

MAPEGUARD UM 35

Installation manual

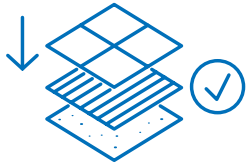


**WATERPROOFING, UNCOUPLING
AND ANTI-FRACTURE MEMBRANE
FOR CRACKED, DAMP AND/OR NOT PERFECTLY
CURED SUBSTRATES FOR THE INSTALLATION
OF CERAMIC TILES AND STONE MATERIAL.**

Mapeguard UM 35

Installation manual

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Introduction to Mapeguard UM 35

Current standards define the **performance characteristics the substrates should meet** for the installation of ceramics or stone material. Substrates such as concrete, cementitious screeds, existing ceramic and wood flooring, or anhydrite screeds must, therefore, meet specific performances and requirements.

Nonetheless some substrates, especially when referring to the field of restoration, can be difficult to handle or simply do not meet the needed requirements. Conditions such as:

- moisture
- seamlessness (in case of control or expansion joints)
- stability
- watertightness

if not treated in the right way, may affect the correct laying of the flooring.

Mapeguard UM 35 is a membrane made of a layer of honeycomb HDPE with a rough surface and polypropylene fabric backing that allows installing ceramics or stone material on most substrates even when these present problems and/or do not meet the standard needed requirements.

Advantages of the system



Crack control

Mapeguard UM 35 allows the control of cracks in the substrate acting as an **anti-fracture membrane**. It acts as an **uncoupling element** that prevents the transmission of substrate cracks to the flooring.



Waterproofing

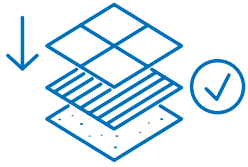
Mapeguard UM 35 membrane is **waterproof** and protects substrates from infiltrations of water, thus improving their durability.

It may be used on internal and external surfaces in combination with **Mapeband Easy** for sealing joints between the sheets and waterproofing critical areas (edges, corners, etc.).

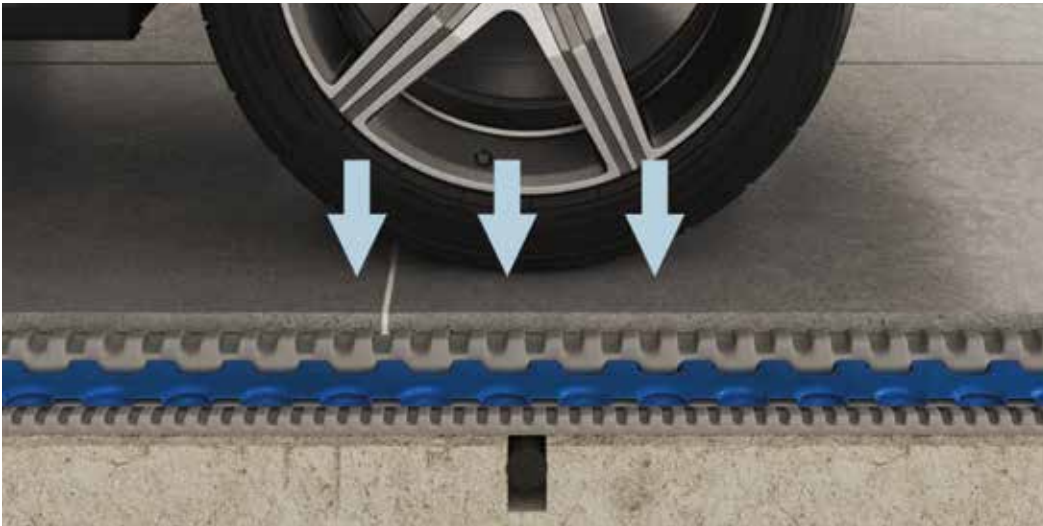


Vapour control

Any moisture in the substrates evaporates thanks to the air channels on the back of the membrane. Therefore, **Mapeguard UM 35** is suitable for use on **damp substrates and/or on substrates that are not fully cured**, including in external environments.

