MAPEGROUT SV

Ultra high performance, rapid-setting and hardening, compensated-shrinkage, hi-flow cementitious mortar applicable at temperatures down to -5°C for repairing concrete and fixing urban features in place

WHERE TO USE

- Repairing concrete structures that require the use of free-flowing mortar, including at low temperatures.
- Repairing industrial floors, roads and runways that need to be put back into service quickly.
- Fixing manholes and manhole covers quickly in place.

Some application examples

- Repairing concrete floors in industrial environments, shopping centres and warehouses.
- Repairing concrete floor slabs.
- Repairing the ends of floor slabs.
- Repairing concrete road surfaces in airports.
- Repairing pavements.
- Fixing street furniture, manhole covers and manholes in place.

TECHNICAL CHARACTERISTICS

Mapegrout SV is a one-component, ready-mixed powdered mortar made from special hydraulic binders, highstrength cement, synthetic polyacrylonitrile fibres, selected aggregates and special additives according to a formula developed in MAPEI research laboratories. Thanks to its special composition, this product develops very high mechanical properties after short curing periods, even if applied at temperatures down to -5°C.
When **Mapegrout SV** is mixed with water it has a fluid consistency, which makes it suitable for casting into sealed formwork in layers up to 5 cm thick without segregation risk.
For thicknesses over 5 cm, **Mapegrout SV** must be added up to 35% of **Gravel 6-10** on the weight of the mixture (for example: for 100 kg of mixture 65 kg of **Mapegrout SV** + 35 kg of **Gravel 6-10**).
Thanks to its rapid hardening properties, the mortar sets to foot traffic and may be used by wheeled vehicles just a few hours after application at +20°C.
Mapegrout SV complies 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 1504-3 ("Structural and non-structural repairs") for R4-class structural mortars.

RECOMMENDATIONS

- Do not add cement or admixtures to **Mapegrout SV**.
- Do not use **Mapegrout SV** if the packaging is damaged.
- Do not add water once the mix has started to set.
- Do not apply **Mapegrout SV** on asphalt or surfaces treated with bitumen.
- Do not apply **Mapegrout SV** on smooth surfaces. Roughen the surface of the substrate (to at least 5 mm) and, if necessary, insert dolly rods.
- Do not use **Mapegrout SV** if the temperature is lower than -5°C or higher +35°C.
- **Mapegrout SV** hardens very quickly and it is recommended, therefore, to only mix quantities of mortar that will be applied within 10 minutes of adding the mixing water at +20°C.

APPLICATION PROCEDURE

TECHNICAL INFORMATION FOR PRODUCT PREPARATION			
Mix composition:	100 kg **Mapegrout SV** 12-13 kg of water		
Thickness applied:	up to 50 mm *(See section "Application of mortar" for greater thicknesses)*		
Application temperature:	Surrounding temperature from +5°C to +35°C		
	+5°C	+10°C	+20°C
Pot life of mix:	60 min.	20 min.	10 min.
End of setting:	100 min.	60 min.	35 min.

Preparation of the substrate

- 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.
- Eliminate traces of paint, oil, powder and any other material which may impede the adhesion of **Mapegrout SV** to the substrate.
- Treat any exposed rebar with **Mapefer** or **Mapefer 1K ZERO** according to the procedure illustrated in the relative Technical Data Sheet for each product.
- Wait until **Mapefer** or **Mapefer 1K ZERO** has dried.
- Saturate the substrate with water.
- Before casting, wait until the excess water has evaporated. If necessary, this phase may be speeded up by using compressed air.

Preparation of the mortar

Pour 12-13% of water (3.0-3.25 litres for each 25 kg bag), according to the consistency required, into a cement mixer. Slowly add **Mapegrout SV** and mix for 1-2 minutes.
Remove all traces of powder not perfectly blended from the inside surface of the mixer and continue mixing for 2-3 minutes to form an even mix. A mortar mixer or low speed drill with a mixing attachment may also be used, depending on the amount of mortar required. Avoid entraining too much air while mixing.
If the areas to be integrated are thicker than 5 cm, add **Gravel 6-10** to **Mapegrout SV** up to 35% by weight of the mix, and complete the mixing until the mix is homogenised.
Instructions for the preparation of mortar for Lab testing samples can be found in the TECHNICAL DATA section.

Applying the mortar

Pour **Mapegrout SV** into the area prepared as specified and finish off the surface immediately with a trowel; a vibrating-needle is not required to spread the mortar. If the product is used to fix manholes or manhole covers in place, and the area around the repair needs to be re-asphalted, it is recommended to form a layer at least 3 cm thick in that area to allow the layer of bitumen to bond firmly and to withstand the weight of vehicles without subsiding.
The mortar maintains its workability for around 10 minutes from when the mixing water is added at +20°C.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

Low temperatures

- Make sure that the substrate is not frozen and protect the product from frost during the first 24 hours after applying.
- Mix the product with warm water.
- Store the product in an area away from freezing weather and damp before use.

