

Mapegrout T60

One component sulphate-resistant, fibre-reinforced thixotropic grout for the repair of concrete



WHERE TO USE

Repair of degraded concrete structures or reinforced concrete structures subject to sulphate attack.

Some application examples

- Canal linings, hydraulic works, and tunnels that require resistance to sulphate attack.
- Repair and reconstruction of concrete coverings damaged by corroded reinforcing bars.
- Filling of rigid joints (e.g. between base and column, cracks in floors, joints between walls, etc.).
- Repair of precast structures.

TECHNICAL CHARACTERISTICS

Mapegrout T60 is a one-component pre-blended thixotropic cement-based mortar composed of sulphate-resistant hydraulic binders, synthetic polyacrylonitrile fibres, organic corrosion inhibitors, select aggregates and special water-retaining additives developed in the MAPEI Research Laboratories. If **Mapegrout T60** is prepared by only adding water, it must be cured under damp conditions in order to guarantee that the product's expansive properties develop completely and correctly. However, it is not very easy to guarantee that these conditions are created on site. Therefore, to guarantee that the expansive properties of **Mapegrout T60** take place when drying in the open air, 0.25-0.5% of **Mapecure SRA**, a special additive which has the property of reducing both plastic and hydraulic shrinkage, may be used to great advantage by adding it to the mix.

Mapecure SRA has a very important role to play, in guaranteeing better curing of mortar. Also, when mixed with **Mapegrout T60**, it may be considered a technologically advanced system, in that the additive has the capacity of slowing down evaporation of the water and of promoting the development of hydration reactions.

Mapecure SRA behaves like an internal curing agent and, thanks to its interaction with some of the main components which make up the cement, it helps to reduce shrinkage by between 20% and 50% compared with the standard values of the product without the additive. This will obviously lead to a lower incidence of cracking phenomena.

RECOMMENDATIONS

- Do not use **Mapegrout T60** on smooth surfaces: roughen the surface thoroughly and add rebars if necessary.
- Do not use cement or admixtures with **Mapegrout T60**.
- Do not pour **Mapegrout T60** into forms (use **Mapegrout Hi-Flow**).
- Do not use **Mapegrout T60** for anchoring (use **Mapefill**).

APPLICATION PROCEDURE

Substrate preparation

- Remove degraded and loose concrete down to the solid, resistant and roughened part of the substrate. Any previous repair work that is no longer thoroughly bonded must also be removed.

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- Sandblast the concrete and the reinforcing bars until they are free of dirt, rust, cement laitance, grease, oil, varnish or old paint.
- Saturate the substrate with water.
- Before repairing with **Mapegrout T60**, wait until the excess water has evaporated. To facilitate the elimination of free water, use compressed air if needed.

Preparing the grout

Pour into the mixer the amount of water needed to obtain the consistency required for the application.

Application	Litres of water per 25-kg bag
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Trowel	3.9 to 4.1
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Spray	4.0 to 4.3
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- Start the mixer and slowly add the **Mapegrout T60** to the water in a continuous flow.
- If improved open-air curing of the mortar is required, add **Mapecure SRA** at the end of the mixing phase at a dosage of between 0.25% and 0.5% in weight of the mortar (0.25-0.5 kg every 100 kg of **Mapegrout T60**).
- Mix for 1 to 2 minutes, then check to make sure the mix is well blended. Scrape any unmixed powder from the bottom and the sides of the mixer. Mix again for another 2 to 3 minutes.
- Depending on the amount needed, a mortar mixer or a drill with an agitator attachment may also be used. Mix at low speed to avoid entraining air.
- Avoid mixing manually unless absolutely necessary. If so, mix small amounts at a time for at least 5 to 6 minutes until a completely homogeneous paste is obtained.

Keep in mind that mixing by hand requires a larger amount of water. This adversely affects several of the mortar's properties, including mechanical strength, shrinkage, watertightness, etc.

Mapegrout T60 remains workable for approx. 1 hour at +20°C.

The expansion of **Mapegrout T60** is calculated to compensate for hygrometric shrinkage. For it to be effective, the expansion needs to be restrained by rebars or restraints inserted into the substrate.

Buildups of **Mapegrout T60** without restraints in thicknesses of more than 2 cm should be done only after inserting rebars and roughening the surface of the concrete, take care to cover the reinforcement with a layer at least 2 cm thick.

Lesser thicknesses can be applied without rebars as long as the substrate has been thoroughly roughened to counter the

expansion. The expansion phase ends during the first days of hardening.

Application procedure

The grout can be applied with a trowel or spray without formwork even on vertical surfaces or soffits.

Mapegrout T60 can also be sprayed on, using piston or scroll action sprayers (e.g. Turbosol, Putzmeister etc.-type equipment).

