



Mapelastastic Smart



Two-component, highly flexible cementitious mortar, to be applied by brush or with a roller, for waterproofing concrete surfaces such as foundations, retaining walls, balconies, terraces, basins and swimming pools and for protection against aggressive chemical agents

WHERE TO USE

Mapelastastic Smart is used to protect new concrete structures, concrete structures repaired using special mortars from the **Mapegrout** or **Planitop** ranges, renders with hairline cracks and cementitious surfaces in general which, being subject to vibrations, may suffer from cracking, and for waterproofing hydraulic projects such as channels and faces of dams and swimming pools, basins, storage tanks, balconies and terraces. Particularly suitable for waterproofing irregular surfaces.

Some application examples

- Waterproofing hydraulic channels, faces of dams and basins.
- Waterproofing bathrooms, showers, balconies, terraces, swimming pools etc. before laying ceramic tiles.
- Waterproofing plasterboard, render or cementitious surfaces, lightweight cement blocks and marine-grade plywood.
- Flexible protection layer of new concrete structures or repaired structures subject to minor deformation under load.
- Protection of cementitious renders or concrete with cracks due to shrinkage, minor movement caused by thermal gradients or dynamic stresses due to the passage of vehicles, against infiltration of water and aggressive elements from the atmosphere.
- Protection of concrete pillars and joists and road and railway viaducts repaired with products from the **Mapegrout** or **Planitop** ranges against the penetration of carbon dioxide.
- Protection of structures with an inadequate layer of concrete over the reinforcement rods against the penetration of aggressive elements.
- Protection of concrete surfaces which may come into contact with sea water, de-icing salts, such as sodium or calcium chloride, and sulphates.

TECHNICAL CHARACTERISTICS

Mapelastastic Smart is a two-component mortar based on cementitious binders, fine-grained selected aggregates, special additives and synthetic polymers in water dispersion, blended according to a formula developed in MAPEI's own research laboratories. When the two components are mixed, a blend with a plastic consistency is obtained. It may be applied by brush, by roller or by spraying with a worm screw rendering machine on both horizontal and vertical surfaces at a thickness of approximately 2 mm. Thanks to the content and high quality of the synthetic resins, the hardened layer of **Mapelastastic Smart** remains constantly flexible under all environmental conditions. **Mapelastastic Smart** is completely waterproof up to a pressure of 1.5 bar and resistant to the penetration of aggressive substances which are present in the atmosphere, such as carbon dioxide, sulphur dioxide and sulphuric anhydride, and soluble salts such as chlorides and sulphates, which are present in seawater or in the ground. **Mapelastastic Smart** has excellent bonding properties on all cementitious, ceramic and marble surfaces as long as they are sound and sufficiently clean. This property, together with its resistance to the deteriorating effect of UV rays, a characteristic of this product, ensures that structures protected and waterproofed with **Mapelastastic Smart** have a long service life, even if they are located in areas with particularly rigid climatic conditions, in coastal areas with a saline-rich atmosphere or in industrial areas where the air is particularly polluted.

Mapelastastic Smart 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)



Waterproofing of terraces by roller



Waterproofing of terraces by brush



Waterproofing of terraces by trowel

according to the PI, MC and IR principles ("Protection systems for concrete surfaces").

RECOMMENDATIONS

- Do not apply **Mapelast Smart** at temperatures lower than +8°C.
- Do not add cement, aggregates or water to **Mapelast Smart**.
- Protect from rain and water spillages for the first 24 hours after application.
- When **Mapelast Smart** is used on large terraces or flat roofs that will not be covered with tiles, vapour vents must be appropriately positioned according to the level of moisture in the substrate (generally every 20-25 m²). This operation is indispensable when **Mapelast Smart** is laid on substrates which are particularly absorbent, such as screeds which have been lightened with polystyrene or foamed clay.

APPLICATION PROCEDURE

Preparation of the substrate

A) Protection and waterproofing of concrete structures and elements (eg. pillars and beams for road and railway viaducts, cooling towers, chimneys, underpasses, retaining walls, applications in coastal areas, basins, swimming pools, channels, faces of dams, columns, faces of balconies, skirt roofs, etc.).