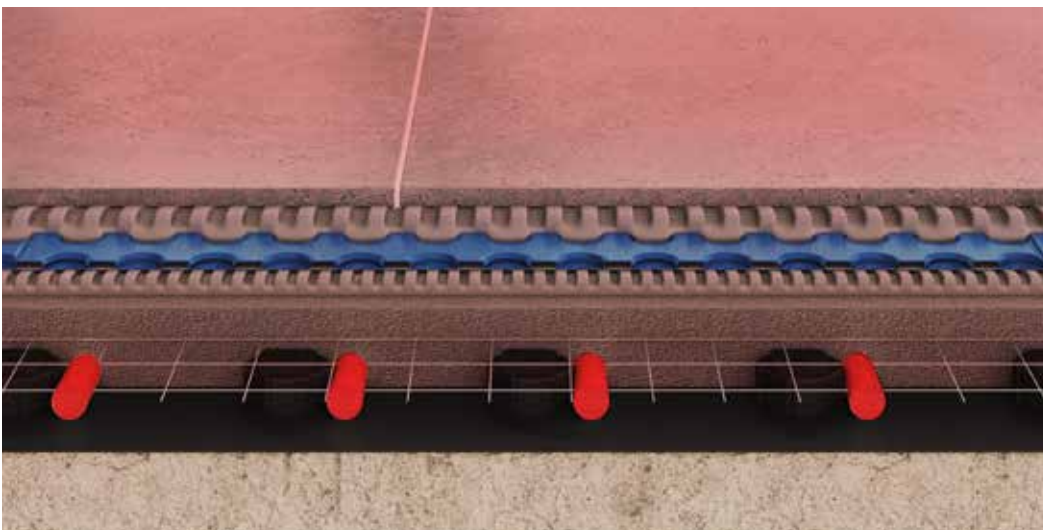


Introduction to **Mapeguard UM 35**



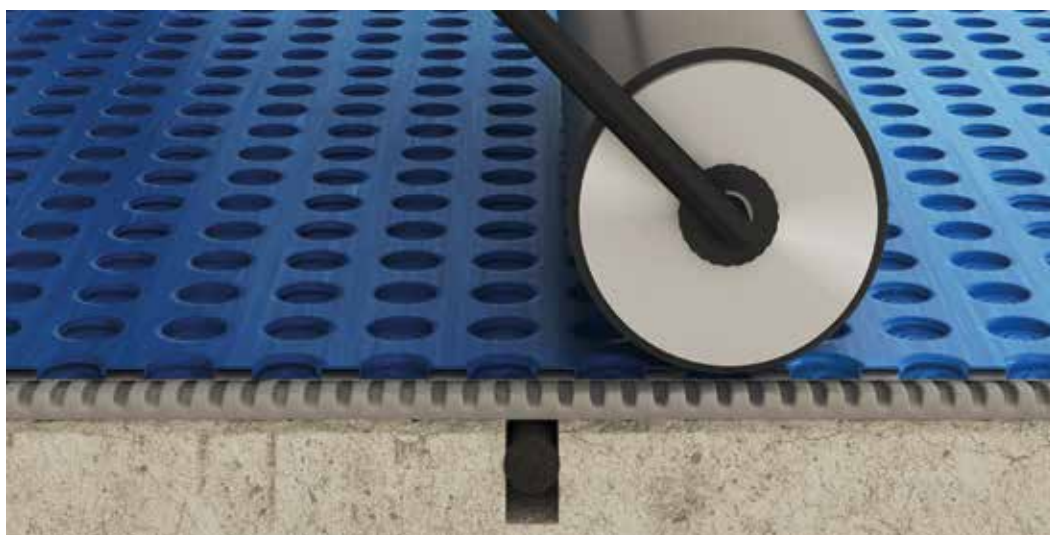
Mechanical strength

Mapeguard UM 35 allows the distribution of stresses also on floors subject to heavy loads. **Mapeguard UM 35** is certified as **Extra Heavy Commercial Rating** according to TCNA test report, complying with ASTM C 627 American standard and is suitable for use in residential and commercial environments.



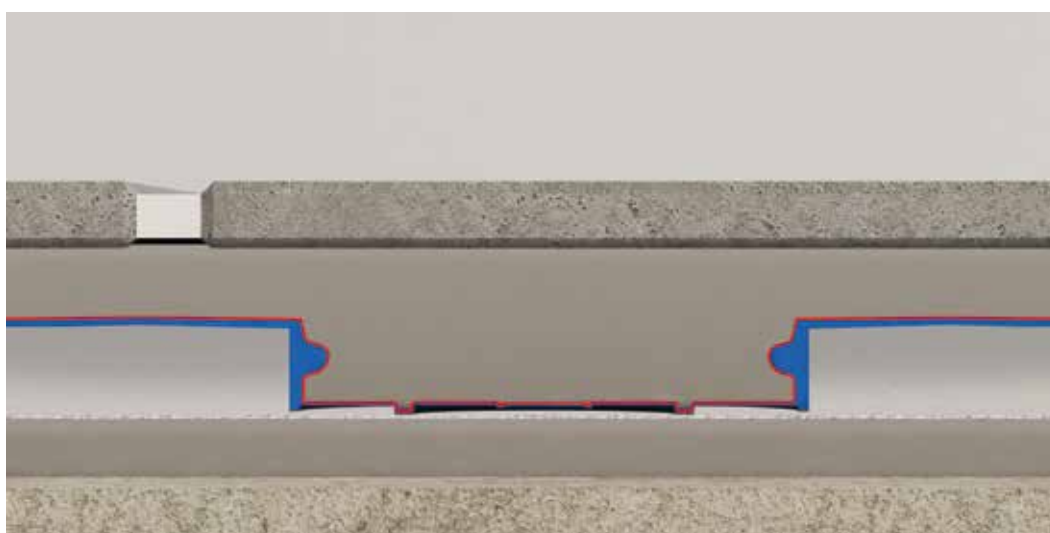
Even heat distribution

Mapeguard UM 35 guarantees that **heat is distributed evenly** when applied on underfloor heating systems, including underfloor thin heating systems.



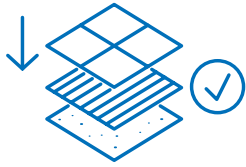
Transparency

Mapeguard UM 35 is semi-transparent and this **allows verifying the correct distribution of the adhesive** underneath. It also **allows easily locating any elements passing** through surfaces (such as drains) thus making the cutting of the membrane easier.



Improved adhesion

Thanks to the particular shape of the embossings on **Mapeguard UM 35** surface, the adhesive used for laying the covering strongly bonds to it. The special shape of the embossings offers a perfect **mechanical grip of the adhesive** in order to obtain a high adhesion between the ceramic or stone covering and **Mapeguard UM 35**.



Where to **use**

Interior and exterior installation as an uncoupling, and anti-fracture membrane for laying ceramic and stone flooring on difficult, cracked or not fully cured substrates, and without having to copy the layout of control and expansion joints in the substrate.

Mapeguard UM 35 is suitable for **balconies and terraces** since it creates an uncoupling and vapour pressure compensation layer on damp substrates and/or on substrates that are not fully cured.

Mapeguard UM 35 is a **waterproofing, uncoupling** and **anti-fracture membrane** that allows moisture in the underlying layers to be released.

Mapeguard UM 35 is suitable for installing ceramic and stone tiles, **including when overlaying existing flooring**.

Mapeguard UM 35 may be used in the following environments



*New residential buildings
and residential buildings under renovation*



Commercial environments



Hospitals



Hotels



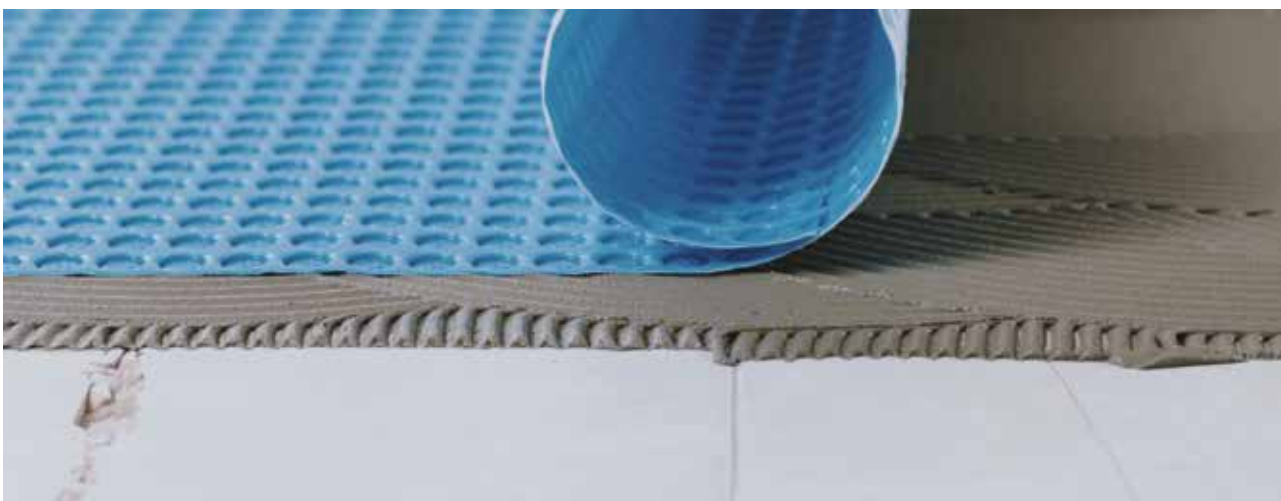
Balconies and terraces



Bathrooms



Laying **Mapeguard UM 35** on a cementitious screed with control joints.



