



Planitop Smooth & Repair

Quick-setting, fibre-reinforced, controlled-shrinkage thixotropic mortar for repairing and smoothing concrete, may be applied in various thicknesses of 3 mm to 40 mm in a single layer



WHERE TO USE

Non-structural repairs and smoothing layers on internal and external horizontal and vertical concrete surfaces, suitable for repairing exposed structures in permanent contact with water.

Application examples

- Quick repairs to deteriorated parts in concrete, the corners of beams, pillars, buffer walls, cornices and the front edges of balconies.
- Quickly smoothing over surface defects in cast concrete, such as gravel clusters, spacer holes, construction joints, etc. before painting the surface.
- Repairing and smoothing over concrete mouldings on civil buildings, such as skirt roofs and protruding decorative elements.
- Repairing prefabricated concrete structures.

TECHNICAL CHARACTERISTICS

Planitop Smooth & Repair is a single component, thixotropic cementitious mortar, made from special hydraulic binders, selected fine-grained aggregates, polyacrylonitrile synthetic fibres, synthetic resins and selected aggregates, according to a formula developed in MAPEI's own research laboratories.

When **Planitop Smooth & Repair** is mixed with water, it forms a mortar with good workability which may be applied by trowel or spatula on vertical surfaces, for smoothing and repairing in thicknesses of from 3 to 40 mm in a single layer.

Planitop Smooth & Repair hardens without shrinking

and, thanks to its content of synthetic fibres, is characterised by its excellent bond on concrete substrates.

After hardening, **Planitop Smooth & Repair** has the following characteristics:

- excellent bond strength to both old concrete (≥ 1.5 MPa) if wetted beforehand with water, and steel reinforcement, especially when treated with **Mapefer** or **Mapefer 1K** anti-corrosion and re-alkalising cementitious mortar, certified EN 1504-7 "Corrosion protection of reinforcement";
- high dimensional stability and, therefore, low risk of cracking during the plastic phase and when hardened;
- thermal compatibility to freeze/thaw cycles, measured as adhesion according to EN 1542;
- impermeable to water.

Planitop Smooth & Repair meets the main requirements of EN 1504-9 ("Products and systems for protecting and repairing concrete structures: definitions, requirements, quality control and conformity assessment. General principles for the use of products and systems") and the minimum requirements of EN 1504-3 ("Structural and non-structural repairs") for non-structural R2-class mortars and the requirements of EN 1504-2 coating (C) according to principles MC and IR ("Concrete surface protection systems").

RECOMMENDATIONS

- Do not apply **Planitop Smooth & Repair** on smooth substrates: roughen surfaces beforehand.

Planitop Smooth & Repair



Application of Planitop Smooth & Repair by trowel



Application of Planitop Smooth & Repair with a spatula

- Do not apply **Planitop Smooth & Repair** on dry substrates.
- Do not add cement or additives to **Planitop Smooth & Repair**.
- Do not add water to the mix to make it more workable once it starts to set.
- Do not use **Planitop Smooth & Repair** for repairs carried out using a rendering machine, the product starts setting after only 35 minutes.
- Do not leave sacks of **Planitop Smooth & Repair** exposed to the sun before use.
- Do not use **Planitop Smooth & Repair** if the temperature is lower than +5°C.
- Do not use **Planitop Smooth & Repair** if the sack is damaged or if it has been opened previously.
- Do not use **Planitop Smooth & Repair** for fixing elements accurately in place (use **Mapefill** or **Mapefill R**).

APPLICATION PROCEDURE

Preparation of the substrate

- Remove all deteriorated and loose concrete to form a solid, rough and strong substrate. Any areas previously repaired and which are not perfectly bonded must also be removed.
- Remove all dust, rust, cement laitance, grease, oil and paint from the concrete and reinforcement rods by sandblasting or hydro-sandblasting.
- Treat reinforcement rods with **Mapefer** or **Mapefer 1K**, according to the procedure illustrated in the relative data sheet for each product.
- Wait until the **Mapefer** or **Mapefer 1K** has dried.
- Saturate the substrate with water.
- Before carrying out repairs with **Planitop Smooth & Repair**, wait until excess water has evaporated off. If necessary, use compressed air to help remove excess water. The substrate must be saturated with water but with a dry surface.

Preparation of the mortar

Slowly pour a 25 kg sack of **Planitop Smooth & Repair** into a container of 4.75-5.25 litres of clean water while stirring. Carefully mix the blend for several minutes then remove any powder which has stuck to the sides and bottom of the container. Keep mixing until all the ingredients are well blended and until there are no lumps. After mixing, mortar with a plastic consistency is formed. **Planitop Smooth & Repair** remains workable for approximately 20 minutes at +20°C. To make it easier to form a smooth, even paste, use an immersion mixer or a low-speed drill with a spiral mixing attachment to

avoid dragging air into the mix. Avoid mixing the product manually. If manual mixing is unavoidable, use a trowel and press the mortar against the sides of the container to break down all the lumps.

