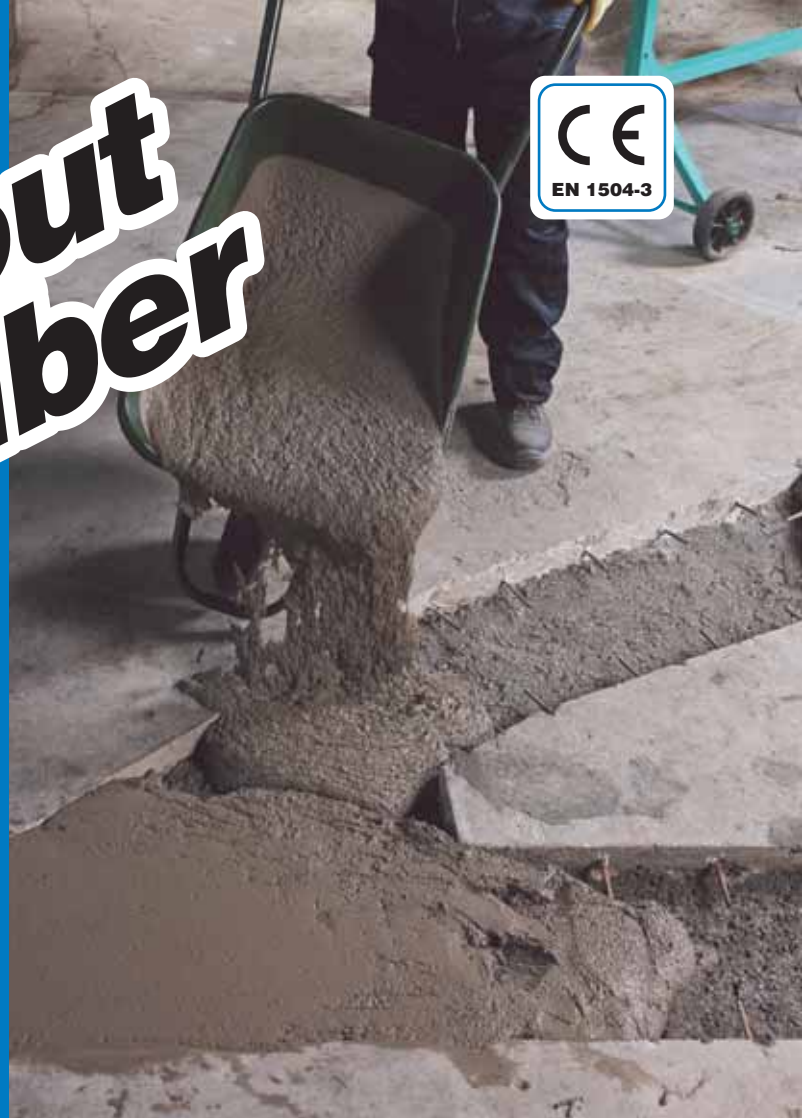




# Mapegrout SV Fiber



**Flowable, compensated-shrinkage, quick-setting and hardening, high-ductility cementitious mortar applied at temperatures as low as -5°C, used in conjunction with stiff steel fibres for repairing concrete**

## WHERE TO USE

Repairing concrete structures where high thicknesses and special conformations of deterioration require the use of a free-flowing mortar, including at low temperatures.

### Some application examples

- Repairing concrete floors (industrial, roads, airports).
- Repairing hydraulic structures (breather channels, canals and forced run-off channels).
- Reintegrating floor slabs after removing deteriorated areas by scarifying.
- Repairs to joints in motorways.
- Rebuilding and levelling off the upper parts of base plinths and reinforced concrete bearing elements on motorway viaducts.
- Repairing lower spigots on pre-compressed beams for viaducts.

## TECHNICAL CHARACTERISTICS

**Mapegrout SV Fiber** is a pre-blended mortar in powder form, made from special hydraulic binders, high-strength cement, selected graded aggregates and special additives, according to a formula developed in MAPEI's own research laboratories.