Laying **Mapeguard UM 35** on existing cracked ceramic flooring.



Laying **Mapeguard UM 35** on existing ceramic flooring with expansion joints.



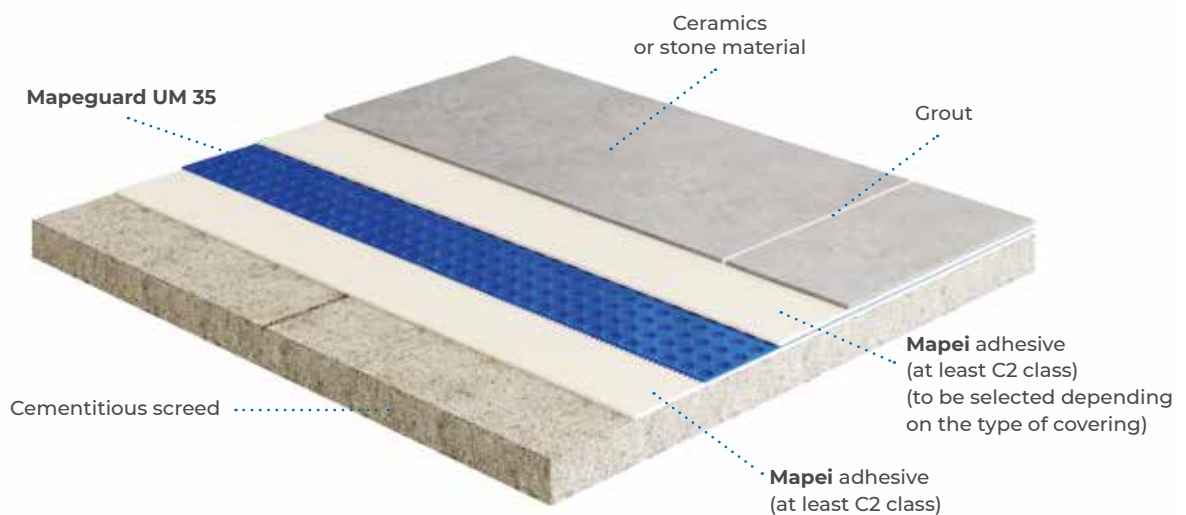
Types of substrate

Mapeguard UM 35 is suitable for these types of substrate:

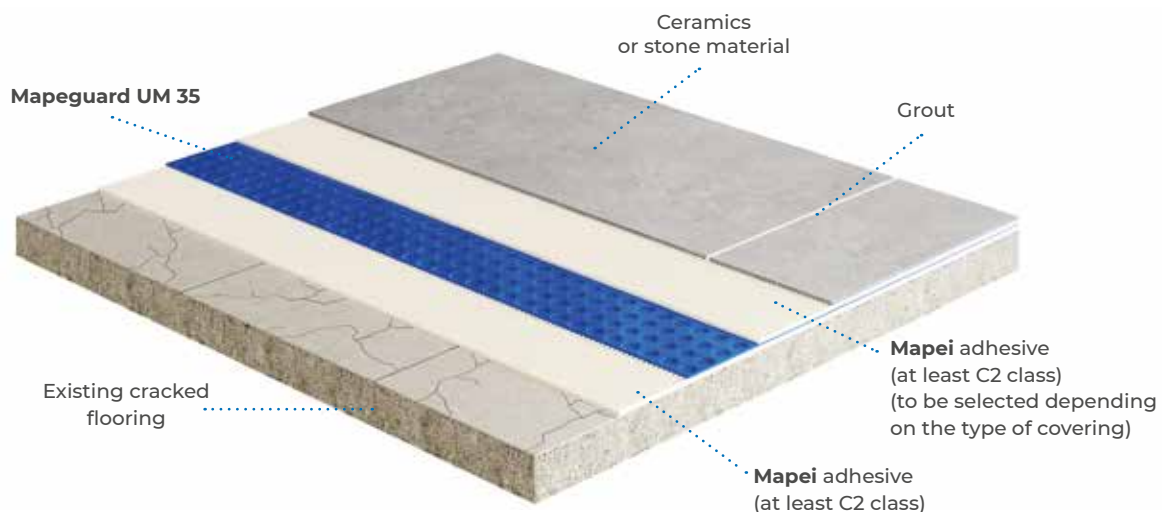
- Concrete*
- Cementitious screeds*
- Cementitious screeds with heating system*
- Anhydrite screeds
- Anhydrite screeds with heating systems
- Existing ceramic flooring
- Existing resin flooring
- Existing wood flooring

**Mapeguard UM 35 helps substrates cure correctly by preventing water from evaporating too quickly.*

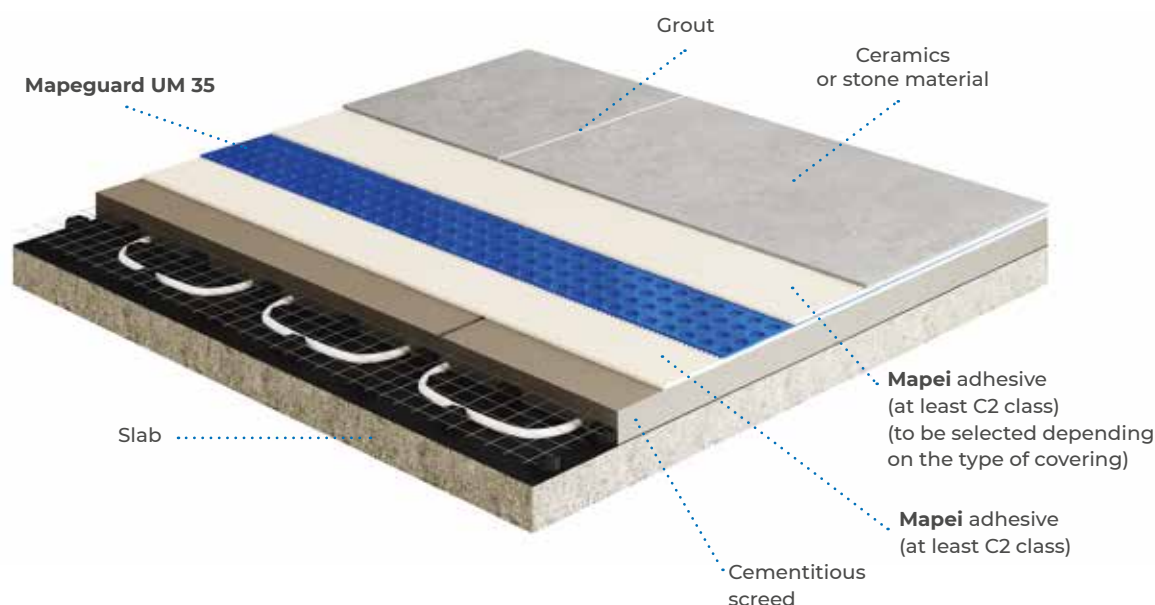
Installation of **Mapeguard UM 35** on a cementitious screed with control joints



