MAPEGROUT ME05

High performance, shrinkage compensated, high-flow micro-concrete and thick section grout

CLASSIFIED AS EUROPEAN STANDARD EN 1504-3 R4 MAPEI REPAIR MORTAR

WHERE TO USE

For pile top treatment and re-profiling, column jacketing, concrete structural repairs, and where particular thickness and void configuration requires the use of a high-flow micro-concrete or grout, for gaps up to 220 mm.

Some application examples

- Structural reinstatement of new and old reinforced concrete elements such as beams and columns
- Repair and re-profiling of piles
- Particularly suitable for reinstatement of honeycombed concrete and or areas of congested reinforcement
- Reinstatement of floor beams and slabs
- Grouting of precast elements
- Grouting of machine and turbine baseplates, bridge bearings, and crane rails

TECHNICAL CHARACTERISTICS

Mapegrout ME05 is a pre-blended powder composed of selected cement, aggregates, and special additives designed to be shrinkage compensated and prepared according to a formula developed in MAPEI research laboratories. **Mapegrout ME05**, once mixed with water, becomes a fluid micro-concrete and thick section grout, suitable for pouring or pumping into formwork without segregation. Please note that in common with all other high-quality cementitious-based materials, curing of **Mapegrout ME05** is essential.

Under extreme and arid climatic conditions and/or where correct or adequate curing cannot be maintained, the addition of **Mapecure SRA** is highly recommended in order to ensure the required performance criteria are attained. **Mapecure SRA** is considered a technologically advanced additive system that has the capability of slowing down the evaporation rate of the mixing water thereby promoting the development and efficiency of the hydration process. The addition of **Mapecure SRA** in proportions of up to 0.25% has the ability to reduce drying shrinkage by between 20% and 50%.

Where concrete repairs are required, particularly as a result of chloride-induced corrosion of the reinforcing steel, the incorporation of **Mapeshield I** internal galvanic protection anodes should be considered or **Mapeshield E**, an external galvanic protection sheet that can be used to protect both repaired and unrepaired areas. Please consult the relevant Technical Data Sheet in order to correctly select the type, size, and spacing of the anode system.

Mapegrout ME05, once cured, has the following properties:

- High flexural and compressive strength
- Modulus of elasticity and coefficients of thermal expansion and permeability to water vapor similar to those of high-quality concrete

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- The expansion of **Mapegrout ME05** has been calculated to compensate for hygrometric shrinkage
- Low water permeability
- High bond strength to new and old concrete substrates, providing the substrate has been saturated with potable grade water beforehand, and high bond to reinforcing bars especially if they have been treated with **Mapefer** or **Mapefer 1K**, two-component and one component reinforcing steel primers
- High abrasion resistance.

Mapegrout ME05 is recommended for voids up to 220 mm. Greater thicknesses may be achieved depending upon the repair geometry and location together with the configuration of reinforcement (further technical recommendations can be obtained from your local MAPEI representative).

RECOMMENDATIONS

- Do not use **Mapegrout ME05** on smooth concrete surfaces; roughen such surfaces
- Do not use **Mapegrout ME05** for precision anchoring (use **Mapefill GP ME** or **Mapefill SP ME**)
- Do not use **Mapegrout ME05** for applications on vertical surfaces without formwork (use **Mapegrout T60 ME** or **Mapegrout T80**)
- Do not add cement or any other additives to **Mapegrout ME05**
- Do not add more water than the recommended dosage
- Do not use damaged or previously opened bags of **Mapegrout ME05**

APPLICATION PROCEDURE

TECHNICAL INFORMATION FOR THE APPLICATION	
Composition of the mix:	100 kg of **Mapegrout ME 05** 12.4-13.2 kg of water
Application thickness:	15 – 220 mm
Application temperature range:	Surrounding and substrate temperature from +5 °C to +40 °C
Pot life of mix:	approx. 1 hour (at +20°C)

Preparation of the substrate

- Remove degraded and or loose concrete until the substrate is solid
- Where necessary clean the concrete and reinforcing steel by sweep blasting or other approved mechanical methods, to remove all dirt, any corrosion products, cement laitance, grease, oil, and any coatings

For best results, suitable watertight formwork must be constructed and preferably water tested before material application.

- Ensure formwork is watertight to prevent grout loss during placement and seal drainage outlets if any
- Pre-soak the substrate with clean, potable water by filling the formwork
- Drain water through drainage holes, excess water, and free-standing water shall be removed, if necessary using oil-free compressed air or sponges to provide a saturated surface dry condition prior to pouring the mixed material.