The surface to be treated must be sound and perfectly clean. Remove all cement laitance, flaky parts and traces of powder, grease, oil and removing compounds by sand-blasting or washing down with high-pressure water. If the structure to be waterproofed and protected with **Mapelast Smart** is in a poor condition, remove the damaged parts by hand or mechanical means, or by using a water jet blasting which uses high pressure water and is particularly recommended, because the reinforcement rods are not damaged and the structures are not subject to vibration which could cause hairline cracks to form in adjacent concrete.

Once the rust has been completely removed by sandblasting, carry out the repair with a ready-mixed mortar from the **Mapegrout** range or with **Planitop 400** (see relevant data sheets). Absorbent surfaces to be treated with **Mapelast Smart** must be dampened beforehand with water.

B) Waterproofing of terraces, balconies and swimming pools

- **CEMENTITIOUS SCREEDS:**
 - settlement cracks caused by plastic or hygrometric shrinkage must be sealed beforehand with **Eporip**;
 - if thicknesses of up to 2 cm have to be levelled out (to create slopes, fill out dips, etc.) use **Adesilex P4**.
- **EXISTING FLOORS:**
 - existing floors and coverings in ceramic, gres, klinker or terracotta etc. must be well bonded to the substrate and free from substances which could compromise the quality of the bond, such as grease, oil, wax, paint, etc.
- **RENDERS:**
 - new, cementitious-based renders or lime-cement renders must be well cured (in good weather, we recommend at least 7 days per cm of thickness applied), adherent to the substrate, resistant and free of powder or all kinds of paint;
 - dampen absorbent surfaces to be treated beforehand with water.

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 **Mapelast Smart** for a few minutes, making sure that no powder remains stuck to the sides or the bottom of the container. Keep stirring until a perfectly homogenous mix is obtained.

Use a low-speed mechanical mixer for this operation to avoid too much air entering the mix. Do not prepare the mix by hand.

Preparation of **Mapelast Smart** may also be carried out with a mortar mixer, which is usually supplied with mortar sprayers.

If this technique is used, make sure that the mix is homogenous and has no lumps before it is poured into the hopper of the pump.

Manual application of the mortar

Mapelast Smart must be applied in at least two coats by brush or with a roller within 60 minutes of it being mixed, to give a final thickness of at least 2 mm.

When used for waterproofing terraces, balconies, basins and swimming pools, and for protecting substrates which have hairline cracks or elements which are particularly stressed, we recommend to embed **Mapenet 150** in the first layer of fresh **Mapelast Smart**, to act as a reinforcement (see the **Mapenet 150** data sheet). After the mesh has been laid, finish off the surface with a flat trowel and apply a second layer of **Mapelast Smart** when the first one has set (after 4-5 hours).

To further improve elongation at failure and crack-bridging of **Mapelast Smart** on horizontal surfaces, we recommend inserting **Mapetex Sel** non-woven macro-holed polypropylene fabric (please see the **Mapetex Sel** data sheet). The first layer of **Mapelast Smart** must be at least 1 mm thick. While it is still fresh, carefully lay the **Mapetex Sel** on the surface, and press it in using a flat-bladed trowel to make sure that it is perfectly buttered. Then apply the second coat of **Mapelast Smart** to completely cover the fabric, and smooth over the surface using a flat-bladed trowel.

In the waterproofing sector, more than in any other sector, it is essential that particular attention is paid to details, which alone are capable of making a difference. This is why **Mapeband TPE**, **Mapeband** and other special accessory articles are indispensable and a determining factor.

Mapeband TPE is used to seal structural joints and joints subject to high dynamic stress, **Mapeband** is used to waterproof check joints, fillet joints between horizontal and vertical elements and special kits from the **Drain** range are used to seal drain holes. It is absolutely imperative that special care is in these critical areas after evening out and cleaning the substrate and before applying the cementitious waterproofing mortar.

After applying **Mapelast Smart**, wait at least 5 days for curing (in favourable climatic conditions: t = +20°C) before laying ceramic tiles. This waiting time can be longer in cold climatic conditions.

