



Stabilcem

Cementitious binder for manufacturing injection slurries, dimensionally stable self-compacting concrete mixtures to repair concrete structures

SCC



WHERE TO USE

Manufacturing of consolidation slurries, shrinkage-compensated self compacting concrete with different aggregate sizes, high strength, to be placed by pumping or casting without vibration.

Some application examples

- Filling cavities and cracks within internally porous concrete, rocks stone and brickwork by pouring or injection.
- Enlargement of concrete columns by casting in formwork.
- Repairing industrial floorings.
- Repairing bridge superstructures.
- Restoring viaduct beams and frames by pumping or casting in formwork.
- Filling rigid joints.
- Repairing concrete foundations of hydraulic works.

TECHNICAL CHARACTERISTICS

Stabilcem SCC is a powdered binder manufactured according to a formula developed in the MAPEI R&D laboratories based on special hydraulic binders, mineral additives and admixtures to manufacture slurries, high quality self compacting concretes with different aggregate sizes free of segregation and easy to place.

By using **Stabilcem SCC** it is possible to create:

- very fluid mortars and concrete with different aggregate sizes with very low water/binder ratio, which can completely fill a formwork without vibration even in the presence of a large amount of rebar;
- concrete with high compressive strength even at early age;
- shrinkage-compensated concrete with different aggregate sizes provided that a 2-3 days wet curing is carried out;
- slurries with no bleeding or shrinkage.

MAIN ADVANTAGES

By using **Stabilcem SCC** it is possible to:

- reduce costs of repair work;
- shorten construction time;
- remove noise caused by vibration;
- remove health risks for workers caused by compaction;
- reduce risks of air bubble formation caused by vibration;
- remove risks of honeycomb formation;
- avoid that the final result of repair depends on quality of the workmanship;
- improve the durability of repaired concrete elements.



Stabilcem SCC



Slump flow tests on concrete manufactured with Stabilcem SCC



Measuring slump flow of concrete manufactured with Stabilcem SCC

RECOMMENDATIONS

- Do not use **Stabilcem SCC** for precision anchorage (use **Mapefill**).
- Do not use **Stabilcem SCC** if the packaging is damaged.

APPLICATION PROCEDURE

Preparing the substrate

Damaged concrete must be removed completely by accurate manual or mechanical scarifying or by hydro-demolition. Once scarified or hydro-demolished, the surfaces must have a roughness of not less than 5 mm. Rebar must be striped by demolition, free of rust and protected with **Mapefer**, an anti-corrosive cementitious two-component mortar, or with **Mapefer 1K**, one-component mortar, following the application procedure described on the relative data sheets. Before pouring, remove dust and all loose parts from the substrate. The surface 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 slurry

Pour into a mechanical mixer 6 litres of waters and, while missing, add a 20 kg bag of **Stabilcem SCC**. Mix for a few minutes until a fluid slurry without lumps is obtained.

Concrete (1 m³)

In a concrete mixer add enough water, **Stabilcem SCC** and aggregates to obtain the desired consistency. Mix until a homogeneous mixture is obtained. To obtain a compressive strength lower than 65 N/mm², it is necessary to use the following composition: 175 kg/m³ of water, 500 kg/m³ of **Stabilcem SCC** and 1,700 kg/m³ of **Ghiaietto 0-15**.

Applying the mix

Injection slurry

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.

Mortars and concrete

The concrete can be placed either by casting or by pumping, depending on the type of work. Once the concrete has been placed, the exposed surface must be protected from the evaporation of the water in order to avoid surface cracks.

This is particularly recommended when repairing bridge superstructures and industrial flooring.

Cover the surface with polyethylene sheets or spray water over the surface during the first days of the hardening process or

apply **Mapecure E**, a curing agent in water emulsion.

Note: the **Mapecure E** film inhibits other materials from adhering to the treated surfaces. If further work needs to be carried out (for example levelling, painting, waterproofing, asphaltting etc.), the product must be removed mechanically or by high pressure water cleaning.

Cleaning

Tools used for preparing and placing slurries, mortars, and concrete with **Stabilcem SCC** can be cleaned before setting with water. After hardening, cleaning can be carried out only mechanically.

CONSUMPTION

Slurries for injection: approx. 1.5 kg/l of cavity to be filled.
Concrete: 500 kg/m³.

