

MAPEFILL SP

Premium super flow non-shrink cementitious grout



WHERE TO USE

For precision anchoring of machinery and metallic structures.

Some application examples

- Anchoring of mechanical equipment.
- Anchorage of metallic carpentry.
- Filling of rigid joints between elements in concrete and precast concrete structures.
- Execution of underpinning.
- Pressure grouting of concrete structures.
- Grouting of machine baseplates, bridge bearings.

TECHNICAL CHARACTERISTICS

Mapecfill SP is a preblended powdered grout composed of high strength cement, graded 1 mm aggregates and special additives with dual shrinkage-compensating expansive agents formulated by MAPEI research laboratories. When mixed with water **Mapecfill SP** is transformed into a very highly fluid, cohesive grout that is able to fill small and congested spaces.

Mapecfill SP, due to its expansive agents, is characterized by a total absence of shrinkage in both its plastic phase and its hardened phase and develops very high early flexural and compressive strengths.

Mapecfill SP also has the following qualities:

- excellent impermeability to water;
- excellent adhesion to steel and concrete;
- excellent resistance to dynamic mechanical stress;
- modulus of elasticity and thermal expansion coefficient similar to those of high quality concrete;

Mapecfill SP meets all the main requirements defined by EN 1504-9 (*"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 claimed by EN 1504-6 (*"Anchoring steel reinforcement"*).

RECOMMENDATIONS

- Do not add cement or additives to **Mapecfill SP**.
- Do not add water when the mix has started to set.

- Do not use **Mapefill SP** if the bag is damaged or has already been opened.
- Do not apply **Mapefill SP** at temperatures below +5°C.

APPLICATION PROCEDURE

TECHNICAL INFORMATION FOR THE APPLICATION

Mixing ratio:

▪ pumpable to pourable mix:	25 kg of Mapefill SP with 3.75 – 4.25 litres of water
▪ pourable to flowable mix:	25 kg of Mapefill SP with 4.25 – 4.75 litres of water
Application temperature range:	Surrounding and substrate temperature from +5°C to +40°C
Pot life of mix:	Approx. 1 hour (at +20°C)

Preparing the substrate

- Remove all deteriorated concrete down to sound substrate.
- Scarify the surface and eliminate completely dust, oil, grease, debris and laitance.
- Soak the sides of the cavity to be filled with water. Before pouring, remove all excess water from the cavity. To remove unabsorbed water, use compressed air if necessary.

Preparing the grout

Pour up to 80% of the required water into a clean container and slowly add **Mapefill SP** powder while stirring continuously. Add the remaining water as necessary to achieve the desired mix. Mix for 1 - 2 minutes, remove from the sides of the container any powder that is not mixed in; remix for another 2 - 3 minutes until a fluid homogeneous paste is obtained.

According to the quantities to be prepared, a grout mixer or a mechanical mixer can be used paying careful attention to avoid the formation of air bubbles. Mixing by hand is not recommended.

Instructions for the preparation of the mortar to create samples for Lab testing are contained in the TECHNICAL DATA table.

Application (anchoring)

Pour **Mapefill SP** from one side only in a continuous flow to facilitate the discharge of air bubbles. The use of **Mapefill SP** for connecting precast concrete elements and the filling of rigid joints is recommended for thicknesses up to 60 mm. It is not necessary to vibrate the grout mechanically; to facilitate the filling of spaces that are particularly difficult, use a clean wooden stick or a steel bar.

Addition of fine gravel

For filling cavities that have dimensions greater than those indicated, add gravel with a maximum diameter of 8 - 10 mm not exceeding 30% by weight of **Mapefill SP**. As certain characteristics may vary, such as workability and strength, it is advisable to carry out preliminary tests at the work site or to consult our Technical Service Department.

Instructions to be observed before and after the application

- At temperatures around +20°C, no particular precautions are required.
- In hot weather it is advisable not to expose the material to sun and to use cold water in preparing the mix.
- In low temperatures it is advisable to use water that is around +20°C.
- After casting, **Mapefill SP** must be properly cured; the surface of grout exposed to the air must be protected from rapid water evaporation that can cause the formation of surface cracks due to plastic shrinkage especially in hot and/or windy weather.
- Spray water on the surface exposed to air and keep it wet during the first 24 hours of curing or apply an anti-evaporant.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Consistency:	powder
Colour:	grey
Maximum diameter of aggregate:	1 mm
Chloride ions content – minimum requirement $\leq 0.05\%$ - according to EN 1015-17:	$\leq 0.05\%$

TECHNICAL INFORMATION FOR THE PREPARATION OF PRODUCT

Mixing ratio:	100 parts in weight of Mapefill SP with 19% of water
Preparation of mix:	While mixing, add approximately $\frac{3}{4}$ of the total amount of water. Then, add slowly the product and the remaining mixing water while continuing mixing. Mix under high shear for at least 2 minutes until a homogeneous paste without lumps is obtained.
Curing condition:	CC (according to Annex A – EN 12190)

CHARACTERISTICS OF FRESH MIX (at +20°C – 50% U.R.)

Colour of mix:	grey
Consistency of mix:	super fluid
Density of mix:	2200 kg/m ³
Flow (ASTM C 939):	20 – 30 sec

FINAL PERFORMANCES

According to curing defined in the test methods

(Sample preparation 40 x 40 x 160 mm: pour the mortar in the center of each compartment of the mould, taking care to fill it)

Performance characteristic	Test method	Requirements according to EN 1504-6	Product performance
Compressive strength:			
▪ 1 day:	EN 12190	not required	20 MPa
▪ 7 days:			50 MPa
▪ 28 days:			55 MPa
Flexural strength:			
▪ 1 day:	EN 196-1	not required	5 MPa
▪ 7 days:			7 MPa
▪ 28 days:			8 MPa
Bleeding:	ASTM C940	not required	absent
Volume change in the plastic phase:	ASTM C940	not required	1%
Drawing resistance of steel rods – displacement at 75 kN load:	EN 1881	≤ 0.6 mm	≤ 0.6 mm
Reaction to fire:	EN 13501-1	Euroclass	A1, A1 _{fl}

CLEANING

Fresh grout can be removed from tools with water. After curing, cleaning becomes very difficult and can only be done mechanically.

CONSUMPTION

Every 25 kg bag of **Mapefill SP** can yield 13 - 14 litres of grout.

PACKAGING

Mapefill SP is available in 25 kg bags.

STORAGE

Mapefill SP can be store in a dry, sheltered place in original, unopened packaging for 12 months. Manufactured in compliance with the regulations of the 2003/53/EC Directive.

SAFETY INTRUCTION 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.my

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.

The values declared in the TECHNICAL DATA table (typical values) were obtained in compliance with test methods and curing cycles defined in the technical standard referenced therein. Therefore please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.

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

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