Laying ceramic tiles on Mapelast Smart

- **BALCONIES AND SWIMMING POOLS:**
 - lay with MAPEI cementitious adhesives and leave wide joints. In swimming pools, use **Granirapid** (class C2F) or **Keracrete + Keracrete Powder** (class C2T). If mosaics are laid, **Adesilex P10 + Isolastic** mixed with 50% (class C2TE S1) water may also be used;
 - grout the joints between the tiles with suitable cementitious grouts, such as **Keracolor FF**, **Keracolor GG** mixed with **Fugolastic**, **Ultracolor Plus** (class CG2) or epoxy resin such as **Kerapoxy** (class RG);

Mapelastic Smart: two-component flexible cementitious membrane for waterproofing balconies, terraces, bathrooms and swimming-pools, and for protecting concrete in compliance with the requirements of EN 14891 and EN 1504-2, coating (C) principles PI, MC and IR.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

	comp. A	comp. B
Consistency:	powder	liquid
Colour:	grey	white
Bulk density (g/cm³):	1.4	–
Density (g/cm³):	–	1.0
Dry solids content (%):	100	53
Storage:	12 months in its original packaging in a dry place	24 months
Hazard classification according to Directive 1999/45 CE:	irritant	none
	Before using refer to the “Safety instructions for preparation and application” paragraph and the information on the packaging and Safety Data Sheet	
Customs class:	3824 50 90	

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

Colour of mix:	grey
Mixing ratio:	component A : component B = 2 : 1
Consistency of mix:	fluid, may be applied by brush
Density of mix (kg/m³):	1,600
Density after application by spray (kg/m³):	2,200
Application temperature range:	from +5°C to +40°C
Pot life of mix:	1 hour

FINAL PERFORMANCE (thickness 2.0 mm)

	Acceptable limit according to EN 1504-2 coating (C) (PI, MC and IR principles)	Performance figures for Mapelastic Smart	
Bond strength to concrete according to EN 1542: – after 28 days at +20°C and 50% R.H. (N/mm²):	For flexible systems with no traffic: ≥ 0.8 with traffic: ≥ 1.5	1.3	
Thermal compatibility to freeze/thaw cycles with de-icing salts, measured as bond strength according to EN 1542 (N/mm²):		0.9	
Bond strength to concrete according to EN 1542: – after 7 days at +20°C and 50% R.H. + 21 days in water (N/mm²):	not applicable	0.9	
Flexibility according to DIN 53504 mod, expressed as elongation: – after 28 days at +20°C and 50% R.H. (%):	not applicable	120	
Static crack-bridging according to EN 1062-7 expressed as maximum width of the crack: – after 28 days at +20°C and 50% R.H. (mm):	from class A1 (0.1 mm) to class A5 (2.5 mm)	class A5 (+20°C) (> 2.5 mm)	
Dynamic crack-bridging according to EN 1062-7 expressed as resistance to cracking cycles:	from class B1 to class B4.2	class B4.2 (+20°C) No failure of the test piece after 20,000 crack cycles with movement of crack from 0.2 to 0.5 mm.	
Permeability to water vapour according to EN ISO 7783-1: - equivalent thickness of air S_D (m):	class I: S _D < 5 m (permeable to vapour)	S _D	μ
		3.6	1,800
Impermeability to water, expressed as capillary absorption according to EN 1062-3 (kg/m²·h^{0.5}):	< 0.1	< 0.05	
Permeability to carbon dioxide (CO₂) according to EN 1062-6 - diffusion in an equivalent thickness of air S_{D,CO2} (m):	> 50	> 50	
Reaction to fire (Euroclass):	According to class declared by manufacturer	E	
	Acceptable limit according to EN 14891	Performance figures for Mapelastic Smart	
Impermeability to water under pressure according to EN 14891-A.7 (1.5 bar for 7 days of positive lift):	no penetration	no penetration	
Crack-bridging ability at +20°C according to EN 14891-A.8.2 (mm):	> 0.75	2.8	
Initial bond strength according to EN 14891-A.6.2 (N/mm²):	> 0.5	1.2	
Bond strength after immersion in water according to EN 14891-A6.3 (N/mm²):	> 0.5	0.7	
Bond strength after application of heat source according to EN 14891-A6.5 (N/mm²):	> 0.5	1.5	
Bond strength after freeze-thaw cycles according to EN 14891-A6.6 (N/mm²):	> 0.5	0.8	
Bond strength after immersion in basic water according to EN 14891-A.6.9 (N/mm²):	> 0.5	0.8	

Bond values according to EN 14891 measured using Mapelastic Smart and a C2-type cementitious adhesive according to EN 12004

Mapelastico Smart

- seal expansion joints with **Mapeflex PU21**, **Mapeflex PU20**, **Mapesil AC**, **Mapeflex PU 50 SL**, **Mapeflex PU40** or **Mapeflex PU45**, according to requirements.