Installation of **Mapeguard UM 35** on a screed or an existing cracked ceramic flooring



Installation of **Mapeguard UM 35** on a heated screed



Recommendations

- The substrate must have an adequate mechanical strength according to expected loads.
- Do not use in correspondence with structural joints on the substrate.
- Do not apply over cracks or joints subject to out-of-plane movements.
- Do not apply directly over structural cracks and/or cracks wider than 3 mm.
- Do not use with tiles smaller than 5x5 cm.
- For substrates subject to residual moisture, use **Mapeband Easy** to seal joints between adjacent sheets of the membrane.
- Do not use on dry anhydrite substrates unless they have been treated beforehand with a special primer such as **Primer G** or **Eco Prim T Plus**.
- Anhydrite substrate must have maximum residual moisture content 2%.
- Do not apply directly on bituminous membranes.
- **Mapeguard UM 35** needs to be covered with suitable ceramic or stone flooring.
- Do not use on lightweight screeds.

Preparation of the **substrate**

Preparation of screeds

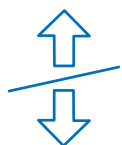
For information on how to install screeds and suitable products to create screeds please refer to Mapei Technical Notebook “Installation of Heated Screeds and Substrates for Laying Floors”.

In order to be suitable for laying floors, screeds must comply with the requirements of the current standards, as follows.



Integrity

The **thickness of the screed** must be defined according to the type of screed (unbonded screed, floating screed, bonded screed with underfloor heating) and to its expected loads. Any gaps or hollows in the screed must be repaired with **rapid-setting mortars**, such as **Topcem Pronto** or **Mapecem Pronto**, applied using the wet-on-wet technique over bonding slurry made of water, cement and **Planicrete**, or with **Eporip**. Fill the pipe trenches with mortar: the thickness of the mortar layer must be at least 2.5 cm higher than the pipe. Moreover, a light mesh must be laid over the pipe. Any **cracks** in the screed (wider than 3 mm) must be sealed monolithically by pouring in them epoxy or polyester resin (such as **Eporip**, **Eporip Turbo**, or **Epojet**). The resin must then be broadcast while still wet with dry sand to improve the adhesion of the subsequent layers.

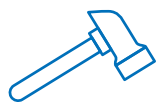


Mechanical strength

The **mechanical strength** of the screed depends on the intended use of the flooring.

The current standards define the requirements of a screed according to expected load (e.g. according to the Italian standard, 16 MPa for a screed without a heating system inside residential buildings, 20 MPa for a heated screed inside residential buildings, and 30 MPa for a cementitious screed outside residential buildings).

If an interior screed has a crumbling surface, it may be consolidated by treating it with special consolidating primers, such as **Primer MF**, **Primer MF EC Plus**, **Eco Prim PU 1K**, or **Prosfas**.



Compaction and uniformity

The surface of the screed must be **compact and strong**. In certain cases, a surface may appear compact but could still have **surface bleeding**. The strengths of a screed presenting surface bleeding may be reduced if compared to those originally designed. Surface bleeding may also cause detachment of the flooring if not verified before it has been installed.

The compactness of a screed **may be checked empirically** with a rubber mallet and surface bleeding may be examined by punching the surface with a bradawl. Any surface bleeding must be removed mechanically and, if necessary, the surface must then be repaired by applying a coat of primer and skimming compound.



Cleaning

The screed must be clean and free from dust, oil, detached areas, or any other material or substance that could affect the adhesion of the subsequent layer (cement laitance, old adhesive, paint, etc.). The screed must be cleaned mechanically or with a specific method, depending on the type of contaminant on the surface.



Flatness and levelness

The **maximum tolerances for horizontal surfaces** depend on the tolerances allowed by the type of covering installed. Unless otherwise specified, a surface is considered as sufficiently flat when under a 2 m straight edge, no gaps exceeding 3 mm are found.

If a **slope** is required **for drainage purposes**, the condition of the surface still needs to be checked and a slope of at least 1% needs to be created.

If a screed does not meet the requirements in terms of flatness/levelness or slope, a suitable levelling product may be applied to correct the defects. The suitable product must be selected depending on where it needs to apply (interior or exterior), on the need of creating slopes, and on the thickness to be applied in order to level off the defects.

For interior surfaces that are not perfectly flat, **self-levelling products** and **thixotropic mortars** from the **Mapei range** may be used (such as **Ultraplan**, **Ultraplan Maxi**, **Planex HR Maxi**, **Adesilex P4**, **Planitop Fast 330**, or **Nivorapid**).

In case of exterior surfaces, if a slope needs to be corrected or a new slope needs to be created, use a product such as **Adesilex P4**, **Planitop Fast 330** or **Planex HR Maxi**.

Preparation of the **substrate**

Preparation of existing floors

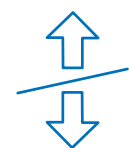
When carrying out renovation work, old flooring is often overlaid with new ceramic flooring. The installation should meet the following requirements.



Integrity

The existing floor covering must be firmly bonded to the substrate and the substrate itself must be strong enough for the type of use specified.

Any damaged, detached, or cracked areas must be removed. If any **elements are either detached or have been removed**, the soundness of the underlying substrate must be assessed and, if necessary, it must be repaired where required (with a product such as **Planitop Fast 330** or **Adesilex P4**).



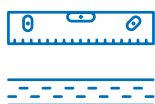
Mechanical strength

If the mechanical strength of the substrate is not high enough, the flooring has to be removed and the substrate must be repaired.



Cleaning

All existing surfaces must be **thoroughly cleaned** and have no detached areas or substances that could affect adhesion (cement laitance, oil, wax, grease, etc.). Before installing the flooring, it is also recommended to clean the surfaces with **a product suitable for the type of contaminant on the surface**, **UltraCare HD Cleaner** is for example ideal for cleaning and preparing existing ceramic and stone surfaces. It is also suitable for removing previous treatments with water-based and metallic waxes.



Flatness and levelness

Tolerances for flatness are the same as those for screeds. Also, if a slope is required, make sure that the existing one meets all the requirements, and in case it doesn't, repair it or create a new one when necessary.

After having cleaned it thoroughly, old ceramic flooring may be levelled off with a suitable skimming product.



Application of Mapeguard UM 35

Uncoupling and anti-fracture layer in internal environments

1

Cutting Mapeguard UM 35

Unroll the membrane and cut it to the shape and size of the area, taking into account the presence of sidewalls, bond-beams, pillars, drains, etc.