For repairing concrete surfaces (e.g. balconies, columns, beams, etc.) we recommend treating the rebars with **Mapefer** or **Mapefer 1K** after sanding them.

When further coats of **Mapegrout T60** are needed, leave the previous coat rough and wet the surface with water.

Precautions to be taken during and after application

- Only use sacks of **Mapegrout T60** which have been stored on their original pallets and covered and stored in a dry place.
- In warm weather do not expose the material to direct sunlight. Use cold water to prepare the mix. Store in a cool place.
- At low temperatures, prepare the mix with water heated to approx. +20°C.

After applying **Mapegrout T60**, we recommend that it is cured carefully, especially in hot or windy weather, to avoid the water evaporating too quickly and causing the formation of surface cracks due to plastic shrinkage. Spray water on the surface 8-12 hours after applying the mortar, and repeat the operation (every 3-4 hours) for at least the first 48 hours. As an alternative, after tamping the mortar, spread on a layer of either **Mapecure E** anti-evaporation treatment in watery emulsion with a low-pressure pump, **Mapecure S** solvent-based curing film for mortar and concrete or **Elastocolor Primer** solvent-based, high-penetration primer for absorbent substrates and curing agent for repair mortar. **Mapecure E** and **Mapecure S**, as with all the best quality products in the same category which are currently available on the market, impede bonding of successive dressing layers. Therefore, if a smoothing layer or paint is to be applied later, they must be completely removed by sandblasting. If **Elastocolor Primer** is used as an anti-evaporation treatment, on the other hand, a final protective layer of **Elastocolor Paint** or **Elastocolor Rasante** may be applied directly on the treated surface without having to remove it.

Cleaning

Grout that has not yet hardened can be removed from tools with water. After setting, cleaning is very difficult and can only be done mechanically.

CONSUMPTION

Approx. 18.5 kg/m² per cm of thickness if

TECHNICAL DATA (typical values)	
PRODUCT IDENTIFICATION	
Colour:	grey
Consistency:	powder
Bulk density (kg/m ³):	1,200
Maximum diameter of aggregate (N/mm):	2.5
Solids content (%):	100
Storage:	12 months in a dry place in original packaging
Hazard classification according to EC 1999/45:	irritant. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packaging and Safety Data Sheet
Customs class:	3824 50 90
APPLICATION DATA (at +23°C - 50% R.H.)	
Colour of mix:	grey
Water content of mix (%):	15-17
Consistency of mix:	thixotropic
Flow (UNI 7044/72) (%):	40-80
Density of mix (kg/m ³):	2,100-2,200
Application temperature:	from +2°C to +35°C
Workability of mix:	1 hour
FINAL PERFORMANCE DATA	
Mechanical characteristics:	Tests of compressive and flexural strength were performed on mortar samples 4x4x16 cm prepared and cured in compliance with EN 196/1 (mixed with 17% water - curing +20°C / 95% R.H.).
Compressive strength (N/mm ²):	
- after 1 day:	≥ 20
- after 7 days:	≥ 45
- after 28 days:	≥ 60
Flexural strength (N/mm ²):	
- after 1 day:	≥ 5
- after 7 days:	≥ 8
- after 28 days:	≥ 9
Static modulus of elasticity under compression (N/mm ²):	
- after 28 days:	27,000
Adhesion to substrate (pull-out) measured on concrete (N/mm ²):	
- after 7 days at +23°C - 50% R.H.:	≥ 2
- after 28 days at +23°C - 50% R.H.:	≥ 2
- after 7 days at +23°C - 50% R.H. + 21 days in water at +20°C:	≥ 2
Adhesion to "Italian Highway Authority wedges"	
- after 7 days at +23°C - 50% R.H.:	≥ 4.0
- after 28 days at +23°C - 50% R.H.:	≥ 5.5
Restrained expansion (UNI 8147) (mm/m):	
- after 7 days:	≥ 400
Restrained expansion (UNI 8147)	
- after 28 days:	increase in expansion no greater than 30% over expansion measured after 7 days

The mechanical strength of **Mapegrout T60** with the addition of aggregate 30% by weight of the grout remains the same as the mechanical strength of the grout without the addition of aggregate.

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used pure and 14.5 kg/m² if used mixed with 30% of 3 to 6-8 mm aggregate.

PACKAGING

25-kg bags and 1500-kg "Big Bags".

STORAGE

12 months if stored in a dry, sheltered place.

Manufactured in compliance with the regulations of the 2003/53/EC Directive.

SAFETY INSTRUCTIONS FOR PREPARATION AND INSTALLATION

Mapegrout T60 contains cement that, when in contact with sweat or other bodily fluids, produces an irritant alkaline reaction and allergic reactions in those predisposed. It is highly recommended to wear protective clothing, gloves and eye/face protection. For further information refer to the safety data sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this product report 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 applications: 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.

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

