

Stabilcem

**Very fluid expanding
cementitious binder
for the preparation
of injection slurries,
mortars, and concrete**



WHERE TO USE

Preparation of high-strength shrinkage-compensated consolidation slurries, mortars and pumpable concrete.

Some application examples

- Filling cavities and cracks within internally porous concrete, rocks stone and brickwork by pouring or injection.
- Preparing shrinkage-compensated concrete for under pinning.
- Preparing shrinkage-compensated non-segregating concrete for filling rigid joints.

TECHNICAL CHARACTERISTICS

Stabilcem is a powdered cement based binder with special additives to replace cement, to manufacture high quality slurries, mortars and concrete.

Stabilcem may be used to help make:

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

Stabilcem does not contain metal aggregates.

RECOMMENDATIONS

- Do not use **Stabilcem** for precision anchors (use **Mapectill**).
- Do not use **Stabilcem** if packaging is damaged.

APPLICATION PROCEDURE

Preparing the substrate

The substrate must be completely clean and solid. Sections that are unsound or detached, together with dust, cement laitance, and traces of form-release oil must be removed by scrubbing and/or washing with high pressure water-jetting.

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 lots of water, starting from the top of the wall, so that all the dust and small, loose particles are washed out of the holes below.

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

Preparing the mix

• Injection slurries:

Pour into a mechanical mixer 6.4 litres of water and, while mixing, add a 20 kg bag of **Stabilcem**. Mix for a few minutes until a fluid slurry without lumps is obtained.

• Mortar and concrete:

In a concrete mixer add enough water, **Stabilcem** and aggregates to obtain the desired consistency. Mix until a homogeneous mixture is obtained.

Applying the mix

• Injection slurries:

Check that the wall is structurally stable to resist the injection pressure (if not, strengthen the masonry). Inject the slurry at a pressure of 1-2 atmospheres

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

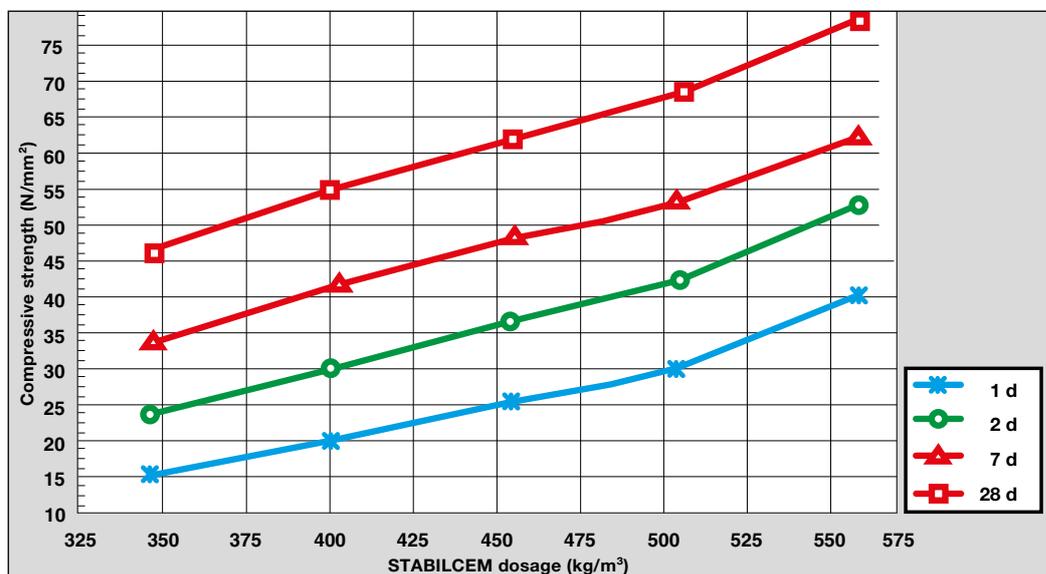
Max. diameter of aggregate (mm)	5	5	15	15	25	25	30	30
Consistency	plastic	fluid	plastic	fluid	plastic	fluid	plastic	fluid
Stabilcem (kg/m ³)	500	500	400	400	350	350	300	300
Sand (kg/m ³)	1596	1557	1032	1008	831	813	862	845
Fine gravel (kg/m ³)	-	-	687	672	635	632	670	657
Gravel (kg/m ³)	-	-	-	-	369	361	383	374
Water (kg/m ³)	205	220	190	205	170	185	160	175

Performance of concrete prepared with Stabilcem in various dosages (350-550 kg/m³)

BINDER		H ₂ O (kg/m ³)	a/ Stabilcem	M.V. (kg/m ³)	Slump (cm)	Compressive strength at +20°C (N/mm ²) after:			
Type	Dosage (kg/m ³)					1 d	2 d	7 d	28 d
Stabilcem	550	213	0.38	2424	21.5	39.9	51.6	61.2	78.7
Stabilcem	500	213	0.42	2417	20.5	30.1	42.2	53.3	68.4
Stabilcem	450	213	0.47	2409	22.5	25.7	36.8	48.3	61.6
Stabilcem	400	211	0.53	2385	21.5	20.6	30.1	42.0	54.5
Stabilcem	350	209	0.60	2357	21.5	15.3	24.0	34.2	45.7