The **membrane may be cut** to shape with simple tools, such as scissors or a craft knife.



2

Application of the adhesive

Spread the adhesive over the surface of the substrate with a suitable notched trowel (e.g. a 5 mm notched trowel). Use a **Mapei** class C2 improved adhesive according to EN 12004 or ISO 13007-1 standards (such as **Keraquick Maxi S1**, **Ultralite S1 Flex Zero**, **Keraflex Maxi S1 Zero**, **Keraflex Extra S1 Zero**, **Keraflex Easy S1 Zero**, **Keraflex**).

When laying the membrane on wood, metal or resilient flooring, it is recommended to use a reactive adhesive such as **Keralastic** or **Ultrabond Eco PU 2K**.

The special fabric on the backside of **Mapeguard UM 35** creates an **excellent mechanical grip** between the membrane, the adhesive, and the substrate.



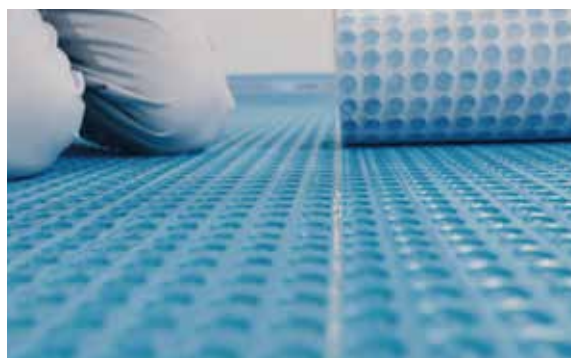


Application of Mapeguard UM 35

3

Laying Mapeguard UM 35

Lay the membrane over the adhesive while it is still wet **with the blue side facing upwards**; make sure the white felt backing is completely wetted. When laying the rolls of the membrane, it is recommended to leave a **3-5 mm gap between the sheets**.



4

Pressing Mapeguard UM 35

When installing **Mapeguard UM 35**, it is very important to press down properly the membrane over the adhesive using a float or a roller using **Mapeguard Roller** (max. 35 kg). If necessary, place weights on the edges of the rolls until the adhesive sets.



5

Protection of Mapeguard UM 35

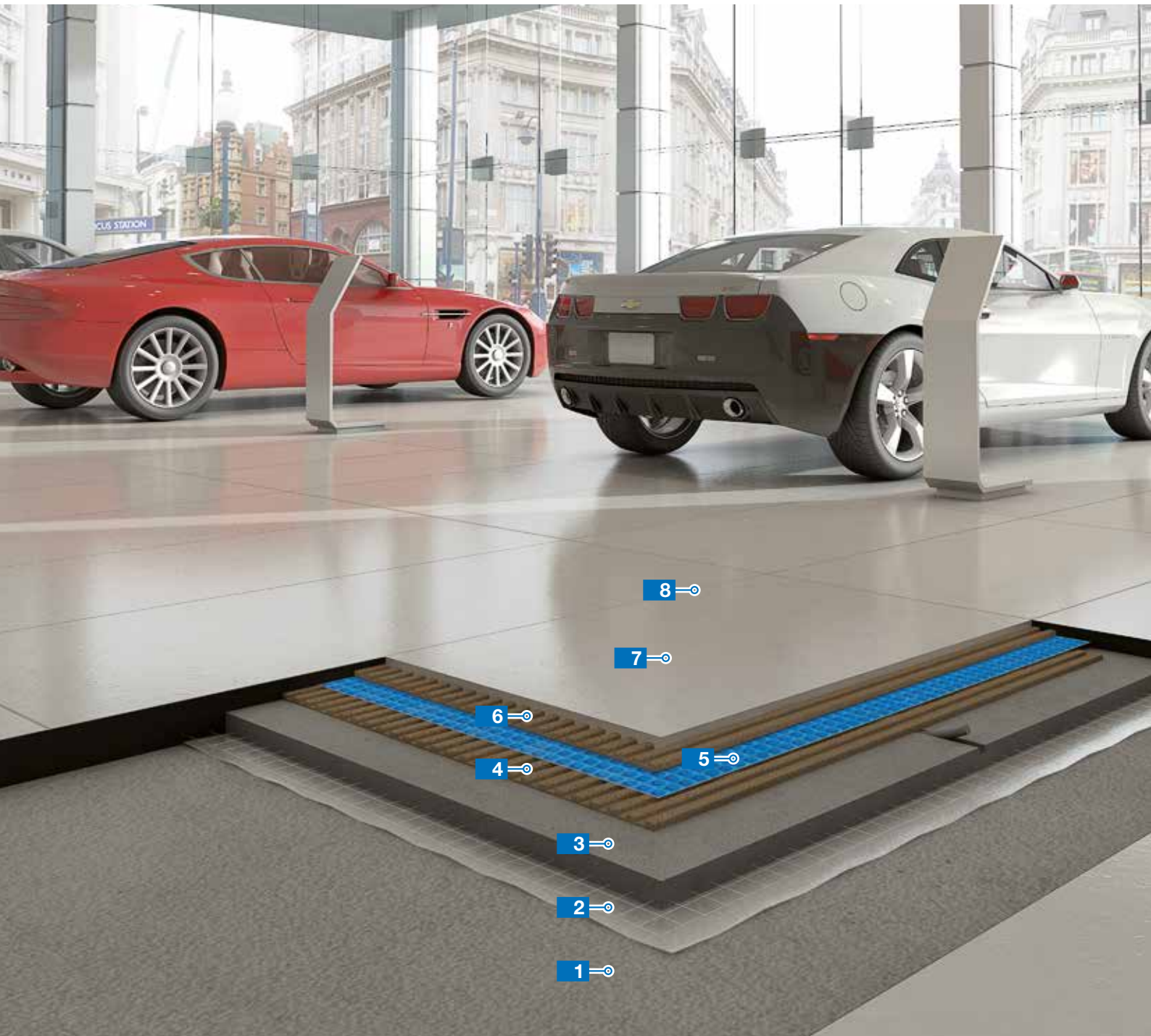
After laying **Mapeguard UM 35**, **protect the surface** of the membrane with wooden panels, in case of frequent traffic.



