MAPEI

IN COMPLIANCE WITH EUROPEAN STANDARD
EN 1504-2 (C)
PRINCIPLES
MC-IR
MAPEI
SURFACE PROTECTION SYSTEMS FOR CONCRETE

IN COMPLIANCE WITH EUROPEAN STANDARD
EN 1504-3
R2
MAPEI
REPAIR MORTAR

CE EN 1504-2

CE EN 1504-3

Planitop HDM

Two-component, high-ductility, pozzolan-reaction cementitious mortar used in conjunction with Mapegrid G 220 for "reinforced" structural strengthening of masonry supports, and for smoothing and levelling surfaces in concrete, stone, brickwork and tuff

WHERE TO USE

Smoothing and levelling layers on concrete, stone, brick and tuff surfaces.
For laying **Mapegrid G 220** glass fibre mesh in "reinforced" structural strengthening systems on facing walls, ceilings and masonry elements.

Some application examples

- Strengthening masonry facing walls, ceilings and general masonry work.
- Levelling and strengthening of structural elements in stone, brickwork and tuff.
- High-ductility smoothing and levelling layer on concrete repaired with mortar from the **Mapegrout** and **Planitop 400** lines.
- Laying and smoothing **Mapegrid G 220**, a system for "reinforced" structural strengthening against stresses induced by seismic activity.

TECHNICAL CHARACTERISTICS

Planitop HDM is a two-component, high-strength, cement-based mortar with fine-grained selected aggregates, special admixtures and synthetic polymers in water dispersion, blended according to a formula developed in MAPEI's own Research Laboratories. When the two components (component A powder and component B liquid) are mixed together, an easy-spread mix is obtained which may be applied manually on vertical surfaces at a thickness of up to 6 mm per layer. Thanks to its high content of synthetic resin, **Planitop HDM** has high bonding strength and, once hardened, forms a tough and compact layer which is impermeable to water and aggressive gases present in the atmosphere, but highly permeable to vapour.

Planitop HDM 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 1504-2 coating (C) according to MC and IR principles ("*Surface protection systems for concrete*") and by EN 1504-3 ("*Structural and non structural repair*") for structural mortars of class R2.

RECOMMENDATIONS

- Do not apply **Planitop HDM** if the temperature is lower than +5°C.
- Do not add cement, aggregates or water to **Planitop HDM**.

APPLICATION PROCEDURE

Preparation of the substrate

To guarantee good adhesion, special care must be taken when preparing the substrate. It must be perfectly clean, sound and free of crumbling parts, dust, oil and old paintwork. Sandblasting or a vigorous cleaning cycle with high-pressure water jets are particularly suitable for this operation. If the product is applied on masonry, stone or tuff surfaces, any defects present must be repaired using **Mape-Antique LC** (cement-free binder for light-coloured dehumidifying mortars for the restoration of damp masonry) mixed with local sand.

Planitop HDM

Application of the first layer of Planitop HDM

Positioning of Mapegrid G 220

Covering Mapegrid G 220 with a further layer of Planitop HDM

If missing parts need to be replaced, integrate the repair with new stone, bricks or tuff with physical characteristics which are as similar as possible to the original materials used for the masonry. Deteriorated concrete surfaces must be repaired with products from the **Mapegrout** range.
Before applying the product, wet the substrate until saturated.

Preparation of the mortar

Pour component B (liquid) into a suitable, clean container. Then slowly add component A (powder) while stirring with a mechanical mixer. Carefully mix the **Planitop HDM** for a few minutes, making sure that no powder remains stuck to the sides or the bottom of the container. Continue mixing until the components are perfectly homogenous (no lumps must be present). A low-speed mechanical mixer is particularly suitable for this operation, to avoid air being dragged into the mix. Do not prepare the mix by hand.

Applying of the mortar

When laying Mapegrid G 220

1. Apply a uniform, 3-4 mm-thick layer of **Planitop HDM** using a flat, metal trowel.

2. While the product is still “fresh”, insert the **Mapegrid G 220** by pressing it lightly with a flat trowel so that it adheres perfectly to the mortar.

3. Apply a second uniform layer of **Planitop HDM** approximately 2-3 mm thick in order to completely cover the mesh.

4. Smooth the surface while still “fresh” using a flat trowel.

Adjacent longitudinal and transversal strips of **Mapegrid G 220** must overlap by at least 5 cm at the junction points.

When used as a smoothing layer

1. Spread the mortar on the surface using a metal trowel at a thickness of up to a maximum of 6 mm.

3. Smooth the surface while still “fresh” using a flat trowel.

Finishing the mortar

After applying **Planitop HDM**, if a smooth finish is required, use a MAPEI product such as **Mape-Antique FC** (cement-free fine mortar for the finishing of dehumidifying renders), **Mapefinish** (two-component cementitious mortar) or **Monofinish** (single component, normal-setting cementitious mortar).
Further protective coatings may be applied after complete hardening of the finishing layer. Use **Elastocolor Paint** (protective and decorative elastic paint based on acrylic resins in water dispersion) after applying a coat of **Elastocolor Primer** (solvent-based fixing primer with high penetration properties), or one of the silicate-based products from the **Silexcolor** range or one of the silicone resin-based products from the **Silancolor** range.
All covering materials are available in a wide range of colours, which may be created using the **ColorMap**® automatic colouring system.

