



# 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 front 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 concrete;
- good resistance to wear;
- high mechanical strength.

**Planitop 400** 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 workable.
- Do not add cement, lime, gypsum or additives to **Planitop 400**.
- Do not use **Planitop 400** by spray with a rendering machine.



# 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** 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 compressed air or a sponge if necessary.

### 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 or a spatula: 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.

## PRECAUTIONS TO BE TAKEN DURING 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/m<sup>2</sup> 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. The product complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH), item 47.

## SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

**Planitop 400** is irritant, it contains cement that when in contact with sweat or other body fluids causes irritant alkaline reaction and allergic reactions to those predisposed. It can cause damage to eyes. In case of contact with eyes or skin wash immediately with plenty of water and seek medical attention. It is recommended to use protective gloves and goggles. For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

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](http://www.mapei.com)

**All relevant references for the product are available upon request and from [www.mapei.com](http://www.mapei.com)**

## TECHNICAL DATA (typical values)

### PRODUCT IDENTITY

<b>Class according to EN 1504-3:</b>	R3
<b>Type:</b>	CC
<b>Consistency:</b>	powder
<b>Colour:</b>	grey
<b>Maximum aggregate size (mm):</b>	0.5
<b>Bulk density (kg/m<sup>3</sup>):</b>	1,300
<b>Dry solids content (%):</b>	100
<b>Chloride ions content</b> - minimum requirement $\leq 0.05\%$ - according to EN 1015-17 (%):	$\leq 0.05$

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

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

### FINAL PERFORMANCE (mixing water 15.5%)

Performance characteristic	Test method	Minimum requirements according to EN 1504-3 for R3 class mortar	Performance of product
<b>Compressive strength (MPa):</b>	EN 12190	$\geq 25$ (after 28 days)	> 8 (after 3 hours) > 15 (after 1 day) > 30 (after 7 days) > 35 (after 28 days)
<b>Flexural strength (MPa):</b>	EN 196/1	not required	> 3 (after 3 hours) > 4 (after 1 day) > 5 (after 7 days) > 7 (after 28 days)
<b>Modulus of elasticity in compression (GPa):</b>	EN 13412	$\geq 15$ (after 28 days)	> 24 (after 28 days)
<b>Bond strength to concrete (MC 0.40 type substrate water/cement ratio = 0.40) according to EN 1766 (MPa):</b>	EN 1542	$\geq 1.5$ (after 28 days)	> 1.5 (after 28 days)
<b>Resistance to accelerated carbonation:</b>	EN 13295	Depth of carbonation < of the reference concrete (MC 0.45 type with water/cement ratio = 0.45) according to UNI 1766	test passed
<b>Capillary absorption (kg/m<sup>2</sup>·h<sup>0.5</sup>):</b>	EN 13057	$\leq 0.5$	< 0.5
<b>Thermal compatibility measured as bonding according to EN 1542 (MPa):</b> - freeze-thaw cycles with de-icing salts: - storm cycle: - dry thermal cycle:	EN 13687/1 EN 13687/2 EN 13687/4	$\geq 1.5$ (after 50 cycles) $\geq 1.5$ (after 30 cycles) $\geq 1.5$ (after 30 cycles)	> 1.5 > 1.5 > 1.5
<b>Reaction to fire:</b>	EN 13501-1	Euroclass	A1



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



Patch-work of a concrete beam



**Planitop  
400**



**BUILDING THE FUTURE**

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