



Planitop 400

Fast setting shrinkage compensated thixotropic mortar for cortical restoration of concrete by applying a single coat of mortar at a variable thickness between 1 and 40 mm

WHERE TO USE

Deep cortical restoration of vertical and horizontal concrete surfaces.

Some application examples

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

TECHNICAL CHARACTERISTICS

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

Mixed with water **Planitop 400** becomes an easily workable and thixotropic mortar that can be applied on vertical surfaces in a thickness up to 4 cm per coat.

Planitop 400 can be subjected to loads 4-5 hours after its application.

Because of its very fine graded aggregate and high content of synthetic resins, **Planitop 400** can be applied by trowel.

Once **Planitop 400** has hardened completely, it has the following characteristics:

- strong adhesion to the concrete;
- good resistance to wear;
- high mechanical strength.

Planitop 400 meets the requirements defined by ENV 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**.



Planitop 400



Restoring the front of the concrete slab of a balcony: preparing the substrate



Restoring the front of the concrete slab of a balcony: positioning wooden form work



Restoring the front of the concrete slab of a balcony: applying Planitop 400

- Do not use **Planitop 400** by spray with a rendering machine.
- Do not use **Planitop 400** as render (use **Nivoplan**).
- Do not use **Planitop 400** for precision anchoring (use **Mapefill**).
- Do not apply **Planitop 400** on dry or dirty surfaces.
- Do not apply **Planitop 400** on even surfaces. Treat the substrate beforehand in order to have irregularities not less than 5 mm.
- Do not leave bags of **Planitop 400** exposed to the sun before use.
- Do not apply **Planitop 400** at temperatures below +5°C.
- Do not use **Planitop 400** if the bag has been damaged or opened beforehand.

APPLICATION PROCEDURE

Preparing the substrate

From 1 to 4 cm thick of damaged concrete elements (e.g. front side of concrete balconies, cornices, etc.)

Remove damaged and loose concrete until a sound, resistant and rough substrate is obtained. Any repair products previously applied that are not perfectly bonded must be removed. Clean the concrete and the rebars from dust, rust, cement laitance, grease, oil, varnish or paint that have been previously applied, by sanding or by accurately brushing, if the surfaces that need to be restored are not too extensive. Protect any existing rebars with **Mapefer** or **Mapefer 1K**. Wet the substrate with water. Before restoring with **Planitop 400** wait until excess water has evaporated. To eliminate free water, use if necessary, compressed air or a sponge.

Preparing the grout

While mixing pour a 25 kg bag of **Planitop 400** into a bucket containing 3.75-4 litres of clean water. Mix with a drill until a lump free homogeneous paste is obtained.

Due to the speed of **Planitop 400**'s drying, it is recommended to mix only an amount that can be used within 10 minutes (at a temperature of +20°C).

Applying the mortar

Patch-work up to 4 cm thick of damaged concrete elements (e.g. concrete balconies, cornices, etc.)

Apply the mortar with a trowel: 4 cm is the maximum thickness allowed per coat. It is possible to apply more coats of **Planitop 400** approximately every 15 minutes.

Once the restoration has been completed **Planitop 400** has to be cured for at least 24 hours in wet conditions.

MEASURES TO BE OBSERVED DURING AND AFTER APPLICATION

No special precaution needs to be taken when the temperature is around +20°C. During summer do not expose the product to the sun and use cold water to prepare the mix. At a lower temperature use water at +20°C and store the product in a heated room otherwise the beginning of the setting and hardening is delayed.

Cleaning

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

CONSUMPTION

18.5 kg/m² per cm of thickness.

PACKAGING

25 kg bag and 4x5 kg boxes.

STORAGE

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

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

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop 400 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. For further information refer to the Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this 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 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

TECHNICAL DATA (typical values)

PRODUCT IDENTIFICATION

Class according to EN 1504/3:	R3
Type:	CC
Consistency:	powder
Colour:	grey
Maximum aggregate size (mm):	0.5
Bulk density (kg/m ³):	1,300
Dry solids content (%):	100
Chloride ions content - minimum requirements $\leq 0.05\%$ - according to EN 1015-17 (%):	≤ 0.05
Storage:	12 months in original packaging in a dry place
Hazard classification according to CE Directive 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

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

Colour of mix:	grey
Mixing ratio:	100 parts of Planitop 400 with 15-16 parts water (3.75-4 l per 25 kg sack)
Consistency of mix:	thixotropic
Density of mix (kg/m ³):	2,100
pH of mix:	> 12
Application temperature range:	from +5°C to +35°C
Pot life of mix:	ca. 10 mins
Setting time: - initial: - final:	approx 15 mins approx 30 mins

FINAL PERFORMANCE (mixing water 15.5%)

Performance characteristic	Test method	Minimum requirements according to EN 1504-3 for R3 class mortar	Product performance
Compressive strength (MPa):	EN 12190	≥ 25 (after 28 days)	> 8 (after 3 hours) > 15 (after 1 day) > 30 (after 7 days) > 35 (after 28 days)
Flexural strength (MPa):	EN 196/1	none	> 3 (after 3 hours) > 4 (after 1 day) > 5 (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)
Resistance to accelerated carbonation:	EN 13295	Depth of carbonation \leq of the reference concrete (MC 0,45 type with water/concrete ratio = 0,45) according to UNI 1766	test passed
Capillary absorption (kg/m ² ·h ^{0,5}):	EN 13057	≤ 0.5	< 0.5
Thermal compatibility measured as bonding according to EN 1542 (MPa): - freeze-thaw cycles with de-icing salts: - storm cycle: - dry thermal cycle:	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:	Euroclass	value declared by manufacturer	A1



Restoring the front side of the concrete slab of a balcony: finishing



Patch-work of a concrete beam

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1055-1-2009

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