PACKAGING

20 kg bags.

STORAGE

Stored in a dry place in unopened packaging **Stabilcem SCC** 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 PREPARATION AND APPLICATION

Stabilcem SCC contains cement that when in contact with sweat or other body fluids causes irritant alkaline reaction and allergic reactions to those predisposed. It can cause damage to eyes. It is recommended to use protective gloves and goggles and to take the usual precautions for handling chemicals. In case of contact with eyes or skin wash immediately with plenty of water and seek medical attention.

For further and complete information about the safe use of our product please refer to the latest version of our 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.

TECHNICAL DATA (TYPICAL VALUES)

PRODUCT DETAILS

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

FINAL PERFORMANCE

Performance characteristics of mortar according to EN 196/1	Performance of product	
Mix composition:	mixing water	350 g
	Stabilcem SCC	900 g
	normalised sand	2,700 g
Consistency:	fluid	
Density of mix (kg/m ³):	2,250	
Compressive strength (MPa):	20 (after 1 day) 50 (after 7 days) 65 (after 28 days)	

Performance characteristics of slurry (32% water)	Performance of product	
Mix composition:	Stabilcem SCC	4,000 g
	water	1,200 g
Flow-cone fluidity according to EN 445: – start:	< 20 seconds	
– after 30 minutes:	< 30 seconds	
Density of mix (kg/m ³):	2,010	
Setting time of slurry: – start setting:	> 4 hours	
– end of setting:	< 8 hours	

Compressive strength according to EN 12190 (MPa):	> 30 (after 1 day) > 60 (after 7 days) > 80 (after 28 days)
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Flexural strength according to EN 196/1 (MPa):	> 5 (after 1 day) > 6 (after 7 days) > 8 (after 28 days)
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Expansion during plastic phase according to UNI 8996/89) (%):	≥ 0.3
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Contrasted expansion after 1 day according to UNI 8147 method A (µm/m):	> 300
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Pull-out strength of steel rebar according to RILEM-CEB-FIP RC6-78 (MPa):	> 15
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Performance characteristics of concrete

Performance characteristics of concrete	Performance of product	
Mix composition:	water (max.)	175 kg/m ³
	Stabilcem SCC	500 kg/m ³
	Gravel 0-15 (ssd)	1,700 kg/m ³
Density of mix (kg/m ³):	2,375	
Flow test according to UNI 11041 (mm):	> 600	
Contrasted expansion after 1 day according to UNI 8148 method A (µm/m):	> 300	
Compressive strength according to EN 12390-3 (MPa):	> 25 (after 1 day) > 55 (after 7 days) > 65 (after 28 days)	

Flexural strength according to EN 12390-5 (MPa):	> 3 (after 1 day) > 4 (after 7 days) > 5 (after 28 days)
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Compressive modulus of elasticity according to UNI 6556 (MPa):	31,000
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Direct tensile adhesion to concrete according to EN 1542 (MPa):	> 2
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Resistance to accelerated carbonation according to EN 13295:	meets specifications
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Thermal compatibility to freeze/thaw cycles with de-icing salts according to EN 13687-1 measured as adhesion (EN 1542) (MPa):	> 2
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Impermeability to water – penetration depth of water under pressure according to EN 12390-8 (mm):	< 5
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Capillary absorption according to EN 13057 (kg/m ² · h ^{0.5}):	0.2
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Pull-out strength of steel rebar according to RILEM-CEB-FIP RC6-78 (MPa):	> 15
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Resistance to freeze-thaw cycles in the presence of salts - flaking according to EN 12390/9 (g/cm ²):	< reference concrete (class XF4) (*)
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Durability: environmental exposure class to which concretes manufactured with Stabilcem SCC resist according to EN 206-1:	X0 XC1, XC2, XC3, XC4 XD1, XD2, XD3 XS1, XS2, XS3 XF1, XF2, XF3, XF4 (*) XA1
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Repair of damaged precast panel "ribs" with concrete manufactured with Stabilcem SCC.
A - Before repair.
B - After repair.

(*) Stabilcem SCC has been tested according to EN 12390/9 in comparison to reference concrete with a class XF4 mix design according to EN 206-1.

Stabilcem SCC

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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The most up-to-date TDS can be downloaded from our website www.mapei.com.

All relevant references for the product are available upon request and from www.mapei.com



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