



# Monofinish HD

## One-component, sulphate-resistant cementitious mortar for repairing, skimming and protecting concrete subjected to high levels of abrasion

### WHERE TO USE

Repairs and protection for the surface of concrete, including when subjected to high levels of abrasion.

### Some application examples

- Wear-resistant coating for channels, sewer manifolds and concrete pipes.
- Protective, abrasion-resistant layers on hydraulic structures.
- Repairs to the wear layer of concrete industrial floors.
- Smoothing and levelling off concrete repaired using mortar from the **Mapegrout** range.
- Levelling off surface defects in poured concrete damaged by wear.

### TECHNICAL CHARACTERISTICS

**Monofinish HD** is a one-component, sulphate-resistant mortar with high resistance to abrasion made from high-strength cement, selected fine-grained aggregates, special additives and powdered synthetic polymers according to a formula developed in MAPEI Research Laboratories.

When **Monofinish HD** is mixed with water, it forms a free-flowing mix which is particularly easy to apply also on vertical surfaces, in layers of 2-3 mm thickness per coat. Thanks to its high content of synthetic resins, **Monofinish HD** forms an excellent bond on all concrete surfaces and, once hardened, forms a tough, compact layer which is impermeable to water. Furthermore, **Monofinish HD** contains special aggregates which make the mortar particularly resistant to abrasion and wear.

**Monofinish HD** 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"*), the minimum requirements of EN 1504-3 (*"Structural and non-structural repairs"*) for structural R4 class mortars and the requirements of EN 1504-2 coating (C) according to principles MC, PR and IR (*"Concrete surface protection systems"*).

### RECOMMENDATIONS

- Do not use **Monofinish HD** to fill very thick areas (use products from the **Mapegrout** range, **Planitop Smooth & Repair** or **Planitop Smooth & Repair R4**).
- Do not add cement or aggregates to **Monofinish HD**.
- Do not apply **Monofinish HD** at a temperature lower than +5°C.

### APPLICATION PROCEDURE

#### Preparation of the substrate

To grant a good adhesion of the system, particular care must be taken during the preparation of the selected substrate.

Surfaces to be treated with this product must be perfectly clean and sound and all traces of efflorescence, form-release oils and loose portions must be eliminated by washing thoroughly with high pressure water jets, sandblasting or hydro-sandblasting. If necessary, rebuild or repair deteriorated areas with mortar from the **Mapegrout** range (refer to the respective technical data sheet).

