

# MAPEFILL 110

Flowable cementitious shrinkage compensated expansive grout with high compression strength for anchoring and grouting



## WHERE TO USE

- Grouting base plates, subject to high dynamic loads
- Fixing rails for infrastructure
- Grouting below and around bridge bearings
- Areas where a non-shrink or shrinkage-compensated grout is required
- Filling gaps where a high modulus of elasticity and high compressive strengths are required
- Anchoring bolts for heavy equipment, such as compressors, turbines and pre-cast elements
- Bridges and Viaducts
- Grouting of bearings for rail and light rail systems Anchoring of bolts
- Can be used at temperatures +2°C

## TECHNICAL CHARACTERISTICS

**Mapefill 110** is a pre-blended powdered grout composed of high-strength cement, graded aggregates and special admixtures with an expansive agent formulated by MAPEI Research & Development laboratories.

**Mapefill 110** conforms to the standard C.1.2601, according to the Specification for Highways works and conforms to the requirements for Highways England, specification for highways works.

When mixed with water, **Mapefill 110** forms a fluid grout with the capacity to flow into complex spaces. It is not necessary to vibrate the mortar and it does not segregate. It can be used for anchoring works from 10 to 300 mm thick. Thanks to its advanced formulation **Mapefill 110** is engineered to avoid cracking in the plastic and hardened phase and develops high early strength at 24hrs and 3 days. If **Mapefill 110** is prepared by only adding water, it must be cured under damp conditions. Therefore, to ensure that the expansive properties of **Mapefill 110** take place when drying in the open air, especially on hot and windy days when water evaporation is accelerated, 0.25% of **Mapecure SRA**, a special shrinkage-reducing admixture, may be used to great advantage when added to the mix. Thanks to this special technology, the development of hydration reactions is encouraged, and capillary porosity is reduced, resulting in an increase in mechanical properties, impermeability and durability. **Mapefill 110** 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 1504-6 for anchoring works.

## RECOMMENDATIONS

- Do not add cement or admixtures to **Mapecore 110**.
- Do not add water once the mix has started to set.
- Do not use **Mapecore 110** if the bag is damaged or if it has been opened previously.

## APPLICATION PROCEDURE

### TECHNICAL INFORMATION FOR THE APPLICATION

Mixing ratio:	100 kg of <b>Mapecore 110</b> , 9.5-10.5 kg of water
Anchoring thickness:	from 10 to 300 mm
Application temperature:	surrounding temperature and temperature of the substrate +2°C to +35°C
Pot life of mix:	approx. 1 hour (at +20°C)
Environment of use (climatic and geographical conditions):	The product can be used in the environmental conditions pursuant to the following exposure classes (EN 206- table F.1) X0 XC1, XC2, XC3, XC4 XD1, XD2, XD3 XS1, XS2, XS3 XF1, XF2, XF3, XF4 XA1

### Preparing the substrate

- Remove the dust, cement laitance and loose material from the concrete surface with a high-pressure water jet, or scabbling, needle gunning or similar
- Ensure the surface is roughened and not smooth
- Saturate the foundation surface and the sides of the cavity to be filled with water and soak the substrate till it remains damp. This will depend on weather and drying conditions. Make sure that there is no standing water on the surface before pouring: wait until any excess water has evaporated off and if necessary, use compressed air to help remove the ponding water
- Saturation should be for a minimum of 1 hour depending on weather and site conditions

### Preparation of the Grout

- Pour into a concrete mixer, 2.3 litres of water per bag up to a total of 2.4 litres, then slowly add **Mapecore 110**, mix for 4-5 minutes until a homogeneous mix is obtained.
- Add the remaining mixing water, up to a maximum of 2.4 litres per bag and mix again for 2 minutes until a homogeneous and lump-free mix is obtained. The pot life of **Mapecore 110** is approximately 1 hour at +20°C.
- If improved open-air curing of the mortar is required, add **Mapecure SRA** to the freshly mixed product at a dosage of 0.25% by weight of the mortar (65ml per 25kg bag of **Mapecore 110**).
- The instructions for the preparation of the mortar to be used for the creation of concrete samples for laboratory tests are reported in the "Technical Data" table.

### Application of the grout

Before pouring, make sure that the formwork is duly positioned and sealed to prevent grout from leaking out during the application.

