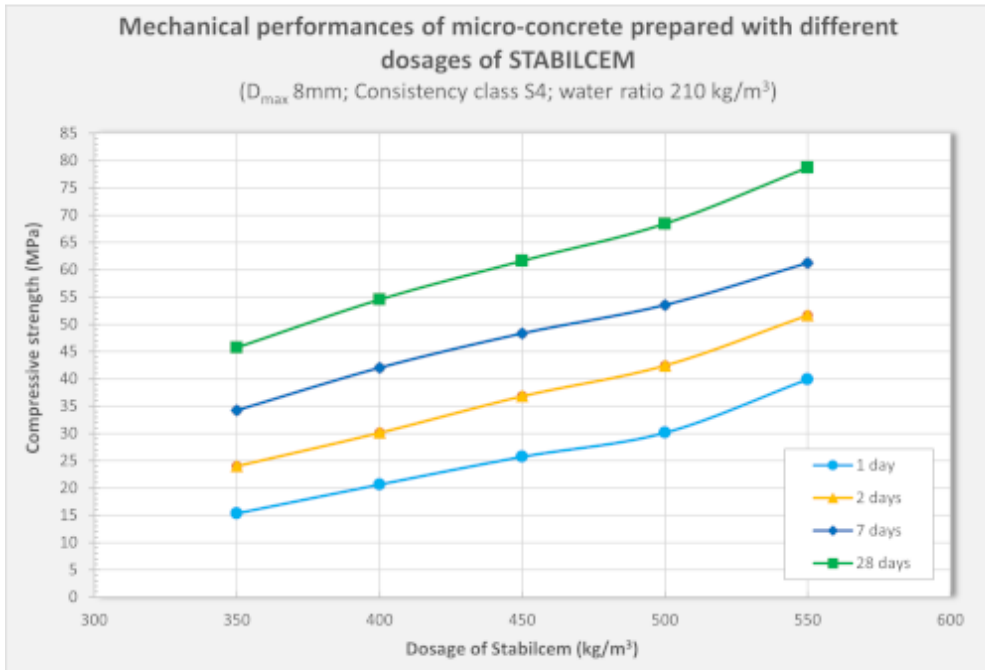


TABLE 1 - Indicative proportions for the composition of mixes with Stabilcem

Max. diameter of aggregate (mm)	15	15	25	25	30	30
Consistency	plastic	fluid	plastic	fluid	plastic	fluid
Stabilcem (kg/m ³)	400	400	350	350	300	300
Sand (kg/m ³)	1032	1008	831	813	862	845
Fine gravel (kg/m ³)	687	672	635	632	670	657
Gravel (kg/m ³)	–	–	369	361	383	374
Water (kg/m ³)	190	205	170	185	160	175

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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