Precautions to be taken during and after application

- No special precautions need to be taken when the temperature is around +20°C.

- In particularly dry, hot or windy conditions, **Planitop HDM** must be cured carefully; we recommend protecting the surface against quick evaporation of water.

Cleaning

Due to the high bonding strength of **Planitop HDM**, even on metals, we recommend that work tools are washed with water before the mortar sets. Once it has set, cleaning may only be carried out by mechanical means.

CONSUMPTION

1.8 kg/m² per mm of thickness.

PACKAGING

30.5 kg kits:
component A: 24 kg sacks;
component B: 6.5 kg cans.

STORAGE

Planitop HDM component A may be stored for up to 12 months when contained in its original packaging in a dry place. Manufactured in compliance with the regulations of the 2003/53/EC Directive.

Planitop HDM component B may be stored for up to 24 months.
Both components must be stored at a temperature of at least +5°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Planitop HDM component A contains cement that, when in contact with sweat or other bodily fluids, produces an irritant alkaline reaction and allergic reactions in those predisposed. Wear protective clothing, gloves and eye/face protection.
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

While the indications and guidelines contained in this data sheet correspond to the company's knowledge and wide experience, they must be considered, under all circumstances, merely as an indication and subject to confirmation only after long-term, practical applications. Therefore, anybody who undertakes to use this product, must ensure beforehand that it is suitable for the intended application and, in all cases, the user is to be held responsible for any consequences deriving from its use.

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

Planitop HDM: two-component, high ductility cementitious mortar for repairing and protecting concrete in conformity with the requirements of EN 1504-3 class R2 and EN 1504-2 MC and IR principles.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY	
Type:	PCC
Customs class:	3824 50 90
COMPONENT A:	
Consistency:	powder
Colour:	grey
Maximum size of aggregate (mm):	0.4
Bulk density (kg/m³):	1,100
Dry solids content (%):	100
Chloride ions content - EN 1015-17 (%) – minimum required ≤ 0.05%:	≤ 0.05
Storage:	12 months in a dry place in its original packaging
Hazard classification according to EC 1999/45:	irritant. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packing and Safety Data Sheet
COMPONENT B:	
Consistency:	fluid liquid
Colour:	white
Density (g/ml):	1.02
Dry solids content (%):	23
Chloride ions content - EN 1015-17 (%) – minimum required ≤ 0.05%:	≤ 0.05
Storage:	24 months in its original packaging
Hazard classification according to EC 1999/45:	none. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packing and Safety Data Sheet

FINAL PERFORMANCE (2.5 mm thick layer)

Performance characteristic	Test method	Requirements according to EN 1504-2 coating (C), MC and IR principles	Requirements according to EN 1504-3 for R2-class mortar	Performance of product
Compressive strength (MPa):	EN 12190	not required	≥ 15 (after 28 gg)	> 5 (after 1 day) > 18 (after 7 days) > 28 (after 28 days)
Flexural strength (MPa):	EN 196/1	not required	not required	> 3.0 (after 1 day) > 6.0 (after 7 days) > 10.0 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412	not required	not required	11 (after 28 days)
Bond strength on concrete (substrate in MC 0.40) - water/cement ratio = 0.40) according to EN 1766 (MPa):	EN 1542	For rigid systems with no traffic: > 1.0 with traffic: > 2.0	≥ 0.8 (after 28 days)	≥ 2 (after 28 days)
Bond strength on masonry (Planitop HDM with Mapegrid G220) (MPa):	–	not required	not required	≥ 2 (after 28 days)
Thermal compatibility measured as bonding according to EN 1542 (MPa): **– freeze-thaw cycles with deicing salts:** **– thunder-shower cycle:** **– dry thermal cycle:**	 EN 13687/1 EN 13687/2 EN 13687/4	For rigid systems with no traffic: ≥ 1.0 with traffic: ≥ 2.0	 ≥ 0.8 (after 50 cycles) ≥ 0.8 (after 30 cycles) ≥ 0.8 (after 30 cycles)	 ≥ 2 ≥ 2 ≥ 2
Capillary absorption (kg/m²·h$^{0.5}$):	EN 13057	not required	≤ 0.5	< 0.3
Impermeability expressed as coefficient of permeability to free water (kg/m²·h$^{0.5}$):	EN 1062-3	W < 0.1	not required	W < 0.05 - Class III (low permeability) according to EN 1062-1
Permeability to water vapour – equivelant thickness of air S_D - (m):	EN ISO 7783-1	Class I S_D < 5 m Class II 5 m ≤ S_D ≤ 50 m Class III S_D > 50 m	not required	S_D < 0.5 Class I (permeable to water vapour)
Resistance to accelerated carbonatation:	EN 13295	not required	not required	Depth of carbonatation ≤ the reference concrete (MC 0.45 type, water/concrete mixing ratio = 0.45) according to UNI 1766
Reaction to fire:	Euroclass	according to value declared by manufacture		E

Planitop HDM

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