**Mapegrout SV Fiber** must be mixed with rigid, stiff, hooked fibres in brass-plated steel called **Fibre R38** with the following characteristics:

- length: 30 mm;
- diameter: 0.38 mm;
- tensile strength: > 2.600 MPa.

When **Mapegrout SV Fiber** is mixed with water and 2.5% of **R38 Fibres**, it forms a fluid mortar which is suitable for casting into formwork, without segregation, at a thickness of between 1 and 5 cm. Once hardened, **Mapegrout SV Fiber** has the following characteristics:

- high flexural and compressive strength;
- modulus of elasticity, thermal expansion coefficient and permeability coefficient similar to high quality concrete;
- impermeable to water;
- excellent bond strength to old concrete, if dampened with water before application, and to reinforcement rods, especially if treated beforehand with **Mapefer** or **Mapefer 1K**;
- high resistance to wear due to abrasion or impact.

When **Mapegrout SV Fiber** is mixed with **Fibre R38**, it meets the main requirements of EN 1504-9 (*"Products and systems for protecting and repairing concrete structures: definitions, requirements, quality control and conformity assessment. General principles for the use and application of systems"*), and the minimum requirements for EN 1504-3 (*"Structural and non-structural repairs"*) for R4-class structural mortars.

# Mapecrout SV Fiber



Preparation of the holes to insert the reinforcement rods (dowelling)



Removing dust with a vacuum cleaner



Fixing reinforcement rods for the dowelling in place using Adesilex PG1

The product may also be used without adding **Fibre R38** for repairing structures where the mortar does not need to be highly ductile.

**Mapecrout SV Fiber** is recommended for thicknesses of up to 5 cm. If a thicker layer is required, we recommend adding of 30 to 50% in weight of a suitable size aggregate; refer to the MAPEI Technical Assistance Department for further details.

Thanks to its rapid hardening properties, **Mapecrout SV Fiber** may be stepped on and opened to rubber-wheeled traffic after only 2 hours from application at a temperature of +23°C.

## RECOMMENDATIONS

- Do not apply **Mapecrout SV Fiber** on smooth surfaces. Roughen the surface of the substrate (ridges of at least 5 mm) and, if necessary, add reinforcement rods.
- Do not apply **Mapecrout SV Fiber** on surfaces treated with asphalt or bitumen.
- Do not add cement or admixes to **Mapecrout SV Fiber**.
- Do not add water once the mix has started to set.
- Do not use **Mapecrout SV Fiber** for fixing elements accurately in place (use **Mapecfill** or **Mapecfill R**).
- Do not use **Mapecrout SV Fiber** if the temperature is lower than -5°C or higher than +35°C. If the product has to be applied at a different temperature than the recommended application range, please contact the Technical Assistance Department.
- **Mapecrout SV Fiber** hardens very quickly. Therefore, we recommend preparing quantities of the product which will be applied within 20 minutes of mixing.
- Do not use **Mapecrout SV Fiber** if the packaging is damaged.

## APPLICATION PROCEDURE

### Preparation of the substrate

- remove all deteriorated and loose concrete to form a solid, rough and strong substrate.
- Any areas previously repaired and which are not perfectly bonded must also be removed.
- Remove all dust, rust, cement laitance, grease, oil and old paint from the concrete and reinforcement rods by sandblasting.
- Saturate the substrate with water.
- Before casting, wait until excess surface water has evaporated off. Use compressed air to accelerate this process if required.

### Preparation of the mortar

Pour 3.4-3.6 litres of water into the cement mixer, slowly add **Mapecrout SV Fiber** and 2.5% of **Fibre R38**.

Mix for 2-3 minutes, remove all powder which has stuck to the walls of the mixer and mix again for 2-3 minutes to form a fluid, lump-free mix.

