



Planitop HPC Floor

Fibre-reinforced, shrinkage-compensated, high-strength, high-ductility, highly-fluid cementitious mortar for strengthening the extrados of floor beams

WHERE TO USE

Repairing and strengthening horizontal structures where high-performance, free-flowing mortar is required to integrate thick layers or fill complex areas.

Some application examples

- Seismic upgrading of elements subjected to high stresses where high ductility is required.
- Structural strengthening by casting a thin layer on the external faces of floor beams in reinforced concrete, brick-cement wood or mixed brick-steel beam.
- Repairs to concrete surfaces (industrial floors, roads, airports).
- Reconstructing and levelling off the upper parts of pulvinoes and bearing elements of piles for motorway viaducts.
- Reinstalling floor beams after removing damaged areas by scarifying.

TECHNICAL CHARACTERISTICS

Planitop HPC Floor is a ready-mixed powdered mortar made from high-strength cement, selected aggregates, special admixtures and stiff steel fibres according to a formula developed in the MAPEI Research & Development laboratories. The fibres contained in **Planitop HPC Floor** are hooked at the ends and are made from stiff, brass-plated steel.

When **Planitop HPC Floor** is mixed with water, it forms a fluid mortar suitable for casting into formwork in layers from 1 to 4 cm thick without segregating, and without the need for electro-welded reinforcing mesh. To allow the product's expansive properties to develop fully and correctly, **Planitop HPC Floor** must be mixed

with water and cured in a damp environment. To allow expansion in the open air, **Planitop HPC Floor** may also include 0.25% of **Mapecure SRA**, a special admixture which has the capacity to reduce plastic and hydraulic shrinkage.

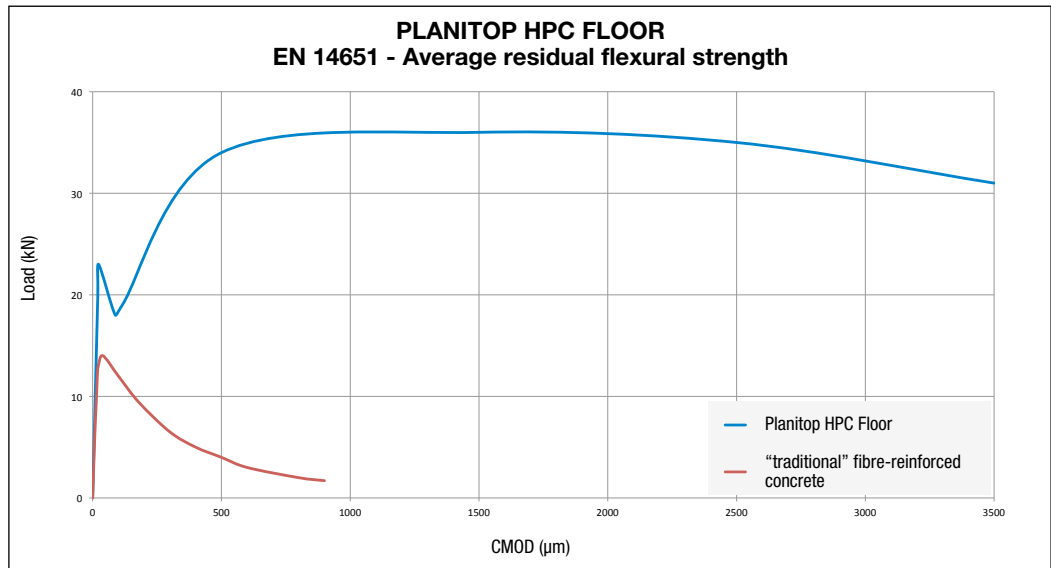
Mapecure SRA carries out an extremely important role and guarantees better curing of the mortar. When mixed with **Planitop HPC Floor** it may be considered a highly advanced technological system, in that the admixture has the capacity of stopping the water evaporating too quickly and encourages the development of the hydration reactions.