Recommendations

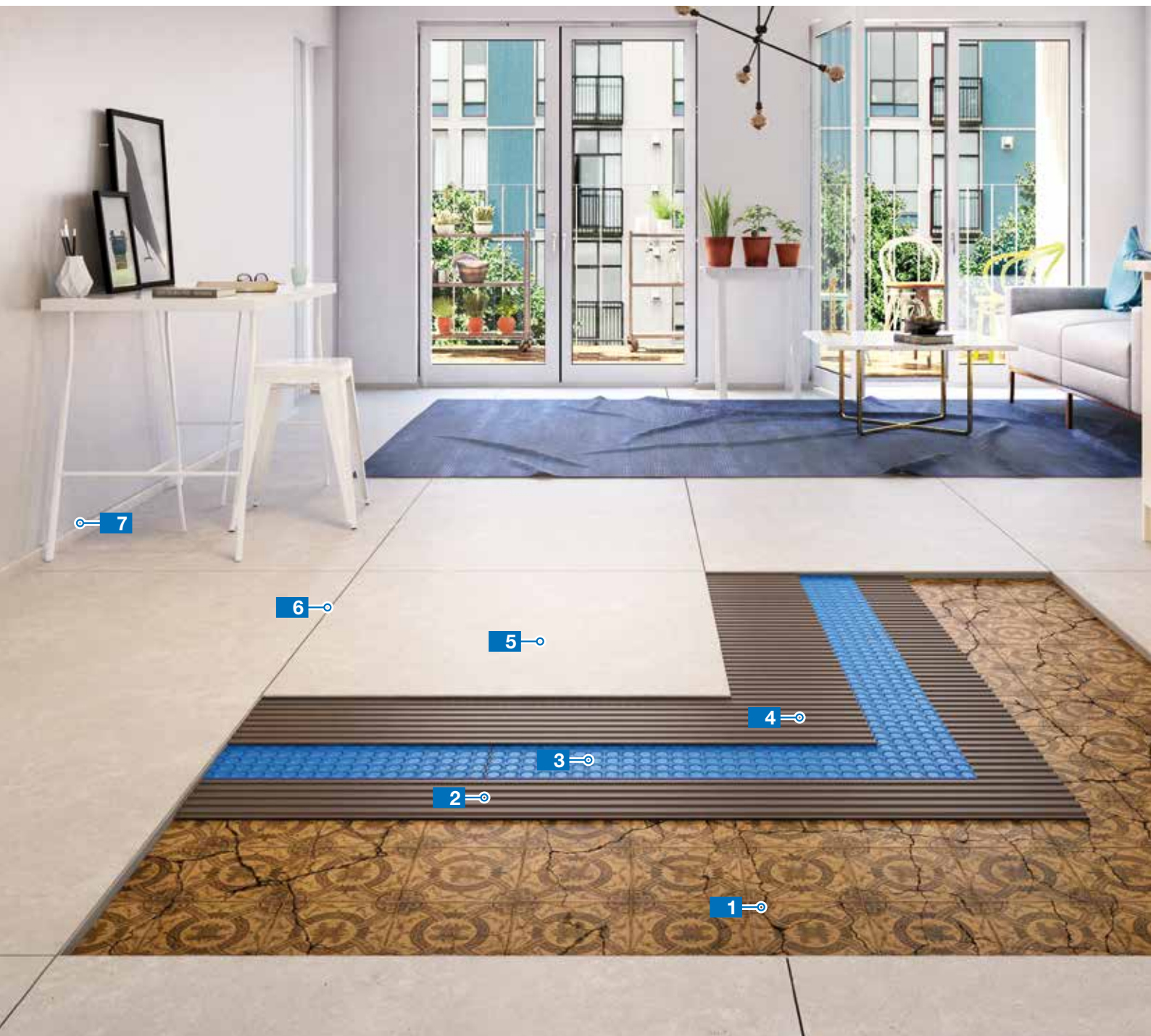
- Any expansion or control joints present in the substrate must not be in the same position as joints between adjacent sheets.

System for installing **large format tiles** using an **uncoupling, anti-fracture membrane** on a cementitious screed **without** having to **copy the layout of control joints** in the substrate.



- | | | | |
|----------|--|----------|--|
| 1 | Concrete substrate | 5 | Mapeguard UM 35 uncoupling anti-fracture membrane |
| 2 | Damp proofing barrier | 6 | Ultralite S1 Flex Zero adhesive |
| 3 | Topcem Pronto cementitious screed | 7 | Large-format porcelain tiles |
| 4 | Ultralite S1 Flex Zero adhesive | 8 | Ultracolor Plus grout |

Rapid system for **overlaying on** existing cracked flooring using an **anti-fracture, uncoupling membrane**.



- | | | | |
|---|--|---|----------------------------|
| 1 | Existing cracked flooring | 4 | Keraquick Maxi S1 adhesive |
| 2 | Keraquick Maxi S1 adhesive | 5 | Porcelain tiles |
| 3 | Mapeguard UM 35 anti-fracture, uncoupling membrane | 6 | Ultracolor Plus grout |
| | | 7 | Mapesil AC sealant |

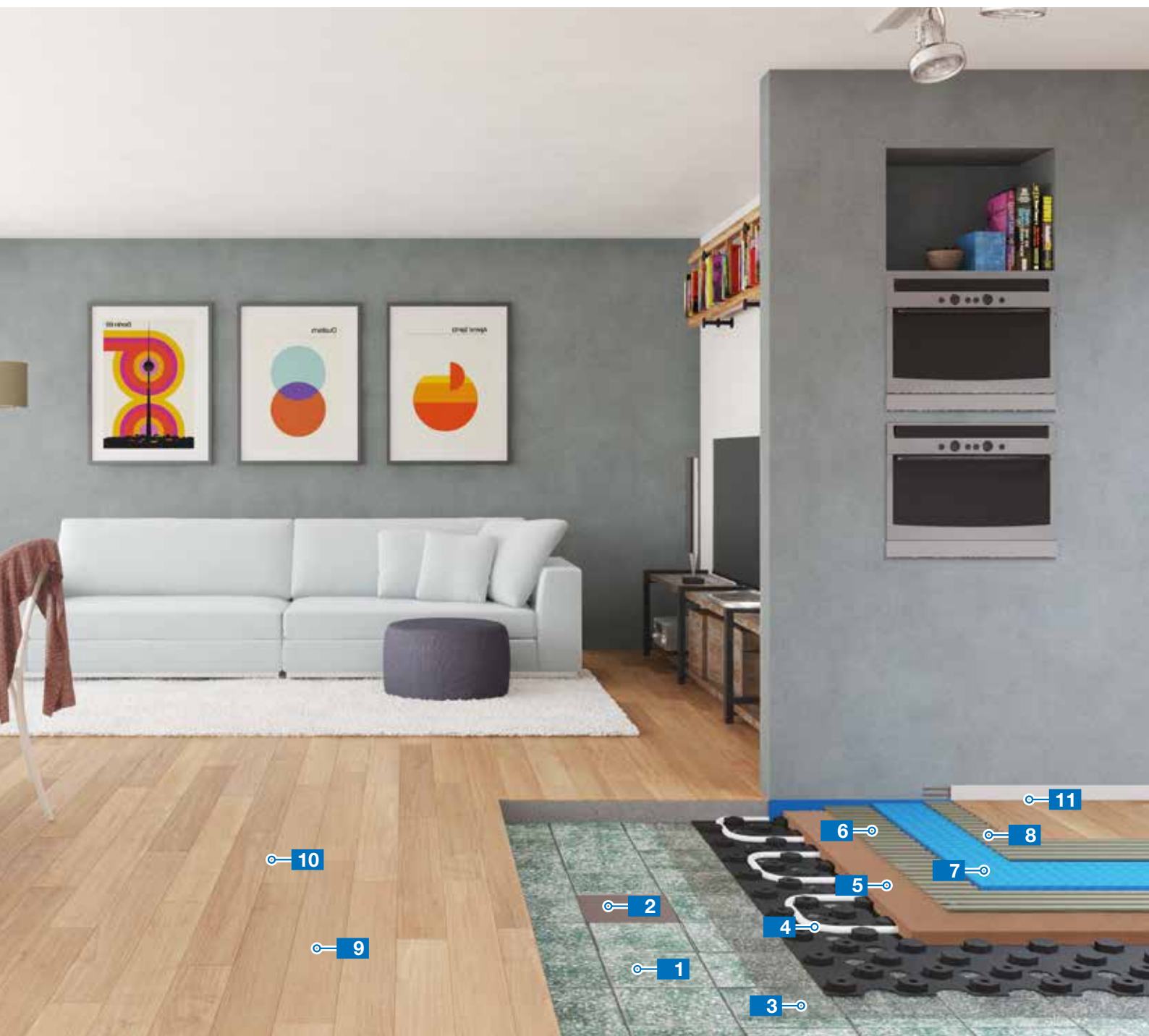
System for installing **ceramic tiles on micro-cracked cementitious substrates** using an **uncoupling, anti-fracture membrane**.