A mortar mixer or drill with a mixer fitting may also be used, according to the quantity of mortar required. Avoid excessive air entrapment while mixing.

**Mapecrout SV Fiber** remains workable for approximately 20 minutes at +20°C.

If there is insufficient boundary support, filling layers of **Mapecrout SV Fiber** thicker than 5 cm must only be applied after inserting reinforcing rods. A layer of at least 2 cm thick must be applied over the rods.

## Application of the mortar

Pour **Mapecrout SV Fiber** in a continuous flow from one side only of the area to be filled, making sure that all air is expelled. Immediately smooth over the surface with a trowel.

After application, **Mapecrout SV Fiber** does not require vibration.

If applied in formwork, water must not be absorbed from the **Mapecrout SV Fiber**. In this case, we recommend treating the formwork with a form-release agent (for example **DMA 1000**).

## Precautions to be taken during and after application

- Only use sacks of **Mapecrout SV Fiber** which have been stored on their original pallets in a covered, well-protected area to prepare the mortar.
- In hot weather, store the product in a cool area and use cold water to prepare the mix.
- In cold weather, store the product in a closed area and protect from frost. Use tepid water to prepare the mortar.
- After application, and particularly in hot or windy weather, we recommend curing **Mapecrout SV Fiber** carefully, to avoid the mixing water evaporating too quickly, otherwise surface cracks may appear due to plastic shrinkage. Spray water on the surface 2-4 hours after applying the mortar and repeat this operation at regular intervals for at least 48 hours.

As an alternative, after tamping the surface of the mortar, apply **Mapecure E** anti-evaporation agent in watery emulsion with a low pressure pump, **Mapecure S** film-forming curing agent for mortar and concrete or **Elastocolor Primer**, high-penetration solvent fixing agent for absorbent surfaces and curing agent for repair mortar.

As with all the best products in this category available on the market, they impede a good bond of successive layers. Therefore, if a smoothing layer or paint is to be applied after, they must be completely removed by sandblasting.

If **Elastocolor Primer** is used to block evaporation, the final protective layer of **Elastocolor Paint** or **Elastocolor Rasante** may be applied directly on the surface without removing it.

## TECHNICAL DATA (typical values)

### PRODUCT IDENTITY

<b>Class according to EN 1504-3:</b>	R4
<b>Type:</b>	CC
<b>Consistency:</b>	powder
<b>Colour:</b>	grey
<b>Density (kg/m³):</b>	1,300
<b>Maximum aggregate size (mm):</b>	2.5
<b>Dry solids content (%):</b>	100
<b>Storage:</b>	12 months in a dry place in its original packaging
<b>Hazard classification according to EC 1999/45:</b>	irritant. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packaging and Safety Data Sheet
<b>Ion chloride content: – minimum requirement 0.05% - according to EN 1015-17 (%):</b>	0.5
<b>Customs class:</b>	3824 50 90

### APPLICATION DATA (at +20°C - 50% R.H.)

<b>Colour of the mix:</b>	grey
<b>Mixing ratio:</b>	100 parts of <b>Mapegrout SV Fiber</b> with 13.5-14.5 parts of water (approx. 3.4-3.6 litres of water per 25 kg sack) and 2.5% of <b>Fibre R38</b> (1 2.5 kg sack of fibres every 4 sacks of <b>Mapegrout SV Fiber</b> )
<b>Consistency of the mix:</b>	fluid
<b>Slump according to EN 13395/1 (mm):</b>	215
<b>Density of the mix (kg/m³):</b>	2,350
<b>pH of the mix:</b>	> 12
<b>Application temperature range:</b>	from -5°C to +35°C
<b>Pot life of the mix:</b>	approx. 20 minutes

