



Planitop SR

One-component ready-mixed high performance fibre-reinforced natural hydraulic lime-based mortar for making “reinforced” composite structural render



WHERE TO USE

Structural render for concrete structures and stone, brick tuff and mixed masonry to give reinforced structures high ductility, improved load-bearing capacity and more regular stress distribution.

Strengthening vaulted element by creating “reinforced shells” with **Mapenet EM 30** and **Mapenet EM 40** high strength, pre-impregnated A.R. alkali resistant glass fibre mesh (FRP) fastened to the structure with **Mapenet EM Connector**. The system follows the approach defined by the guidelines for the approval of FRCM (Fibre Reinforced Cementitious Matrix) systems which stress the importance of obtaining approval for the entire strengthening package.

Some application examples

- New “reinforced” render with **Mapenet EM 30** and **Mapenet EM 40** high strength, pre-impregnated A.R. alkali resistant glass fibre mesh (FRP) fastened to the structure with **Mapenet EM Connector**.
- Increasing the compressive strength of bay walls.
- Levelling off particularly uneven masonry and/or brickwork to create an interface suitable for the application of a composite system.
- Building facing walls with high performance masonry mortar compliant with standards applied in seismic zones.
- Forming construction joints, including joints “reinforced” with composite rods (such as **Maperod**) and steel bows (such as **MapeWrap S Fiocco**) using the repointing technique.

TECHNICAL CHARACTERISTICS

Planitop SR is a ready-mixed powdered mortar made from natural hydraulic lime, hydraulic binders, natural sand, special admixtures and micro-fibres with very low emission level of volatile organic compounds (EMICODE EC1 R Plus), according to a formula developed in the MAPEI research laboratories.

Its characteristics create sufficient adhesion for pre-impregnated, high strength A.R. glass fibre mesh (FRP) from the **Mapenet EM** range and an efficient interlock mechanism for the various components in the FRCM system.

This product is classified GP according to EN 998-1 Standards: “General purpose mortar for internal/external render” with guaranteed performance characteristics, category CS IV.

It is also classified G according to EN 998-2 Standards: “Guaranteed performance, general-purpose masonry mortar for external use on elements with structural requirements”, class M 15 (compressive strength > 15 N/mm²).

When **Planitop SR** is mixed with water in the hopper of a continuous-feed rendering machine or in a cement mixer, it forms a mortar with a plastic-thixotropic consistency which is easy to apply by spray or trowel. Thanks to its special composition, **Planitop SR** has an extremely low rate of hygrometric shrinkage which drastically reduces the risk of crack formation in the mortar. It also has properties that make it resistant to a wide range of aggressive chemical and physical phenomena.

Typical values are shown in the Technical Data table (see Application Data and Final Performance sections)

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Structural render made using Planitop SR and Mapenet EM 40

which refer to the main characteristics of **Planitop SR** at both the fresh and hardened states.

RECOMMENDATIONS

- Never add admixtures, cement or other binders (lime and gypsum) to **Planitop SR**.
- Do not apply **Planitop SR** if the temperature is lower than +5°C.

APPLICATION TECHNIQUE

Preparation of the substrate

Surfaces must be prepared according to specification before applying **Planitop SR**. Remove all loose or crumbling material, dust, mould and any other material or substance that could affect the adhesion of **Planitop SR** using hand or power tools to form a clean, sound, compact substrate. Remove all deteriorated and loose mortar before pointing the joints between masonry elements. Hydro-blast the masonry with low pressure water jets to remove any efflorescence and soluble salts from the surface and to prevent the salts absorbing water from the mortar, otherwise its final performance characteristics could be affected.

If weak substrates need to be consolidated, apply several coats of **Consolidante 8020** or **Primer 3296** (follow the instructions on the relevant Technical Data Sheet).

Fill gaps and uneven areas in the masonry using the “patching” and “tacking” techniques with **Planitop SR** as a base mortar and pieces of stone, brick or tuff with characteristics as similar to the original material as possible. Before applying the mortar wet the substrate so that it is saturated with a dry surface (s.s.d. state).

Place **Mapenet EM 30** or **Mapenet EM 40** high strength, pre-impregnated A.R. alkali resistant glass fibre mesh (FRP) on the substrate.

Fasten the mesh firmly in place to the structure using “L” shaped connectors made from alkali resistant glass fibre and thermo-setting vinylester-epoxy resin, such as **Mapenet EM Connector**.

Fasten the connectors to the masonry using **Mapefix PE Wall** (Polyester resin-based chemical anchor). **Mapefix EP 385-585** (epoxy chemical anchor for structural loads) or **Mapefix VE SF** (styrene-free hybrid vinylester resin-based chemical anchor) may be used for anchors in concrete and the recommended number of connectors to use is 5/m². The strengthening mesh must be set at a certain distance from the substrate so that it is at the mid-point of the finished render.

Preparation of the mortar

Mix **Planitop SR** in the hopper of a continuous-feed rendering machine if applied by spray or in a cement mixer if applied by trowel.

