PLANITOP 400 ME

Shrinkage controlled thixotropic mortar for levelling and restoration of concrete by applying a single layer of mortar at a variable thickness between 2 and 30 mm



WHERE TO USE

Deep levelling and restoration of vertical and horizontal concrete surfaces.

Some application examples

· Restoration of corners and front sides of concrete balconies which have been damaged by the rusting of the re-bars
· Repairs damaged corners, concrete beams, pillars, and concrete panels
· Repairs to precast concrete elements damaged during installation and transport
· Repairs to damaged concrete piping
· Repairs to superficial defects present in concrete castings such as honeycombs, holes, cold joints, etc.

TECHNICAL CHARACTERISTICS

Planitop 400 ME is a pre-mixed powder composed of special hydraulic binders, selected finely graded aggregates, and special additives prepared according to a formula developed in the MAPEI Research Laboratories.

Mixed with water **Planitop 400 ME** becomes an easily workable and thixotropic mortar that can be applied on vertical surfaces in a thickness of up to 3 cm per layer. Because of its very fine graded aggregate and high content of synthetic resins, **Planitop 400 ME** can be applied by trowel.

Once **Planitop 400 ME** has hardened completely, it has the following characteristics:
· Strong adhesion to the concrete
· Good resistance to wear
· High mechanical strength

Planitop 400 ME meets the requirements defined by 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 the use of products and systems")* and the minimum requirements claimed by EN 1504-3 *("Structural and non-structural repair")* for structural mortars of class R3.

RECOMMENDATIONS

· Do not add more water to a mix that has already started to set in order to try to make it re-workable
· Do not add cement, lime, gypsum, or additives to **Planitop 400 ME**
· Do not use **Planitop 400 ME** by spray with a rendering machine
· Do not use **Planitop 400 ME** as render (use **Nivoplan**)
· Do not use **Planitop 400 ME** for precision anchoring (use **Mapefill SP ME**, **Mapefill GP ME,** or **Planigrout 300 ME**)
· Do not apply **Planitop 400 ME** on dry or dirty surfaces
· Do not apply **Planitop 400 ME** on smooth surfaces. Treat the substrate beforehand in order to have irregularities not less than 2 mm
· Do not apply **Planitop 400 ME** at temperatures below +5°C
· Do not use **Planitop 400 ME** if the bag has been damaged or opened beforehand

APPLICATION PROCEDURE

Preparation of the Substrate

Remove any degraded or loose concrete until a sound substrate is achieved. Any previous repair work that is no longer thoroughly bonded must also be removed. Sandblast/grit blast or power brush the reinforcing bars until they are free of dirt, rust, cement laitance, grease, form oil, or forms of contamination. Saturate the substrate with water. Before repairing with **Planitop 400 ME**, remove any excess surface water using compressed air or a sponge if needed.

Preparation of the mortar

Pour into a rust-free, mixing vessel the correct amount of water needed to obtain the consistency required for the application. (for every 25 kg of **Planitop 400 ME** powder, 3.75-4.0 liters of water for trowelling consistency).

Using a slow-speed drill fitted with a suitable mixing paddle, start mixing and slowly add **Planitop 400 ME** to the water in a continuous flow. Mix for 1 to 2 minutes, making sure that the mix is well blended. Scrape any unblended powder from the bottom and sides of the mixer. Mix again for another 2 to 3 minutes.

- Mix using a mortar mixer or an electric drill with a mixer attachment may be used. Mix at low speed (typically 300 to 500 rpm) to avoid entraining air.
- Avoid mixing manually unless completely unavoidable. 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 may adversely affect several of the mortar's characteristics, including mechanical strength, shrinkage, impermeability, etc.

Application procedure

The mortar can be trowelled without slumping to overhead or vertical surfaces from a minimum of 2 mm to a maximum thickness of 30 mm per layer. Reinforcing steel bars must be first treated with **Mapefer** or **Mapefer 1K** before applying **Planitop 400 ME**. Where necessary apply a second layer of **Planitop 400 ME** before the previous layer has finished setting (within 4 hours at +23°C).

Precautions to be taken during and after application

Only use bags of **Planitop 400 ME** that have been stored correctly, covered, and stored in a dry place. In hot weather working conditions, the following precautions should be taken:

- Avoid direct exposure to sunlight for stored material and also mixing equipment
- Use cool water (approx +20°C) for mixing
- Avoid application during the hottest time of the day and/or direct sunlight
- Mix only sufficient material that can be applied using available labor and equipment to ensure a continuous and uninterrupted application

Curing

In accordance with good concrete practice, all exposed surfaces of **Planitop 400 ME** must be immediately cured after application, using wet hessian covered with polythene sheeting; failure to cure the open surfaces can cause the formation of cracks due to plastic shrinkage, especially in hot and/or windy climatic conditions; **Mapecure SRA** should also be considered.

Cleaning

Fresh **Planitop 400 ME** can be cleaned from tools with water. Once the product has set, cleaning can only be carried out by mechanical means.

CONSUMPTION

18 kg/m² per cm of thickness.

PACKAGING

25 kg bag

STORAGE

In original packaging and in a dry place, **Planitop 400 ME** can be stored for 12 months.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop 400 ME is an irritant, contains cement that on contact with sweat or other body fluids produces an irritant alkaline reaction and allergic reactions to those predisposed. Wear protective gloves and goggles. In case of contact with eyes or skin wash immediately with plenty of water and seek medical attention.

For further and complete information about the safe use of our product please refer to our latest version of the Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)			
PRODUCT IDENTIFICATION			
Type:	CC		
Consistency:	powder		
Colour:	grey		
Maximum aggregate size (mm):	0.5		
Apparent density (kg/m³):	1300		
Dry solids content (%)	100		
Chloride ions content – minimum requirement ≤ 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 **Planitop 400 ME** with 15-16 parts water (3.75-4.00 litres per 25 kg bag)		
Consistency of mix:	thixotropic		
Density of mix (kg/m³):	2100		
pH of mix:	> 1		
Application temperature range:	from +5°C to +45°C		
Pot life of mix:	ca. 1 hour		
FINAL PERFORMANCE (mixing water 15.5%)			
Performance characteristic	**Test method**	**Minimum requirements according to EN 1504-3 for R3 class mortar**	**Performance of product**
Compressive strength (MPa):	EN 12190	≥ 25 (after 28 days)	7 (after 3 hours) 9 (after 1 day) 20 (after 7 days) 35 (after 28 days)
Flexural strength (MPa):	EN 196/1	none	1.5 (after 3 hours) 2 (after 1 day) 4 (after 7 days) 7 (after 28 days)
Modulus of elasticity in compression (GPa):	EN 13412	≥ 15 (after 28 days)	24 (after 28 days)
Bond strength to concrete (MC 0.40 type substrate water/concrete ratio = 0.40) according to EN 1766 (MPa):	EN 1542	≥ 1.5 (after 28 days)	> 1.5 (after 28 days)

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.

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

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