Application of the mortar by spraying

After preparing the surface (refer to "Preparation of the substrate" section) spray on at least two layers of **Mapelastico Smart** at a thickness of at least 1 mm per layer with a rendering machine fitted with a spraying lance for smoothing and levelling compound in order to form a final layer at least 2 mm thick.

Successive coats must only be applied when the previous one is dry (after 4-5 hours).

In areas with hairline cracks or which are highly stressed, insertion of **Mapenet 150** in the first layer of fresh **Mapelastico Smart** is recommended.

Immediately after laying the mesh, **Mapelastico Smart** must be smoothed off with a flat trowel.

To ensure the mesh is totally encapsulated, a further layer of **Mapelastico Smart** may be applied with a spray gun.

To further improve elongation at failure and crack-bridging of **Mapelastico Smart** on horizontal surfaces, we recommend inserting **Mapetex Sel** non-woven macro-holed polypropylene fabric (please see the **Mapetex Sel** data sheet). The first layer of **Mapelastico Smart** must be at least 1 mm thick. While it is still fresh, carefully lay the **Mapetex Sel** on the surface, and press it in using a flat-bladed trowel to make sure that it is perfectly buttered. Then apply the second coat of **Mapelastico Smart** to completely cover the fabric, and smooth over the surface using a flat-bladed trowel.

When operating around expansion joints and joints between horizontal and vertical surfaces, **Mapeband**, alkali-resistant rubber tape with felt, or **Mapeband TPE**, tape made from thermo-plastic polymers and synthetic elastomers, must always be employed.

If **Mapelastico Smart** is used, on the other hand, for protecting bridge piles and joists, railway underpasses or façades on buildings etc., the product may be painted over using products from the **Elastocolor** range, acrylic resin-based paint in water dispersion available in a wide array of colours obtained using the **ColorMap®** automatic colouring system.

If **Mapelastico Smart** is used, on the other hand, for protecting surfaces in constant contact with water and the final coating is not in ceramic such as in swimming pools, or on horizontal concrete surfaces not for pedestrian use such as on flat roofs, the product may be painted over with **Elastocolor Waterproof** flexible acrylic resin-based paint in water dispersion (refer to the technical data sheet for **Elastocolor Waterproof**).

Elastocolor Waterproof is available in a wide range of colours obtained using the **ColorMap®** automatic colouring system and must be applied at least 20 days after applying **Mapelastico Smart**.

Precautions to be taken during and after application

- No special precautions need to be taken when the temperature is around +20°C.
- During hot weather, it is advisable to keep the product out of direct sunlight before use (powder and liquid).

- After application, and in particularly dry, hot or windy weather, we recommend that the surface is protected from rapid evaporation with sheets.

Cleaning

Due to the high bonding strength of **Mapelastico Smart**, 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

Application by brush or roller:

Approx. 1.6 kg/m² per mm of thickness.

Spray gun application:

Approx. 2.2 kg/m² per mm of thickness.

PACKAGING

Units of 30 kg:

component A: 20 kg bags;
component B: 10 kg drums.

STORAGE

Mapelastico Smart component A may be stored for up to 12 months when contained in its original sealed packaging.

Manufactured in compliance with the regulations of the 2003/53/EC Directive.

Mapelastico Smart component B may be conserved for up to 24 months.

Store **Mapelastico Smart** in a dry place and at a temperature of at least 5°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapelastico Smart component A contains cement which, in contact with sweat or other body fluids, produces an irritant alkaline reaction and allergic reaction to those predisposed. Use protective gloves and goggles.

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



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