Max. diameter of aggregate: 8 mm

MECHANICAL PERFORMANCE CHARACTERISTICS OF CONCRETE ACCORDING TO THE AMOUNT OF STABILCEM



Max. diameter of aggregate: 8 mm

TECHNICAL DATA (TYPICAL VALUES)

PRODUCT DETAILS

Consistency:	powder
Colour:	grey
Bulk density (kg/l):	0.97
Dry solids content (%):	100

APPLICATION DATA OF THE PRODUCT

Mixing ratio: – injection slurry: – mortar and concrete:	100 parts in weight of Stabilcem with 32 parts water; see Table 1
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FINAL PERFORMANCE

Performance characteristics of mortar according to EN 196/1	Performance of product	
Mix composition:	mixing water	202.5 g
	Stabilcem	450 g
	normalised sand	1,350 g
Consistency:	fluid	
Density of mix (kg/m ³):	2,250	
Compressive strength (MPa):	18 (after 1 day) 42 (after 7 days) 60 (after 28 days)	
Performance characteristics of slurry (32% water)	Performance of product	
Mix composition:	Stabilcem	2000 g
	water	640 g
Flow-cone fluidity according to EN 445: – start: – after 30 minutes:	13 seconds 20 seconds	
Density of mix (kg/m ³):	2,040	
Bleeding according to UNI 8998:	absent	
Setting time of slurry: – start setting: – end of setting:	> 4 hours < 8 hours	
Compressive strength according to EN 12190 (MPa):	30 (after 1 day) 60 (after 7 days) 75 (after 28 days)	
Flexural strength according to EN 196/1 (MPa):	4 (after 1 day) 7 (after 7 days) 8 (after 28 days)	
Direct tensile adhesion to concrete according to EN 1542 (MPa):	> 2.5 (failure of substrate)	
Expansion during plastic phase according to UNI 8996/89) (%):	≥ 0.3	
Contrasted expansion after 1 day according to UNI 8147 method A (µm/m):	> 300	
Pull-out strength of steel rebar according to RILEM-CEB-FIP RC6-78 (MPa):	16	
Performance characteristics of concrete	Performance of product	
Mix composition:	water (max.)	200 kg/m ³
	Stabilcem	400 kg/m ³
	Gravel 0-15 (ssd)	1,717 kg/m ³
Density of mix (kg/m ³):	2,330	
Consistency class according to EN 12350-2:	S5	
Contrasted expansion after 1 day according to UNI 8148 method A (µm/m):	> 300	
Compressive strength according to EN 12390-3 (MPa):	22 (after 1 day) 38 (after 7 days) 52 (after 28 days)	
Flexural strength according to EN 12390-5 (MPa):	2.5 (after 1 day) 4.5 (after 7 days) 5.5 (after 28 days)	
Compressive modulus of elasticity according to UNI 6556 (MPa):	30,000	
Direct tensile adhesion to concrete according to EN 1542 (MPa):	> 2.5 (failure of substrate)	
Resistance to accelerated carbonation according to EN 13295:	meets specifications	
Thermal compatibility to freeze/thaw cycles with de-icing salts according to EN 13687-1 measured as adhesion (EN 1542) (MPa):	> 2.5 (failure of substrate)	
Impermeability to water – penetration depth of water under pressure according to EN 12390-8 (mm):	5	
Capillary absorption according to EN 13057 (kg/m ² · h ^{0.5}):	0.2	
Pull-out strength of steel rebar according to RILEM-CEB-FIP RC6-78 (MPa):	17	

Stabilcem



through the injectors installed, starting from the lowest hole and working up until the cavities are filled.

- **Mortar and concrete:**

According to the type of work and the consistency chosen, placing on a substrate saturated with water can be carried out 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 placed as quickly as possible. Surfaces that remain exposed after casting must be protected from rapid water evaporation to avoid the formation of superficial microcracks.

Cover surface with damp cloth or spray water during the first days of curing.

Cleaning

Tools used for the preparation and placing of slurries, mortars and 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: approx. 1.5 kg/l of cavity to be filled.

Mortars and screeds: 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 product complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH), item 47.

The product is available in special 20 kg vacuum-packed polyethylene bags which may be stored outside for the entire construction phase of the site. Rain has no effect on its characteristics.

SAFETY INSTRUCTIONS FOR THE PREPARATION AND APPLICATION

Stabilcem contains cement that when in contact with sweat or other body fluids produces an irritant alkaline reaction and allergic reactions to those predisposed. It can

cause damage to eyes. While using, wear gloves and protective goggles and take the usual precautions for handling chemicals. If the product comes in contact with the eyes or the skin, wash immediately with plenty of water and seek medical advice.

For further and complete information about a safe use of our product please refer to our latest version of the Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

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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