



Mapelastastic Smart



Two-component, high-flexibility cementitious mortar (with crack-bridging capacity > 2 mm) applied by trowel or roller for waterproofing balconies, terraces, bathrooms and swimming pools



WHERE TO USE

Mapelastastic Smart is used to protect concrete structures, 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, 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 beams 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.

ADVANTAGES

- High performance: a 2 mm thick film can cover cracks up to 2 mm wide.
- Excellent mechanical characteristics thanks to the use of **Mapetex Sel** reinforcement.
- CE-certified product in compliance with EN 1504-2 and EN 14891.
- Excellent elongation at failure (120%).
- Fluid consistency for easy application.
- Resistant to UV rays.
- May also be applied on existing coverings.
- Compatible with ceramic, mosaic and natural stone coverings.
- Product certified EC1 R Plus by the GEV Institute (Gemeinschaft Emissions-kontrollierte Verlegewerkstoffe, e.V.) as a product with very low emission of volatile organic compounds.

TECHNICAL CHARACTERISTICS

Mapelastastic Smart is a two-component mortar based on cementitious binders, 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 are mixed, a blend with a plastic consistency is obtained. It may be applied by

Mapelast^{ic} Smart

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. Due to the content and high quality of the synthetic resins, the hardened layer of **Mapelast^{ic} Smart** remains constantly flexible under all environmental conditions.

Mapelast^{ic} Smart is waterproof 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.

Mapelast^{ic} Smart has excellent bonding properties on all cementitious, ceramic and marble surfaces as long as they are sound and sufficiently clean.

These properties, together with its resistance to the deteriorating effect of UV rays, a characteristic of this product, ensure that structures protected and waterproofed with **Mapelast^{ic} 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.

Mapelast^{ic} 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 requirements claimed by EN 1504-2 coating (C) according to the PI, MC and IR principles (*“Protection systems for concrete surfaces”*).

RECOMMENDATIONS

- Do not apply **Mapelast^{ic} Smart** at temperatures lower than +8°C.
- Do not add cement, aggregates or water to **Mapelast^{ic} Smart**.
- Protect from rain and water spillages for the first 24 hours after application.
- Do not leave **Mapelast^{ic} Smart** exposed in swimming pools.

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, 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^{ic} 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** or **Planitop** range.

Absorbent surfaces to be treated with **Mapelast^{ic} Smart** must be slightly 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 30 mm have to be levelled out (to create slopes, fill in dips, etc.) use **Planitop Fast 330** or carry out a bonding screed with **Topcem** (min 10 mm previous application of slurry bond agent made with **Planicrete**). Refer to the relative TDS documents.

• 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.

To remove all traces of material that could affect the adhesion of **Mapelast^{ic} Smart**, clean existing floors with a mixture of water and 30% caustic soda and thoroughly rinse the floor with water to eliminate all traces of caustic soda.

• RENDERS:

- new, cementitious-based renders or lime-cement renders must be well cured (in good weather, we recommend at least 7 days per mm of thickness applied), bonded to the substrate, resistant and free of powder or all kinds of paint;
- dampen absorbent surfaces to be treated beforehand with water.

Close up of the waterproofing layer

In the waterproofing sector, more than in any other sector, it is essential that particular attention is paid to details. **Mapeband TPE**, **Mapeband** and other special accessories 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 construction joints, 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 taken in these critical areas after levelling out and cleaning the substrate before applying the cementitious waterproofing mortar.

Preparation of the mortar

Pour component B (liquid) into a suitable,



Waterproofing of details by roller



Waterproofing of details by brush



Waterproofing of terraces by trowel

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 (CM01P) 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/cm ³): | 1.4 | - |
| Density (g/cm ³): | - | 1.0 |
| Dry solids content (%): | 100 | 53 |

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/m ³): | 1,600 |
| Density after application by spray (kg/m ³): | 2,200 |
| Application temperature range: | from +8°C to +40°C |
| Pot life of mix: | 1 hour |
| EMICODE: | EC1 R Plus - very low emission |

FINAL PERFORMANCE (thickness 2.0 mm)

| Performance characteristic | Test method | Requirements according to EN 1504-2 coating (C) principles PI, MC and IR | Performance figures for Mapelastic Smart | |
|--|--------------------|--|--|----------|
| Adhesion to concrete - after 28 days at +20°C and 50% R.H. (N/mm ²): | EN 1542 | 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 Adhesion (N/mm ²): | | | 0,9 | |
| Adhesion to concrete - after 7 days at +20°C and 50% R.H. + 21 days in water (N/mm ²): | | | 0,9 | |
| Elasticity expressed as elongation - after 28 days at +20°C and 50% R.H. (%): | DIN 53504 modified | not required | 120 | |
| Static crack-bridging at -20°C expressed as maximum crack width - after 28 days at +20°C and 50% R.H. (mm): | EN 1062-7 | from class A1 (0.1 mm) to class A5 (2.5 mm) | class A5 (+20°C) (> 2.5 mm) | |
| Dynamic crack-bridging at +20°C 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 0.20 to 0.50 mm | |
| Permeability to water vapour - equivalent air thickness S _D (m): | EN ISO 7783-1 | class I: S _D < 5 m (permeable to vapour) | S _D = 3.6 | μ = 1800 |
| Impermeability to water, expressed as capillary absorption (kg/m ² ·h ^{0.5}): | EN 1062-3 | < 0.1 | < 0.05 | |
| Permeability to carbon dioxide (CO ₂) - diffusion in equivalent air layer thickness S _{CO₂} (m): | EN 1062-6 | > 50 | > 50 | |
| Reaction to fire: | EN 13501-1 | Euroclass | E | |
| | | Requirements according to EN 14891 | Performance figures for Mapelastic Smart | |
| Impermeability to water under pressure (1.5 bar for 7 days of positive lift): | EN 14891-A.7 | no penetration | no penetration | |
| Crack-bridging ability at +23°C (mm): | EN 14891-A.8.2 | ≥ 0.75 | 2.8 | |
| Crack-bridging ability at -5°C (mm): | EN 14891-A.8.3 | ≥ 0.75 | 0.8 | |
| Initial adhesion strength (N/mm ²): | EN 14891-A.6.2 | ≥ 0.5 | 1.2 | |
| Adhesion after immersion in water (N/mm ²): | EN 14891-A.6.3 | ≥ 0.5 | 0.7 | |
| Adhesion after application of heat source (N/mm ²): | EN 14891-A.6.5 | ≥ 0.5 | 1.5 | |
| Adhesion after freeze-thaw cycles (N/mm ²): | EN 14891-A.6.6 | ≥ 0.5 | 0.8 | |
| Adhesion after immersion in basic water (N/mm ²): | EN 14891-A.6.9 | ≥ 0.5 | 0.8 | |
| Adhesion after immersion in chlorinate water (N/mm ²): | EN 14891-A.6.8 | ≥ 0.5 | 0.8 | |