Preparation of the mortar

Pour 3.1-3.3 litres of clean potable grade water into a forced-action concrete mixer. Slowly add the **Mapegrout ME05** powder into the water while the mixer is working. Mix for 2 minutes: scrape any unmixed powder off the sides of the mixer and wait for 2 minutes then remix for a further 1 minute until the mix is fluid and free from any lumps. Depending on the quantity being prepared, a slow-speed drill (300 rpm) with a suitable mixing paddle can be used. Excessive mixing should be avoided as this can cause air entrapment.
The instructions for the preparation of the micro-concrete to be used for samples preparation for laboratory tests are reported in the "Technical Data" table.

Application of the mix

To avoid air pockets, pour or pump **Mapegrout ME05** continuously into the lowest part of the prepared formwork, ensuring that adequate venting has been provided, to prevent air entrapment. The formwork should be grout-tight and pre-treated with shutter-release oil (MAPEI **Form Release Agent DMA 1000**). **Mapegrout**

ME05 does not need to be vibrated; however, to ensure all areas of the formwork have been filled, it is recommended to use steel rods to tamp the mixed material, or gently tap the formwork.

Precautions to be observed during the application

In hot working conditions the following precautions should be taken:

- Avoid direct exposure to sunlight for stored material and also mixing equipment
- Prior to use, the product must be stored in a shaded area out of direct sunlight
- Use cool water for mixing
- Avoid application during the hottest time of the day and/or in direct sunlight
- Mix only sufficient material that can be applied using available labour and equipment to ensure a continuous and uninterrupted application
- In accordance with good concrete practice, all exposed surfaces of **Mapegrout ME05** must be immediately cured after casting, using wet hessian covered with polythene sheeting. Failure to cure the open surfaces can cause the formation of surface cracks due to plastic shrinkage, especially in hot and/or windy climatic conditions
- Spray water onto the surface of the application within the first 8-12 hours of de-shuttering and repeat the operation for at least the first 48 hours. As an alternative, after finishing the application of the material, apply a coat of curing membranes such as **Mapecure E**, **Mapecure S** or **Elastocolor Primer**. Film forming curing membranes can impair the adhesion of subsequent finishes, please consult your local MAPEI technical representative for further advice

Cleaning

Before hardening, the mixed material can be cleaned from tools and equipment with water. After setting, cleaning is very difficult and it can only be removed mechanically.

CONSUMPTION

12.7 liters per 25 kg.

PACKAGING

25 kg bags.

STORAGE

When stored in dry conditions in the original, unopened bags, **Mapegrout ME05** has a shelf life of 12 months. If stored at high temperature and or high humidity conditions the shelf life may be reduced.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instruction on the safe use of our products can be found on the latest version of the Safety Data Sheet available on our website www.mapei.ae.

TECHNICAL DATA (typical values)

PRODUCT IDENTIFICATION DATA	
Class according to EN 1504-3:	R4
Type according to EN 1504-1:	CC
Consistency:	Powder
Colour:	grey
Maximum size of aggregate:	4 mm

TECHNICAL INFORMATION FOR PRODUCT PREPARATION

Mixing ratio:	100 parts in weight of **Mapegrout ME 05** with 13% of water
Preparation of the mix:	Mixing according to EN 196-1
Curing condition:	CC (according to Annex A – EN 12190)

CHARACTERISTICS OF THE FRESH MIX (at +20 °C and 50% R.H.)	
Colour of mix:	Grey
Consistency of mix:	Fluid
Density of mix:	2200 kg/m^3

FINAL PERFORMANCE
According to curing defined in the tests methods

Performance characteristic	Test method	Requirements EN 1504-3 - R4	Product performance
Compressive strength: **- 1 days** **- 7 days** **- 28 days**	EN 12190	- - > 45 MPa	**> 25 MPa** **> 45 MPa** **> 65 MPa**
Flexural strength: **- 1 days** **- 7 days** **- 28 days**	EN 196-1	Not required	**6 MPa** **9 MPa** **10 MPa**
Drying shrinkage	ASTM C 157	Not required	**< 500 microstrain**

Note: 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.

IMPORTANT NOTES

Whilst we try to ensure that any advice, recommendations or information given in our literature is accurate and correct, we have no control over the circumstances in which our product is used. It is therefore important that installers satisfy themselves that the product and conditions are suitable for the envisaged application. No warranty can be given or responsibility accepted other than, that the product supplied by us will meet our written specification. The installer should ensure that our latest product data and safety information sheets have been consulted prior to use.

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

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into other project-related documents, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation. The most up-to-date TDS can be downloaded from our website www.mapei.ae.

ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

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

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