### FINAL PERFORMANCE (13.5% mixing water)

Performance characteristics	Test method	Requirements according to EN 1504-3 for R4 class mortar	Product performance			
<b>Compressive strength (MPa):</b>	EN 12190	≥ 45 (after 28 days)	–	–5°C	0°C	20°C
			2 hours	> 10	> 14	> 23
			4 hours	> 15	> 18	> 30
			8 hours	> 18	> 23	> 40
			1 day	> 27	> 32	> 50
			7 days	> 57	> 60	> 65
			28 days	> 70	> 70	> 70
<b>Flexural strength (MPa):</b>	EN 196/1	none	> 15 (after 1 day at +20°C) > 18 (after 7 days at +20°C) > 20 (after 28 days at +20°C)			
<b>Compressive modulus of elasticity (GPa):</b>	EN 13412	≥ 20 (after 28 days)	29 (after 28 days)			
<b>Bond strength on concrete (substrate in MC 0.40 - water/cement ratio = 0.40) according to EN 1766 (MPa):</b>	EN 1542	≥ 2 (after 28 days)	> 2 (after 28 days)			
<b>Crack resistance:</b>	"O Ring Test"	none	no cracks after 180 days			
<b>Resistance to accelerated carbonatation:</b>	EN 13295	carbonatation depth than the reference concrete (MC 0.45 type water/cement ratio = 0.45) according to UNI 1766	meets specifications			
<b>Impermeability to water – penetration depth - (mm):</b>	EN 12390/8	none	< 5			
<b>Capillary absorption (kg/m²·h<sup>0.5</sup>):</b>	EN 13057	0.5	< 0.35			
<b>Slip-resistance of steel reinforcement rods – bonding stress (MPa):</b>	EN 15184	none	> 25			
<b>Thermal compatibility measured as bonding according to EN 1542 (MPa):</b> – freeze-thaw cycles with deicing salts: – storm cycle: – dry thermal cycle:	EN 13687/1 EN 13687/2 EN 13687/4	≥ 2 (after 50 cycles) ≥ 2 (after 30 cycles) ≥ 2 (after 30 cycles)	> 2 > 2 > 2			
<b>Toughness:</b> – load at first cracking: – toughness index:	ASTM C1018	none	> 20 KN I <sub>20</sub> > 20			
<b>Reaction to fire:</b>	Euroclass	according to value declared by manufacturer	A1			



Preparation of the Mapegrout SV Fiber mix



Adding metallic fibres (Fibre R38) to the mix



Consistency of the mix



# Mapegrout SV Fiber



Application of Mapegrout SV Fiber in the area under repair



Levelling off Mapegrout SV Fiber with a straight-edge



Tamping the Mapegrout SV Fiber



Ready for use within a few hours of being applied

## Cleaning

Fresh mortar may be removed from tools used to prepare and apply the mortar with running water. Once hardened, cleaning is much more difficult, and the mortar must be removed mechanically.

## CONSUMPTION

Approximately 20 kg/m<sup>2</sup> per cm of thickness.

## PACKAGING

Mapegrout SV Fiber is supplied as follows:

- 25 kg sacks;
- 15 kg boxes containing 6 sacks of 2.5 kg each of Fibres R38.

## STORAGE

If stored in a dry, covered area in its original packaging, the product remains stable for 12 months.

This products conforms to the requirements of Directive 2003/53/CE.

## SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

The product contains cement which, in contact with perspiration or other body fluids, produces an irritating alkaline reaction and, in those subjects sensitive to such products, an allergic rash. Use protective gloves and goggles.

For further information, please refer to the Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

## WARNING

*While the indications and guidelines contained in this data sheet correspond to the company's knowledge and wide experience, they must be considered, under all circumstances, merely as an indication and subject to confirmation only after long-term, practical applications. Therefore, anybody who undertakes to use this product, must ensure beforehand that it is suitable for the intended application and, in all cases, the user is to be held responsible for any consequences deriving from its use.*

**All relevant references for the product are available upon request and from [www.mapei.com](http://www.mapei.com)**