Application of the mortar

Apply the mortar by trowel or spatula and without formwork in layers of from 3 to 40 mm. According to the weather conditions, tamp the surface with a sponge float after approximately 30 minutes (at +20°C). If the structure to be repaired is subject to high dynamic stress, it may be advantageous to apply a flexible smoothing and levelling compound, such as **Mapelastic** or **Mapelastic Smart**. The final protective coat may be applied by using the coloured finishing product **Elastocolor Paint**.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

- Only use sacks of **Planitop Smooth & Repair** which have been stored on their original, covered pallets.
- In hot weather, store the product in a cool area and use cold water to prepare the mix.
- In cold weather, store the product in a closed area at a temperature of +20°C and protect from frost. Use tepid water to prepare the mortar.
- After applying and tamping the mortar, particularly in hot or windy weather, we recommend curing **Planitop Smooth & Repair** carefully to avoid the mixing water evaporating too quickly, otherwise surface cracks may appear due to plastic shrinkage. Spray water on the surface for at least 24 hours after applying the mortar or use a curing agent from the **Mapecure** range. If a curing agent is applied, make sure that it is removed from the surface by sand-blasting or hydro-blasting before applying any other product, since the curing agent may impede a good bond of successive coating layers.

Cleaning

Mortar which has not yet hardened may be washed from tools using water. Once hardened, cleaning is much more difficult, and it must be removed mechanically.

CONSUMPTION

Approximately 14 kg/m² per cm of thickness.

PACKAGING

25 kg sacks.

STORAGE

Planitop Smooth & Repair may be stored for up to 12 months in its original packaging. This product conforms to the requirements of CE 2003/53. The product is available in special 25 kg vacuum-packed polyethylene sacks which may be stored outside for the entire construction phase of the site. Rain has no effect on its characteristics.

Planitop Smooth & Repair: *thixotropic, fibre-reinforced, quick-setting, compensated-shrinkage cementitious mortar for repairing and smoothing concrete, CE certified according to CPD 89/106 in conformity with the requirements of*

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Class according to EN 1504-3:	R2
Type:	PCC
Consistency:	powder
Colour:	grey
Maximum diameter of aggregate (EN 1015-1) (mm):	0.4
Bulk density (kg/m³):	1,200
Dry solids content (%):	100
Ion chloride content: - minimum requirement ≤ 0.05% - according to EN 1015-17 (%):	≤ 0.05
Storage:	12 months in original packaging
Hazard classification according to EC 1999/45:	irritant. Before using, refer to the "Safety instructions for preparation and installation" paragraph and the information on the packaging and Safety Data Sheet
Customs class:	3824 50 90

APPLICATION DATA OF PRODUCT (+20°C – 50% R.H.)

Colour of mix:	grey
Mixing ratio:	100 parts of Planitop Smooth & Repair with 19-21 parts of water (4.75-5.25 litres of water per 25 kg sack)
Consistency of mix:	thixotropic – applicable by trowel
Density of mix (EN 1015-6) (kg/m³):	1,730
Application temperature range:	from +5°C to +35°C
Pot life of mix:	approx. 20 minutes
Waiting time before finishing with float:	approx. 30 minutes
Setting time: - start: - finish:	35 minutes 50 minutes

FINAL PERFORMANCE (20% mixing water)

Performance characteristic	Test method	Requirements according to EN 1504-2 coating (C) principles MC and IR	Requirements according to EN 1504-3 for R2-class mortar	Performance of product
Compressive strength (MPa):	EN 12190	not required	≥ 15 (after 28 days)	≥ 5 (after 1 day) ≥ 15 (after 7 days) ≥ 18 (after 28 days)
Flexural strength (MPa):	EN 196/1	not required	not required	≥ 2 (after 1 day) ≥ 3 (after 7 days) ≥ 4 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412	not required	not required	13 (after 28 days)
Bond strength on concrete (substrate type MC 0.40) according to EN 1766 (MPa):	EN 1542	For rigid systems with no traffic: ≥ 1.0	≥ 0.8 (after 28 days)	≥ 1.5 (after 28 days)
Thermal compatibility measured as bond strength according to EN 1542 (MPa): - freeze-thaw cycles with de-icing salts:	EN 13687/1	For rigid systems with no traffic: ≥ 1.0	≥ 0.8 (after 50 cycles)	≥ 1.5
Capillary absorption (kg/m²·h^{0.5}):	EN 13057	not required	≤ 0.5	≤ 0.4
Impermeability expressed as coefficient of permeability to free water (kg/m²·h^{0.5}):	EN 1062-3	W < 0.1	not required	W < 0,1 Class III (low permeability to water) according to EN 1062-1
Permeability to water vapour – equivalent air thickness S_D- (m):	EN ISO 7783-1	Class I S _D < 5 m Class II 5m ≤ S _D ≤ 50 m Class III S _D > 50 m	not required	S _D < 5 Class I (permeable to water vapour)
Reaction to fire:	EN 13501-1	Euroclass		A1



Smoothing of Planitop Smooth & Repair with a straight edge



Tamping Planitop Smooth & Repair

Planitop Smooth & Repair



SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop Smooth & Repair contains cement which, in contact with perspiration or other body fluids, produces an irritating alkaline reaction and, in those subjects sensitive to such products, an allergic rash. Use protective gloves and goggles.

For further and complete information about a safety use of our product please refer to our latest version of the 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 web site www.mapei.com

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