

Mapegrout 430

**Fine-grained,
fibre-reinforced,
normal-setting
thixotropic mortar for
repairing concrete**



WHERE TO USE

Repairing the protective concrete layer on deteriorated concrete structures following oxidation of steel reinforcement.

Some application examples

- Repairing the corners of columns, beams and the front edges of balconies.
- Rebuilding the layer over steel reinforcement on structures in reinforced cement.
- Smoothing over surface defects, such as honeycombs, construction joints and spacer holes.
- Filling rigid joints.
- Quick repairs on pre-fabricated concrete elements damaged during handling.

TECHNICAL CHARACTERISTICS

Mapegrout 430 is a pre-blended, compensated-shrinkage mortar in powder form made from cementitious binders, selected fine-grained aggregates, special admixtures and synthetic fibres according to a formula developed in MAPEI Research & Development laboratories.

After mixing **Mapegrout 430** with water, it forms a mortar with a thixotropic consistency which is very easy to apply, even on vertical surfaces, at a thickness of between 5 and 35 mm without the need for formwork. If **Mapegrout 430** is mixed only with water, it must be cured in a damp environment to allow the expansive properties of the product to develop fully and correctly. To carry out expansion in the open air when damp curing is not guaranteed, **Mapegrout 430** may include 0.25% of **Mapecure SRA**, a special admix which has the property of reducing plastic and hydraulic shrinkage. **Mapecure SRA** carries out an extremely important

role in guaranteeing that the mortar cures more correctly, and when added to **Mapegrout 430** it may be considered a highly advanced technological system, in that the admixture has the capacity of reducing quick evaporation of water from the mortar and favouring the development of hydration. **Mapecure SRA** acts basically as an internal curing agent and, thanks to its interaction with some of the main components in the cement, it reduces final shrinkage by 20% to 50% compared with the same product without the admix. This means there will be a lower risk of cracking.

After hardening, **Mapegrout 430** has the following properties:

- medium mechanical strengths;
- modulus of elasticity, thermal expansion coefficient and water vapour permeability coefficient similar to medium-quality concrete;
- impermeable to water;
- excellent bond strength to old concrete, if dampened with water before application, and to steel reinforcement, especially if treated beforehand with **Mapefer** or **Mapefer 1K**.

Mapegrout 430 responds to 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 for EN 1504-3 (*"Structural and non-structural repair"*) for R3-class structural mortars.

RECOMMENDATIONS

- Do not use **Mapegrout 430** to repair structures subjected to intense compressive loads or high

Mapegrout 430



Application of Mapegrout 430 by trowel



Application of Mapegrout 430 by spray



Levelling off Mapegrout 430 with a straight edge

wear and abrasion, in such cases use **Mapegrout Thixotropic** or **Mapegrout T60**.

- Do not use **Mapegrout 430** for pumping over long distances or to high levels (in such cases use **Mapegrout Easy Flow**).
- Do not apply **Mapegrout 430** on smooth concrete substrates. Roughen the surface and, where necessary, insert dolly rods.
- Do not use **Mapegrout 430** for fixing elements in place (in such cases use **Mapefill**).
- Do not use **Mapegrout 430** for repairs requiring casting into formwork (in such cases, use **Mapegrout Hi-Flow**).
- Do not add cement or admixtures to **Mapegrout 430**.
- Do not add water once the mix has started to set.
- Do not apply **Mapegrout 430** if the temperature is below +5°C.
- Do not use **Mapegrout 430** if the bag is damaged or if it has been opened previously.

APPLICATION PROCEDURE

Preparation of the substrate

- Remove all deteriorated and loose concrete to form a sound, 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 carrying out repairs with **Mapegrout 430**, wait until excess water has evaporated off. If necessary, use compressed air to help remove excess water.

Preparation of the mortar for manual application

- Pour approximately 4.4-4.6 litres of water into a cement mixer.
- Switch the mixer on and slowly add **Mapegrout 430** in a continuous flow.
- If better curing in open air is required, add **Mapecure SRA** at a ratio of 0.25% of the weight of the mortar immediately after mixing (0.25 kg every 100 kg of **Mapegrout 430**).
- Mix for 1-2 minutes, make sure that all the ingredients are well blended, remove all powder which has stuck to the walls of the mixer and has not been perfectly amalgamated and mix for a further 2-3 minutes.
- A mortar mixer or drill with a mixer fitting may also be used, according to the quantity of mortar required. Mixing must be carried out at a low speed to avoid the entrapment of air. **Mapegrout 430** remains workable for approximately 1 hour at +20°C.

Preparation of the mortar for application with a rendering machine

The mortar may be prepared with a continuous-feed rendering machine, such as a Putzmeister MP 25 or a PFT G4 or G5. Load the contents of the bags in the hopper of the machine and set the flow-meter of the machine to get a steady flow of plastic mortar.

Model	Rotor stator	Mixer	Flow-meter setting (l/h)
Putzmeister MP 25	D6 - Power	standard	330-380
PTF G4 or G5	D6 - 3	standard	330-380

Application of the mortar

The mortar may be applied with a trowel, spatula or a rendering machine. No formwork is required, even on vertical surfaces and ceilings, and the maximum applicable thickness per layer is 35 mm.