Mapecure SRA acts basically as an internal curing agent and, thanks to its interaction with some of the main components in the cement, reduces final shrinkage by 20% to 50% compared with the same product without the admix, which means there is also a lower risk of cracking.

The use of **Mapecure SRA** may reduce mechanical performance characteristics slightly by 5-6%.

Once hardened, **Planitop HPC Floor** has the following characteristics:

- very high flexural and compressive strength;
- high ductility;
- high resistance to cyclical loads;
- impermeable to water;
- excellent adhesion to old concrete, if dampened with water before application, and to reinforcement rods, especially if treated beforehand with **Mapecer 1K**;
- high resistance to wear due to abrasion or impact.



Typical residual flexural strength behaviour in compliance with EN 14651

Planitop HPC Floor complies with the principles defined in EN 1504-9 (*“Products and systems for protecting and repairing concrete structures: definitions, requirements, quality control and conformity assessment. General principles for the use and application of systems”*), and the minimum requirements of EN 1504-3 (*“Structural and non-structural repairs”*) for R4-class structural mortars and EN 1504-6 (*“Anchoring rebar”*).

The product may also be used without adding **Mapecure SRA** when climatic conditions allow a favourable curing cycle to be carried out.

RECOMMENDATIONS

- Do not use **Planitop HPC Floor** on smooth concrete substrates.
- Do not use **Planitop HPC Floor** for anchoring elements accurately in place (use **Mapefill** or **Mapefill R**).
- Do not apply **Planitop HPC Floor** by spray or with a trowel (use **Mapegrout Thixotropic**).
- Do not add cement or admixtures to **Planitop HPC Floor**.
- Do not add water once the mix has started to set.
- Do not use **Planitop HPC Floor** if the bag is damaged or if it has been opened previously.

APPLICATION PROCEDURE

Preparation of the substrate

- Remove all deteriorated concrete and any concrete that is loose or detached down to the level of the substrate. The substrate must be solid and strong with a surface roughness of at least 5 mm. Any areas previously repaired and which are not perfectly adhered must be removed.
- Remove all dust, rust, cement laitance, grease, oil and old paint from the concrete and reinforcement rods by sandblasting.
- If consolidation of the substrate is needed, it is possible to apply **Primer 3296** diluted 1:1 with water at least 4 hours prior to applying **Planitop HPC Floor**.

When casting the mortar in formwork, on the other hand, proceed as follows:

- Saturate the substrate with water.
- Before casting, wait until excess surface water has evaporated off. Use compressed air to accelerate this process if required.

Preparation of the mortar

Pour **Planitop HPC Floor** into a cement mixer and add 2.9-3.1 litres of water for each bag. Mix for at least 12 minutes to form a well-blended, fluid, lump-free mix. **Planitop HPC Floor** remains workable for approximately 1 hour at +20°C.

Application of the mortar on floor slabs

Pour **Planitop HPC Floor** onto the surface and, if necessary, help the mortar spread over the surface with a rake.

Application of the mortar into formwork

Pour **Planitop HPC Floor** into the formwork in a continuous flow from one side only, and make sure all the air is expelled.

The formwork must not absorb any of the water from **Planitop HPC Floor**, so we recommend treating the formwork beforehand with a form-release agent (such as **DMA 1000**).

Make sure all the elements to be reinforced are completely filled. To help the mortar flow into the more difficult areas, use wooden rods or round bars or vibrate slightly.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

- Only use bags of **Planitop HPC Floor** 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 lukewarm water to prepare the mortar.
- After stripping the formwork, we recommend curing **Planitop HPC Floor** carefully to prevent the mixing water evaporating off too quickly, especially in hot or windy weather, otherwise surface

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Class according to EN 1504-3:	R4
Type:	CC
Consistency:	powder
Colour:	grey
Bulk density (kg/m ³):	1,400
Maximum size of aggregate (mm):	1.0
Dry solids content (%):	100
Ion chloride content – minimum requirement ≤ 0.05% - according to EN 1015-17 (%):	≤ 0.05