High temperatures and/or windy conditions

- Always saturate the substrate with water.
- Use cold water to prepare the mortar.
- Protect the surface of wet mortar to prevent the water evaporating off too quickly and generating plastic shrinkage cracks with **Mapecure S** or **Mapecure E**.

Cleaning

Remove wet mortar from tools used to prepare and apply the mortar with running water. Once hardened cleaning must be carried out mechanically.

COLOUR

Grey.

CONSUMPTION

- Used neat: 20 kg/m² per cm of thickness.
- Used ad micro-concrete with **Gravel 6-10** at 50%: made up of 65 parts of **Mapegrout SV** and 35 parts of gravel (s.s.d. condition): approx. 13.8 kg/m² per cm of thickness (approx. 7.4 kg/m² of **Gravel 6-10**).

PACKAGING

25 kg polyethylene bags.

STORAGE

Mapegrout SV can be stored for 12 months in its original packaging in a dry place.
The special 25 kg vacuum-packed polyethylene bags may be stored outside for the entire duration of the site. Rain has no effect on its characteristics.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the SDS available from our website www.mapei.com.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY	
Class according to EN 1504-3:	R4
Type according to EN 1504-1:	CC
Consistency:	powder
Colour:	grey
Maximum size of aggregate:	2.5 mm
Chloride ion content according to EN 1015- 17: (minimum requirements according to EN 1015 ≤ 0.05%))	≤ 0.05 %

TECHNICAL INFORMATION FOR PRODUCT PREPARATION	
Mix composition:	100 parts by weight of **Mapegrout SV** with 13% of water
Preparation of mix:	Mix the product in compliance with the standard EN 196-1

CHARACTERISTICS OF FRESH MIX (at +20°C - 50% R.H.)	
Colour of mix:	grey
Consistency of mix:	fluid
Density of mix:	2300 kg/m^3

FINAL PERFORMANCE PROPERTIES According to seasoning defined in the test methods					
Performance characteristic	Test method	Requirements EN 1504-3 (R4)	Performance of product		
Compressive strength:	EN 12190		- 5°C*	+10°C*	+20°C*
- 3 hours:		-	> 8 MPa	>15 MPa	> 30 MPa
- 4 hours:		-	> 12 MPa	> 20MPa	> 45 MPa
- 8 hours:			>25 MPa	> 30 MPa	> 55 MPa
- 1 day		-	> 55 MPa	> 60 MPa	> 65 MPa
- 7 days:		-	> 65 MPa	> 70 MPa	> 75 MPa
- 28 days:		≥ 45 MPa	> 75 MPa	> 80 MPa	> 85 MPa
Flexural strength:	EN 196-1	not required			
- 1 day:					> 6 MPa
- 7 days:					> 7 MPa
- 28 days:					> 9 MPa
Compressive modulus of elasticity:	EN 13412	≥ 20 GPa	30 GPa		
Direct tensile adhesion to concrete:	EN 1542	≥ 2.0 MPa	> 2.0 MPa		
Resistance to accelerated carbonation:	EN 13295	depth of carbonation ≤ to reference concrete	Meets specifications		
Capillary absorption:	EN 13057	≤ 0.5 kg/m²·h$^{0.5}$	< 0.1 kg/m²·h$^{0.5}$		
Thermal compatibility:					
- freeze-thaw cycling with de-icing salt (50 cycles):	EN 13687-1	≥ 2.0 MPa	> 2.0 MPa		
- Thunder-shower cycling (30 cycles):	EN 13687-2	≥ 2.0 MPa	> 2.0 MPa		
Dry-thermal cycling (30 cycles):	EN 13687-4	≥ 2.0 MPa	> 2.0 MPa		
Impermeability to water – penetration depth - (mm):	EN 13290-8	not required	< 5 mm		
Crack resistance:	"O-Ring" test	not required	no cracks after 180 days		
Reaction to fire:	EN 13501-1	Euroclass	A1, A1$_{FL}$		

NOTES: Preparation of specimens: pour the mortar into the molds until they are filled without settling.
(*) Mechanical properties at -5°C refer to mixes made by conditioning the product, water and formwork at +5°C followed by curing at -5°C.

Composition and characteristics of beton made using Mapegrout SV. Composition of mix: 65 parts Mapegrout SV - 35 parts Gravel 6/10 - 13 parts water						
Performance characteristic	Test method	Performance of product				
Density of mix (kg/m³):	EN 12350-6	2,400				
Compressive strength (MPa):	EN 12190-3	3 h	8 h	1 day	7 days	28 days
		> 30	> 45	> 55	> 65	> 75

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 standards 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

LEGAL NOTICE

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