



Planitop HPC LV

Ultra high performance, self-compacting, fibre-reinforced expanding cementitious mortar

WHERE TO USE

Repairing and strengthening structures where the thickness and shape of areas to be repaired require the use of high-strength, high-flow mortar.

Some application examples

- Filling rigid joints between concrete members and pre-cast concrete.
- Anchoring metallic structures.
- Structural strengthening of reinforced concrete pillars and beams by column and beam jacketing.
- Repairs to concrete floors (industrial, roads, airports).
- Reconstructing and levelling the upper parts of piers and bearing elements of piles for motorway viaducts.
- Reintegrating floor beams after removing damaged areas by scarifying.

TECHNICAL CHARACTERISTICS

Planitop HPC LV is a pre-blended powdered mortar made from high-strength cement, selected aggregates and special additives according to a formula developed in the MAPEI Research & Development laboratories.

When **Planitop HPC LV** is mixed with water it forms a fluid mortar suitable for casting into formwork without segregating in layers from 2 to 10 cm thick, and without the need for electro-welded reinforcing mesh.

To allow the product's expansive properties to develop fully and correctly, **Planitop HPC LV** must be cured in a damp environment. However, it is very difficult to guarantee these conditions on site. Therefore, to allow expansion in the open air, **Planitop HPC LV** may also be admixed with 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 LV** it may be considered a technologically advanced system, in that the admixture has the capacity to stop the water evaporating too quickly and encourage the development of 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 admixture, 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 LV** has the following characteristics:

- very high flexural and compressive strength;
- high resistance to cyclical loads;
- impermeable to water;

- excellent adhesion to old concrete, if dampened with water before application, and to rebar, especially if treated beforehand with **Mapefer** or **Mapefer 1K**;
- high resistance to wear due to abrasion or impact.

Planitop HPC LV 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 of products and systems”*) and the minimum requirements of EN 1504-3 (*“Structural and non-structural repairs”*) for structural R4-class mortars and the minimum requirements of EN 1504-6 (*“Anchoring of reinforcing bars”*).

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 apply **Planitop HPC LV** on smooth concrete substrates.
- Do not apply **Planitop HPC LV** by spray or with a trowel (use **Mapegrout Thixotropic**).
- Do not add cement or additives to **Planitop HPC LV**.
- Do not add water once the mix has started to set.
- Do not use **Planitop HPC LV** if the bag is damaged or if it has been opened previously.

APPLICATION PROCEDURE

Substrate preparation

Remove all deteriorated concrete and any concrete that is loose or detached down to the level of the substrate. The substrate must be sound and strong with a surface roughness of at least 5 mm. Any areas previously repaired and which are not perfectly bonded must be removed. Remove all dust, rust, cement laitance, grease, oil and old paint from the concrete and rebar by sandblasting.

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 the mixing water into the mixer, such as a bucket-type mixer, and gradually add the product. Mix for around 10 minutes to form a well-blended, fluid, lump-free mix.

Planitop HPC LV remains workable for approximately 45 minutes at +20°C.

Application of the mortar

Pour the **Planitop HPC LV** 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 the **Planitop HPC LV**.

We recommend treating the formwork beforehand with a form release agent (such as **DMA 1000**).

Make sure that all the members to be strengthened are completely filled. To help the mortar flow into the more difficult areas, use wooden rods, round bars or vibrate lightly.

Avoid carrying out second pours, including using the wet-on-wet technique, to prevent the formation of cold joints. Mix and freshen up the surface of the mortar that has just been cast and then carry on pouring.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

Only use bags of **Planitop HPC LV** that 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.

We recommend curing **Planitop HPC LV** carefully to prevent the mixing water evaporating off too quickly, especially in hot or windy weather, otherwise surface cracks may appear. Spray water on the surface of the mortar and cover it with polyethylene sheets or keep it moist for at least the first 48 hours.

Cleaning

Mortar may be cleaned from tools before it hardens using water. Once hardened cleaning is much more difficult and it must be removed mechanically.

CONSUMPTION

Approximately 22 kg/m² per cm of thickness.

PACKAGING

Planitop HPC LV is supplied in 25 kg bags.

STORAGE

Planitop HPC LV may be stored for 12 months in its original packaging in a dry, covered area.

This product conforms to the prescriptions of Reg. (EC) N. 1907/2006 (REACH) - Annex XVII, item 47.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop HPC LV contains cement that when in contact with sweat and other body fluids causes irritant alkaline reactions and allergic reactions to those predisposed. It can cause damage to eyes.

While using wear protective gloves and goggles and take the usual precautions for handling chemicals. If the product comes in contact with the 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 the latest version of our Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Class according to EN 1504-3:	R4
Type:	CC
Consistency:	powder
Colour:	grey
Bulk density (kg/m ³):	1,300
Maximum size of aggregate (mm):	6
Dry solids content (%):	100
Ion chloride content – minimum requirement $\leq 0.05\%$ 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 HPC LV with 9.0-9.4 parts of water (2.25-2.35 litres of water per 25 kg bag)
Flow after mix (EN 12350-8) (mm):	800
Density of mix (kg/m ³):	2,400
pH of mix:	> 12.5
Application temperature:	+5°C to +35°C
Pot life of mix:	approx. 1 hour

FINAL PERFORMANCE (9.2% mixing water)

Performance characteristic	Test method	Requirements according to EN 1504-6	Performance of product
Compressive strength (MPa):	EN 12190	> 80% of value declared by manufacturer	115 (after 28 days)
Flexural strength (MPa):	EN 196/1	none	9.5 (after 28 days)
Compressive strength (MPa):	EN 12390-3	none	50 (after 1 day) 100 (after 7 days) 108 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412	none	37 (after 28 days)
Adhesion to concrete (substrate in MC 0.40 - water/cement ratio = 0.40) according to EN 1766 (MPa):	EN 1542	none	≥ 2 (after 28 days)
Impermeability to water – penetration depth (mm):	N 12390-8	none	< 5
Free expansion during the plastic phase (%):	ASTM 827	none	≥ 0.3
Displacement of rebar under a load of 75 kN - (mm):	EN 1881 (*)	< 0.6	< 0.6
Thermal compatibility measured as bonding according to EN 1542 (MPa): – freeze-thaw cycles with deicing salts:	EN 13687/1	> 2	> 2
Reaction to fire:	Euroclass	value declared by manufacturer	A1

(*) Testing carried out in compliance with EN 1881 Standards and considering uniform stress distribution between the bar and Mapefill

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 all cases, be taken as merely indicative and subject to confirmation after long-term, practical applications. For this reason, anyone who intends using this product must ensure beforehand that it is suitable for the envisaged application. In all cases, the user alone is fully responsible for

any consequences deriving from the use of the product.

Always refer to the latest, updated version of the technical data sheet available on the company website www.mapei.com

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