TECHNICAL DATA (typical values)				
<b>PRODUCT IDENTITY</b>				
Type:	PCC			
Consistency:	powder			
Colour:	grey			
Maximum size of aggregate (mm):	0.5			
Bulk density (kg/m <sup>3</sup> ):	1,300			
Dry solids content (%):	100			
Chloride ions content - EN 1015-17 (%) - minimum requirement ≤ 0.05%:	≤ 0.05			
<b>APPLICATION DATA OF PRODUCT (at +20°C – 50% R.H.)</b>				
Colour of mix:	grey			
Mixing ratio:	100 parts of <b>Monofinish HD</b> with 15.5-16.5 parts of water (approx. 3.9-4.15 l of water per 25 kg bag)			
Consistency of mix:	trowellable			
Density of mix (kg/m <sup>3</sup> ):	2,200			
Application temperature range:	+5°C to +35°C			
Pot life of mix:	approx. 30 min.			
Surface drying time:	approx. 30 min.			
<b>FINAL PERFORMANCE (16% mixing water –2.5 mm thick layer)</b>				
Performance characteristic	Test method	Requirements according to EN 1504-2 coating (C) principles MC, PR and IR	Requirements according to EN 1504-3 for R4-class mortars	Performance of product
Compressive strength (MPa):	EN 12190	Not required	≥ 45 (after 28 days)	15 (after 1 day) 40 (after 7 days) 50 (after 28 days)
Flexural strength (MPa):	EN 196/1	Not required	Not required	4 (after 1 day) 7 (after 7 days) 8 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412	Not required	≥ 20 (after 28 days)	≥ 20 (after 28 days)
Bond strength to concrete (substrate type MC 0,40) according to EN 1766 (MPa):	EN 1542	For rigid systems With no traffic: ≥ 1.0 With traffic: ≥ 2.0	≥ 2 (after 28 days)	≥ 2 (after 28 days)
Thermal compatibility measured as bond strength according to EN 1542 (MPa): - freeze-thaw cycles with de-icing salts:	EN 13687/1	not required	≥ 2 (after 50 cycles)	≥ 2
- freeze-thaw cycles with de-icing salts after thunder-shower cycles:	EN 13687/1 EN 13687/2	For rigid systems With no traffic: ≥ 1.0 With traffic: ≥ 2.0	not required	
Capillary absorption (kg/m <sup>2</sup> ·h <sup>0.5</sup> ):	EN 13057	not required	≤ 0.5	≤ 0.5
Impermeability (coefficient of permeability to free water) (kg/m <sup>2</sup> ·h <sup>0.5</sup> ):	EN 1062-3	W < 0.1	not required	W < 0.1 class III Impermeability (coefficient of permeability to free water)
Permeability to water vapour - equivalent thickness of air S <sub>D</sub> - (m):	EN ISO 7783-1	Class I S <sub>D</sub> < 5 m Class II 5 m ≤ S <sub>D</sub> ≤ 50 m Class III S <sub>D</sub> > 50 m	not required	S <sub>D</sub> < 5 Class I (permeable to water vapour)
Resistance to accelerated carbonation:	EN 13295	not required	Depth of carbonatation ≤ than reference concrete (MC 0.45-type, water/concrete ratio = 0.45) according to UNI 1766 standards	Test passed
Abrasion resistance (mg):	ISO 5470-1	Weight loss < 3000 mg with H22 disk after 1000 cycles/1000 g load	not required	< 1000
Abrasion resistance Böhme abrasion test:	EN 13892-3	not required	not required	class A6
Resistance to impact:	EN ISO 6272-1	No cracks or delamination after loading Class I ≥ 4 Nm Class II ≥ 10 Nm Class III ≥ 20 Nm	not required	class III (no cracks or delamination)
Reaction to fire:	EN 13501-1	Euroclass		E

Wet and saturate the entire surface of the substrate to be skimmed with **Monofinish HD** and then wait until any excess water has evaporated. If necessary, use compressed air or a sponge to help remove excess water.

**Monofinish HD** must not be applied on substrates with a film of free water on the surface.

#### **Preparation of the mortar**

Pour 3.9-4.15 litres of clean water into a suitable container and slowly add a 25 kg bag of **Monofinish HD** while stirring. Carefully mix the blend for a few minutes and remove any powder which has stuck to the sides and bottom of the container.

Keep mixing until the blend is completely homogenous (completely lump-free). A low-speed mechanical mixer is recommended for this operation, to avoid too much air being entrained in 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 and form a smooth blend.

#### **Application of the product**

Spread the mortar on the prepared surface with a trowel, at a maximum thickness of 2-3 mm. Thicker layers will have to be applied in more coats.

**Monofinish HD** may also be applied by spray with one of the following types of mortar pump:

- Turbosol T6 or similar;
- Strobot 406S;
- Putzmeister MP12;
- Putzmeister S5 EV/TM/2.

Whichever type of pump is employed, use a skimming lance with an 8-10 mm diameter nozzle and a pump with an air compressor.

Smooth the surface of **Monofinish HD** with a flat trowel or damp sponge float approximately 30 minutes after application at +20°C. If the surface tends to dry out while smoothing it over, water may be sprayed on it to help the float slide easier.

During hot or windy weather or on particularly sunny days, we recommend spraying water on the surface for the first few hours after application to avoid a too rapid evaporation of the mixing water and a subsequent formation of cracks.

#### **Cleaning**

Because of the high bond strength of **Monofinish HD**, we recommend cleaning tools with water before the mortar starts to set. Once hardened, the product may only be removed mechanically.

#### **CONSUMPTION**

About 1.8 kg/m<sup>2</sup> per mm of thickness.

#### **PACKAGING**

25 kg bags.

#### **STORAGE**

**Monofinish HD** may be stored for up to 12 months in its original packaging in a dry place. The product complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH), item 47.

#### **SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION**

**Monofinish HD** contains cement that, when in contact with sweat or other body fluids causes an irritant alkaline reaction and allergic reactions in those subjects predisposed. It can cause eye damage. During use 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 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](http://www.mapei.com)**

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