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

Colour of mix:	grey
Mixing ratio:	100 parts of Planitop HPC Floor with 11.5-12.5 parts of water (2.9-3.1 litres of water per 25 kg bag)
Consistency of mix:	fluid
Density of mix (kg/m ³):	2,400
pH of mix:	> 12.5
Application temperature range:	from +5°C to +35°C
Pot life of mix:	approximately 1 hour (at +20°C)
Accessible to light traffic	24 h (at +20°C)
Accessible to heavy traffic	72 h (at +20°C)

FINAL PERFORMANCE (12% of mixing water)

Performance characteristic	Test method	Requirements according to EN 1504-3 for R4-class mortar	Requirements according to EN 1504-6	Performance of product
Compressive strength (MPa):	EN 12190	≥ 45 (after 28 days)	> 80% of the value declared by the manufacturer (after 28 days)	40 (after 1 day) 130 (after 28 days)
Tensile strength (MPa):	BS 6319	none	none	8.5 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412	≥ 20 (after 28 days)	none	38 (after 28 days)
Shear resistance (MPa):	EN 12615	none	none	16 (after 28 days)
Adhesion on concrete (substrate in MC 0.40- water/cement ratio = 0.40 according to EN 1766 (MPa):	EN 1542	≥ 2 (after 28 days)	none	≥ 3 (after 28 days)
Shore Hardness:	ISO 868	none	none	D > 75
Endogenous shrinkage (%):	–	none	none	< 0.05
Impeded shrinkage (after curing for 7 days in water and 21 days at +21°C - 50% R.H.) (µm/m):	–	none	none	200
Resistance to accelerated carbonation:	EN 13295	Depth of carbonation ≤ reference concrete (MC 0.45 with water/cement ratio = 0.45) according to EN 1766	none	meets specifications
Impermeability to water – penetration depth (mm):	N 12390-8	none	none	< 2
Thermal compatibility measured as adhesion according to EN 1542 (MPa): – Freeze-thaw cycles with de-icing salts:	EN 13687/1	≥ 2 (after 50 cycles)	none	> 2
Resistance to freeze-thaw cycles in the presence of salt - flaking (g/m ²):	EN 12390-9	none	none	< 100 (after 50 cycles)
Slip resistance of steel reinforcing bars - movement under a load of 75 kN (mm):	EN 1881	none	< 0.6	< 0.6
Fracture energy (N/m):	EN 14651 mod.	none	none	18,500
Absorption of energy due to deformation (J):	EN 14488-5 2006	none	none	1294
Residual flexural strength (MPa): – CMOD 1 = 500 µm: – CMOD 2 = 1,500 µm: – CMOD 3 = 2,500 µm: – CMOD 4 = 3,500 µm:	EN 14651	not required	not required	f _{R1} 10.9 f _{R2} 11.5 f _{R3} 11.2 f _{R4} 9.9
Reaction to fire:	EN 13501-1	Euroclass		A1, A1 _{fl}

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cracks may appear. While pouring the mix, spray water on the mortar and then repeat this operation at regular intervals (every 3-4 hours) for at least the first 48 hours. Then cover the surface with waterproof sheets and keep covered for at least 5 days.

Cleaning

Wash the mortar from tools before it hardens using water. Once hardened, cleaning is much more difficult and it must be removed mechanically.

CONSUMPTION

Approximately 21 kg/m² per cm of thickness.

PACKAGING

Planitop HPC Floor is supplied in 25 kg paper bags.

STORAGE

12 months in a dry, covered area in its original packaging.

The product complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH) - All. XVII, item 47.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop HPC Floor contains cement that, when in contact with sweat or other bodily fluids causes an irritant alkaline reactions and allergic reactions in those predisposed. It can cause damage to eyes.

It is recommended to wear protective gloves and goggles and to take the usual precautions for handling chemicals. In case of contact with eyes or skin wash immediately with plenty of water and seek medical advice.

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

LEGAL NOTICE

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The most up-to-date TDS can be downloaded from our website www.mapei.com.

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



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