If there is insufficient boundary support, filling layers of more than 30 mm must only be applied after inserting dolly rods and roughing the surface of the concrete. A layer of at least 20 mm thick must be applied over the rods.

Thinner layers may be applied even if there is no reinforcement, but the surface of the substrate must be well roughened before application.

Apply **Mapegrout 430** after treating the steel reinforcement with **Mapefer** or **Mapefer 1K**. If a second layer of **Mapegrout 430** is required, it must be applied before the first layer has completely set (after no more than 4 hours at +20°C).

If the repaired surface needs to be smoothed over, use one of the following products:

Monofinish, **Planitop 200**, **Mapefinish**, **Mapelast**, **Mapelast Guard**, or **Mapelast Smart**, according to specific requirements. Once hardened, the surface may be painted with **Elastocolor Paint**, **Elastocolor Rasante**, **Colorite Beton** or **Colorite Performance**.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

- Only use bags of **Mapegrout 430** which have been stored on their original pallets.
- In hot weather, store the product in a cool area and use cold water to prepare the mortar.
- In cold weather, store the product at a temperature of +20°C and protect from frost. Use lukewarm water to prepare the mortar.
- After application, and particularly in hot or windy weather, we recommend curing **Mapegrout 430** carefully, to avoid the mixing water evaporating too quickly, otherwise surface cracks may appear due to plastic shrinkage. Spray water on the surface 8-12 hours after applying the mortar and repeat this operation at regular intervals (every 3-4 hours) for at least the first 48 hours.

As an alternative, after tamping the surface of the mortar, apply **Mapecure E** anti-evaporation agent in water emulsion with a low-pressure pump, **Mapecure S** film-forming curing agent in solvent for mortar and concrete or **Elastocolor Primer**, high-penetration solvent fixing agent for absorbent surfaces and curing agent for repair mortar. **Mapecure E** and **Mapecure S**, as all the best products in this category available on the market, impede the bond of successive coating layers. Therefore, if smoothing and levelling compound or paint are to be applied, they must be completely removed by sand-blasting. If **Elastocolor Primer** is used to block evaporation, the smoothing and levelling layer or final protective layer of **Elastocolor Paint**

Mapegrout 430: fine-grained, fibre-reinforced, compensated-shrinkage, medium-strength thixotropic cementitious mortar for repairing concrete, in compliance with the requirements of EN 1504-3 Standard class R3

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Class according to EN 1504-3:	R3
Type:	CC
Consistency:	powder
Colour:	grey
Maximum size of aggregate (mm):	1.0
Bulk density (kg/m³):	1,250
Dry solids content (%):	100
Chloride ions content - minimum required $\leq 0.05\%$ according to EN 1015-17 (%):	≤ 0.05

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

Colour of mix:	grey
Mixing ratio:	100 parts of Mapegrout 430 with 17.5-18.5 parts of water (approximately 4.4-4.6 litres of water per 25 kg bag)
Consistency of mix:	thixotropic
Density of the mix (kg/m³):	2,000
pH of mix:	> 12.5
Application temperature range:	from +5°C to +35°C
Pot life of mix:	approx. 1 hour
Waiting time between each layer:	max. 4 hours

FINAL PERFORMANCE (18% mixing water - mixing and compaction according to EN 196-1)

Performance characteristic	Test method	Requirements according to EN 1504-3 for R3-class mortar	Performance of product
Compressive strength (MPa):	EN 12190	≥ 25 (after 28 days)	> 7 (after 1 day) > 25 (after 7 days) > 30 (after 28 days)
Flexural strength (MPa):	EN 196/1	not required	> 2 (after 1 day) > 4 (after 7 days) > 6 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412	≥ 15 (after 28 days)	23 (after 28 days)
Bond strength on concrete (substrate in MC 0.40 - water/cement ratio = 0.40) according to EN 1766 (MPa):	EN 1542	≥ 1.5 (after 28 days)	> 2 (after 28 days)
Resistance to accelerated carbonation:	EN 13295	Depth of carbonation \leq that of reference concrete (MC 0.45 - water/cement ratio = 0.45)	test passed (*)
Capillary absorption (kg/m²·h^{0.5}):	EN 13057	≤ 0.5	< 0.40
Thermal compatibility measured as bond strength according to EN 1542 (MPa): - freeze-thaw cycles with de-icing salts: - storm cycles: - dry thermal cycles:	EN 13687/1 EN 13687/2 EN 13687/4	≥ 1.5 (after 50 cycles) ≥ 1.5 (after 30 cycles) ≥ 1.5 (after 30 cycles)	> 1.5 > 1.5 > 1.5
Reaction to fire:	EN 13501-1	Euroclass	A1



**Tamping
Mapegrout 430**

(*) Test passed by using **Elastocolor Paint**, **Elastocolor Rasante**, **Colorite Beton** or **Colorite Performance** to protect the surface

Mapegrout 430



or **Elastocolor Rasante** may be applied directly on the surface without removing it.

Cleaning

Mortar which has not yet hardened may be washed from tools using water. Once hardened, cleaning is much more difficult, and it must be removed mechanically.

CONSUMPTION

17 kg/m² per cm of thickness.

PACKAGING

25 kg bags.

STORAGE

Mapegrout 430 may be stored for up to 12 months in its original packaging in a dry place.

Mapegrout 430 is available in special 25 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

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.

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.

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

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