The formwork should not absorb water from **Mapecore 110**. To prevent this, it is recommended to treat the formwork with a form-release compound (such as **Mapeform DMA 1000** for wooden formwork, **Mapeform 1500 Plus** or **Mapeform Eco 31** for any type of formwork).

Pour our pump **Mapecore 110** into the areas previously prepared from one side only in a continuous flow to help expel the air. Pour **Mapecore 110** into the formwork until it is completely full, making sure the grout comes into full contact with the baseplate.

It is not necessary to vibrate the grout.

For further information regarding the type of tools to be used for mixing and pumping operations, please contact the Mapei Technical Service Department.

The product is not compatible with continuous rendering machines.

## PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

- To prepare the grout, use only **Mapefill 110** bags that have been stored on their original pallets.
- After pouring, **Mapefill 110** must be cured very carefully. Surfaces exposed to the open air must be protected to avoid the water evaporating off too quickly, otherwise, surface cracks due to plastic shrinkage may form, particularly in hot and/or windy weather.
- Spray water on surfaces exposed to the open air during the first 24 hours of curing or apply a suitable anti-evaporation product on the surface. (**Mapecure E30** or similar).
- If the grout is to be applied in high temperatures or windy conditions, the area should be shaded. Consideration to the using damp hessian or polythene as a method of curing

### Cleaning

Remove grout from tools with water before it hardens. Once hardened, cleaning is much more difficult and must be carried out only mechanically.

## CONSUMPTION/YIELD

Approx 2.2 kg of dry powder per ltr/11.3 ltrs of mixed material per 25 kg bag

## PACKAGING

**Mapefill 110** is available in 25 kg bags.

## STORAGE

**Mapefill 110** may be stored for maximum 12 months in its original packaging. Store the product in a dry, covered place at a temperature between +5°C and +35°C in its original, well-sealed packaging.

## SAFETY INSTRUCTIONS FOR THE 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.co.uk](http://www.mapei.co.uk).

PRODUCT FOR PROFESSIONAL USE.

## TECHNICAL DATA (typical values)

PRODUCT IDENTITY	
Type according to EN 1504-1:	CC
Consistency:	Powder
Colour:	grey
Maximum size of aggregate:	2.5mm
Chloride ion content according to EN 1015- 17 (minimum requirements according to EN 1015 ≤ 0.05%):	≤ 0.06

TECHNICAL INFORMATION FOR PRODUCT PREPARATION	
Mixing ratio:	100 parts in weight of <b>Mapefill 110</b> with 10.0 % of water
Preparation of the mix:	Mix the product in compliance with the standard EN 196-1

CHARACTERISTICS OF THE FRESH MIX (at +20°C – 50% R.H.)	
Colour of the mix:	grey
Consistency of the mix:	fluid
Density of the mix (kg/m <sup>3</sup> ):	2350

## FINAL PERFORMANCE

Product cured in compliance with the test methods

Performance characteristic	Test method	Requirements according to EN 1504-6	Product performance
Compressive Strength: -28 days	EN 12190-3	Not required	>110 MPa
Compressive Strength: -1 day	EN 12190	Not required	60 MPa
-7 day			98 MPa
-28 days			110 MPa
Flexural strength -28 days:	EN 196-1	Not required	13 MPa
Modulus of elasticity in compression:	EN 13412	Not required	36 GPa
Direct tensile adhesion to concrete:	EN 1542	Not required	> 2.0 MPa
Thermal Compatibility Freeze-thaw cycling with de-icing salt: (50 cycles):	EN 13687-1	Not required	> 2.0 MPa
Capillary Absorption:	EN 13057	Not required	0.01 kg/m <sup>2</sup> .h <sup>0.5</sup>
Pull-out strength of steel rebar - displacement at load 75kN:	EN 1881	≤ 0.6 mm	0.3 mm
Reaction to fire:	EN 13501-1	Euroclass	A1

**Mapefill 110** was tested according to Dept of Transport Specification C1. 2601 and ASTM C 827-01a .  
Preparation of the test pieces: pour the mortar into the mold until it is full without settling it

## 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.

**Please refer to the current version of the technical data sheet, available from our website [www.mapei.co.uk](http://www.mapei.co.uk)**

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