- 1** Micro-cracked screed
- 2** **Keraflex Maxi S1 Zero** adhesive
- 3** **Mapeguard UM 35** uncoupling, anti-fracture membrane

- 4** **Keraflex Maxi S1 Zero** adhesive
- 5** Porcelain tiles
- 6** **Keracolor GG** grout
- 7** **Mapesil AC** sealant

System for installing **ceramic tiles on underfloor thin heating system** after having applied an **uncoupling, anti-fracture membrane**.



- | | | |
|---|--|---|
| 1 Existing ceramic flooring | 5 Novoplan Maxi smoothing compound | 8 Ultralite S1 Flex Zero adhesive |
| 2 Planitop Fast 330 filler mortar for removed tiles | 6 Ultralite S1 Flex Zero adhesive | 9 Parquet-effect porcelain stoneware |
| 3 Eco Prim T Plus primer | 7 Mapeguard UM 35 uncoupling, anti-fracture membrane | 10 Ultracolor Plus grout |
| 4 Thin radiant system | | 11 Mapesil AC sealant |

System for installing **ceramic tiles on heated screed** after having applied an **uncoupling, anti-fracture membrane**.



- | | | |
|---|---|---|
| 1 Concrete substrate | 5 Mapesilent Tape
soundproofing tape | 9 Mapeguard UM 35 uncoupling,
anti-fracture membrane |
| 2 Vapour barrier | 6 Floor heating system | 10 Ultralite S1 Flex Zero adhesive |
| 3 Mapesilent Roll
soundproofing membrane | 7 Topcem Pronto screed | 11 Porcelain tiles |
| 4 Mapesilent Band R
soundproofing strip | 8 Ultralite S1 Flex Zero adhesive | 12 Ultracolor Plus grout |
| | | 13 Mapesil AC sealant |



Application of Mapeguard UM 35

Uncoupling, anti-fracture, and waterproofing layer

Before laying **Mapeguard UM 35** waterproofing membrane, check and/or create a suitable slope in the substrate to ensure that water drains away sufficiently.

1

Perimeter groove

Cut a **perimeter groove** approx. 10 cm to lap up the edges of the waterproofing membrane under the existing render.

If required, **level off the surface** with **Planitop Fast 330** so that the **Mapeband Easy** to be applied afterwards can be positioned correctly (see note on page 24).



2

Cut of Mapeguard UM 35

Unroll the membrane and cut it to the shape and size of the area, taking into account the presence of sidewalls, bond-beams, pillars, drains, etc.

The **membrane may be cut** to shape with simple tools, such as scissors or a craft knife.





Application of Mapeguard UM 35

3

Spreading the adhesive

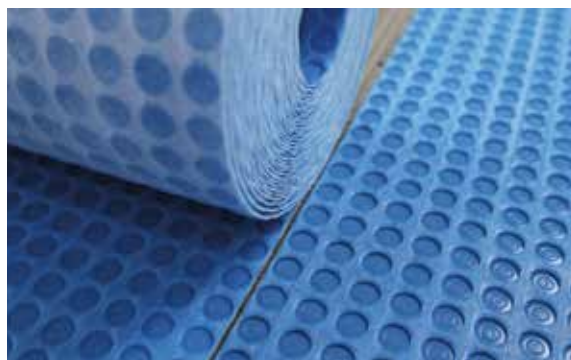
Spread the adhesive over the surface of the substrate with a suitable notched trowel (e.g. a trowel with 5 mm notches). Use a **Mapei** class C2 improved **adhesive** according to EN 12004 or ISO 13007-1 standards (such as **Keraquick Maxi S1**, **Ultralite S1 Flex Zero**, **Keraflex Maxi S1 Zero**, **Keraflex Extra S1 Zero**, **Keraflex Easy S1 Zero**, **Keraflex**). When laying the membrane on wood, metal, or resilient flooring, it is recommended to use a reactive adhesive such as **Keralastic** or **Ultrabond Eco PU 2K**. The particular shape of the embossings on **Mapeguard UM 35** backing creates an excellent mechanical grip between the membrane, the adhesive, and the substrate and forms a particularly strong bond.



4

Laying Mapeguard UM 35

Lay the membrane over the adhesive while it is still wet, with the **blue side facing upwards**; make sure the white felt backing is completely wetted. While laying the rolls of the membrane, it is recommended to leave a 3-5 mm gap between the sheets.



5

Pressing Mapeguard UM 35

When installing **Mapeguard UM 35**, it is very important to press down properly the membrane over the adhesive using a float or a roller using **Mapeguard Roller** (max. 35 kg). If necessary, place weights on the edges of the rolls until the adhesive sets.



6

Waterproofing

Waterproof all the joints between the different sheets, all the edges, and corners between the membrane and sidewalls by applying **Mapeband Easy** bonded with **Mapeguard WP Adhesive** (e.g. with a 3 mm notched trowel). The strips of **Mapeband Easy** must overlap by at least 5 cm in order to create a continuous waterproofing layer. **Mapeband Easy 90° and 270°** angular pieces may be applied around edges and in corners. Then level off the perimeter groove with **Planitop Fast 330**.