Application of the mortar

Application by trowel

After pouring the minimum amount of clean water required into the mixer (approx. 5 litres every 25 kg bag of **Planitop SR**), slowly add the powdered mortar in a continuous flow.

Add more water if required up to a maximum of 5.25 litres per bag including the water added at the start of mixing. Then mix the **Planitop SR** again for a further 2-3 minutes, depending on the efficiency of the mixer, until an even, “plastic” and thixotropic mix is obtained.

Apply **Planitop SR** in layers of up to 30 mm thick, starting from the lower part of the wall.

Application with a rendering machine

Pour the bags of **Planitop SR** into the hopper of a continuous-feed rendering machine (such as a PFT G4 or G5, Putzmeister MP 25, Turbosol or similar) and set the flow-rate at 320-340 l/h, depending on the type of machine used, until a “plastic” consistency is obtained.

Tests to validate the product were carried out using a Putzmeister MP 25 with the following set-up:

Stator Rotor	Mixer	Tube	Lance
D6 Power D6 - 3	Standard	Ø 25 mm, length 15 m	Standard, 14 mm nozzle

If an initial 5 mm thick layer of semi-fluid **Planitop SR** has been applied, wait until this layer starts to “set” before applying a single layer (maximum 30 mm thick) of **Planitop SR** starting from the bottom of the wall working upwards.

If the thickness to be applied is more than 30 mm, apply **Planitop SR** in several layers. Each layer must be applied without tamping the previous one.

We recommend applying the render from a distance of approximately 20 cm so that the product is applied evenly. After applying the render, wait a few minutes and level off the surface using an aluminium H-type or blade-type straight edge by going over the surface horizontally and vertically until it is flat.

Remove the vertical guides which were previously attached to the wall and fill the gaps with the same mortar.

Finish off the surface of **Planitop SR** with a plastic, wooden or sponge float a few hours after application, depending on the surrounding temperature and conditions.

Cleaning

Remove mortar from tools with water before it hardens. Once hardened cleaning is more difficult and must be carried out mechanically.

PACKAGING

25 kg bags.

CONSUMPTION

Approx. 14.5 kg/m² (per cm of thickness).

STORAGE

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

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

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Consistency:	powder		
Colour:	white		
Maximum size of aggregate (EN 1015-1) (mm):	2.5		
Bulk density (kg/m³):	1,475		
Chloride content (EN 1015-17) (%):	Requirements according to EN 998-1	Requirements according to EN 998-2	Performance of product
	not required	< 0.1	< 0.05
EMICODE:	EC1 R Plus - very low emission		

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

Mixing ratio:	100 parts of Planitop SR with 20-21 parts of water (5-5.25 litres of water every 25 kg bag of product)
Bulk density of fresh mortar (EN 1015-6) (kg/m³):	1,780
Porosity of fresh mortar (EN 1015-7) (%):	15
Application temperature range:	from +5°C to +35°C
Workability time of fresh mortar (EN 1015-9):	approx. 60 mins
Minimum applicable thickness (mm):	10
Maximum applicable thickness per layer (mm):	30

FINAL PERFORMANCE (17% mixing water)

Performance characteristic	Test method	Requirements according to EN 998-1	Requirements according to EN 998-2	Performance of product
Compressive strength after 28 days (N/mm²):	EN 1015-11	CS I (from 0.4 to 2.5)	from Class M 1 (> 1 N/mm²) to Class M d (> 25 N/mm²)	> 15 (Category CS IV) (Class M 15)
		CS II (from 1.5 to 5.0)		
		CS III (from 3.5 to 7.5)		
		CS IV (≥ 6)		
Adhesion to substrate (N/mm²):	EN 1015-12	declared value and failure mode (FP)	not required	≥ 1.0 Failure mode (FP) = B
Initial shear strength (fvok) (N/mm²):	EN 998-2 Appendix C	not required	chart value	0.15
Static modulus of elasticity after 28 days (N/mm²):	EN 13412	not required	not required	10,000
Capillary action water absorption [kg/(m²·min ^{0.5})]:	EN 1015-18	from Category W 0 to Category W 2	declared value	Category W 1
Water vapour permeability factor (μ):	EN 1015-19	declared value	declared value	15
Thermal conductivity (λ _{10,dry}) (W/m·K):	EN 1745	chart value	chart value	0.67
Reaction to fire:	EN 13501-1	value declared by manufacturer	value declared by manufacturer	A1

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SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop SR contains cement that when in contact with sweat or other body fluids causes irritant alkaline reactions and allergic to 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 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.

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



This symbol is used to identify Mapei products which give off a low level of volatile organic compounds (VOC) as certified by GEV (Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.), an international organisation for controlling the level of emissions from products used for floors.



Our Commitment To The Environment
MAPEI products assist Project Designers and Contractors create innovative LEED (The Leadership in Energy and Environmental Design) certified projects, in compliance with the U.S. Green Building Council.

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



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