Adhesion values according to EN 14891 measured on **Mapelastic Smart** and C2-type cementitious adhesive in compliance with EN 12004

clean container. Then slowly add component A (powder) while stirring with a mechanical mixer. Carefully mix **Mapelastec 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 **Mapelastec 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

Mapelastec Smart must be applied in at least two coats by trowel 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** alkali-resistant glass fibre mesh in the first layer of fresh **Mapelastec Smart**, to act as a reinforcement.

After the mesh has been laid, finish the surface with a flat trowel and apply a second layer of **Mapelastec Smart** when the first one has set (after 4-5 hours). To further improve elongation at failure and crack-bridging of **Mapelastec Smart** on horizontal surfaces, we recommend inserting **Mapetex Sel** non-woven macro-holed polypropylene fabric. The first layer of **Mapelastec Smart** must be at least 1 mm thick. While it is still fresh, carefully lay **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 **Mapelastec Smart** to completely cover the fabric, and smooth over the surface using a flat-bladed trowel.

After applying **Mapelastec Smart**, wait at least 5 days for curing before laying ceramic tiles.

This waiting time can be longer in cold climatic conditions.

In good weather and at normal temperatures, on the other hand, this time may be reduced to 24 hours for dry substrates.

Laying ceramic tiles on Mapelastec

• BALCONIES AND TERRACES:

- bond in place using a C2 class cementitious adhesive such as **Adesilex P9** or **Keraflex Maxi S1**. For more rapid setting, a C2F class adhesive such as **Adesilex P9 Express** or even **Keraflex**

S1 Express can be used.

- grout the joints with a CG2 class cementitious product such as **Keracolor FF**;
 - seal the movement joints with a special MAPEI elastic sealant (such as **Mapeflex PU 45 FT**, **Mapesil AC** or **Mapesil LM**. Other types of sealant may be required for specific service conditions: please refer to the MAPEI Technical Services Department).
- SWIMMING POOLS:
 - grout the joints with a CG2 class cementitious product (**Keracolor FF** mixed with **Fugolastic** or **Ultracolor Plus**) or with an RG Class epoxy product such as the **Kerapoxy** range of products);
 - seal the joints with **Mapesil AC** silicone sealant.

Application of the mortar by spraying

After preparing the surface (refer to "Preparation of the substrate" section) spray on at least two layers of **Mapelastec 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 **Mapelastec Smart** is recommended.

Immediately after laying the mesh, **Mapelastec Smart** must be smoothed with a flat trowel. To ensure the mesh is totally encapsulated, a further layer of **Mapelastec Smart** may be applied with a spray gun.

To further improve elongation at failure and crack-bridging of **Mapelastec Smart** on horizontal surfaces, we recommend inserting **Mapetex Sel** non-woven macro-holed polypropylene fabric. The first layer of **Mapelastec 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 **Mapelastec Smart** to completely cover the fabric, and smooth over the surface using a flat-bladed trowel.

If **Mapelastec Smart** is used, for protecting bridge piles and beams, 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 **Mapelastic Smart** is used for protecting 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. **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 **Mapelastic 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 **Mapelastic 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 trowel or roller:

Approx. 1.6 kg/m² per mm of thickness.

Spray gun application:

Approx. 2.2 kg/m² per mm of thickness.

N.B.: *the consumption figures indicated are for a seamless film on a flat surface and are higher if applied on uneven substrates.*

PACKAGING

Units of 30 kg:
component A: 20 kg paper bags;
component B: 10 kg drums.

STORAGE

Mapelastic Smart component A may be stored for up to 12 months when contained in its original sealed packaging in a dry place.

Mapelastic Smart component B may be stored for up to 24 months.

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

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapelastic Smart component A is irritant; contains cement that when in contact with sweat or other body fluids causes irritant alkaline reaction and allergic reactions to those predisposed.

Mapelastic Smart component B is not considered hazardous according to current standards and regulations regarding the classification of mixtures. During use wear protective gloves and goggles and take the usual precautions for the handling of chemical products. 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 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

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The most up-to-date TDS can be downloaded from our website www.mapei.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.



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

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



**Mapelastic
Smart**



BUILDING THE FUTURE

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