Application of **Mapeguard UM 35**

7

Protection of **Mapeguard UM 35**

After laying **Mapeguard UM 35** membrane, protect the surface with wooden panels, in case of frequent traffic.



Note:

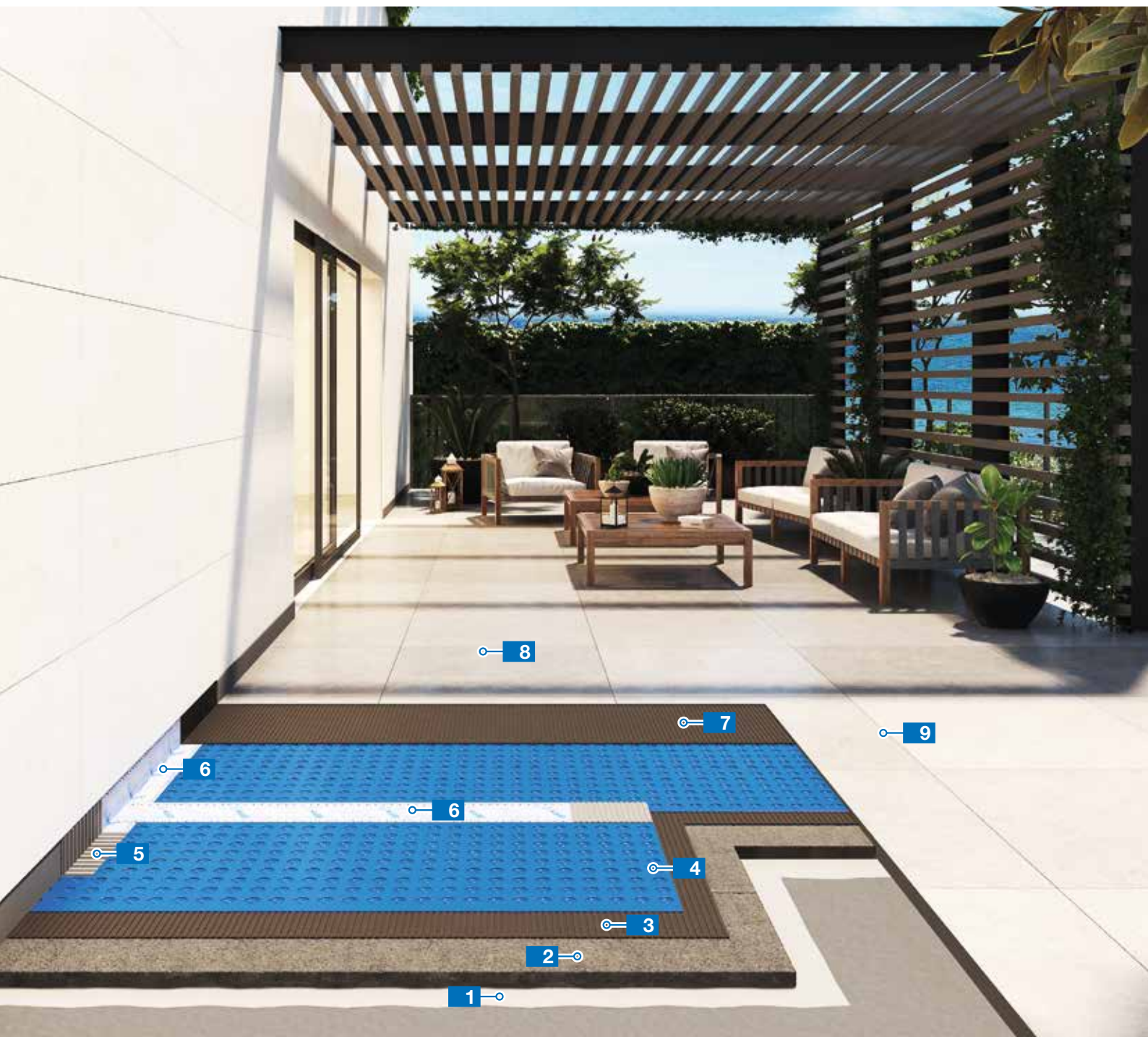
If **Mapeband Easy** needs to be bonded on areas where the bituminous membrane has been lapped up along the sidewalls, the application of **Mapeband SA** is required (make sure to prime the surface beforehand with **Primer for Aquaflex**) on the bituminous membrane before installing **Mapeguard UM 35**. Only after laying **Mapeguard UM 35**, **Mapeband Easy** may be applied.



Recommendations

- Any expansion and control joints present in the substrate must not be in the same position as joints between adjacent sheets.

System for installing **ceramic tiles in external** environments with an **uncoupling, anti-fracture** and **waterproofing membrane**, on a cementitious screed, **without** having to **copy the layout of control joints** in the substrate.



- 1** Damp proofing membrane
- 2** **Topcem Pronto**
cementitious screed
- 3** **Keraflex Maxi S1 Zero**
adhesive

- 4** **Mapeguard UM 35**
uncoupling, anti-fracture
and waterproofing membrane
- 5** **Mapeguard WP Adhesive**
adhesive
- 6** **Mapeband Easy**
waterproofing rubber tape

- 7** **Keraflex Maxi S1 Zero** adhesive
- 8** Porcelain tiles
- 9** **Ultracolor Plus** grout



Waterproofing of critical areas

In order to achieve a fully waterproofed system, it is important not to overlook critical areas, such as drains, joints between bituminous membranes, and the underside of a threshold.

Waterproofing with Drain Vertical/Lateral

1

Cutting Mapeguard UM 35

Cut the membrane in correspondence of the drain.



2

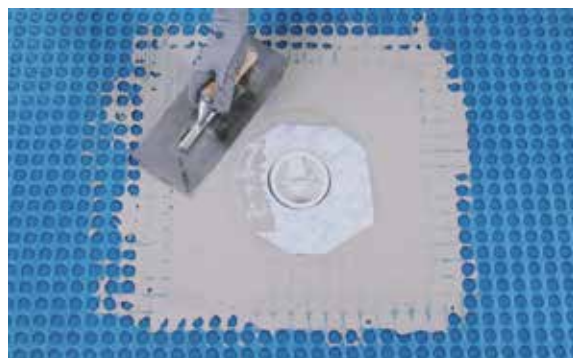
Installation of Drain Vertical

Install Drain Vertical/Drain Lateral by bonding the rim around the edge to **Mapeguard UM 35** with **Mapeguard WP Adhesive**.

Once placed **Drain Vertical/Drain Lateral**, press it down with a flat trowel and cover the fabric with another coat of **Mapeguard WP Adhesive**.



2



Waterproofing with Drain Front

1

Skim the drain

Make a groove for the drain and apply **Adesilex PG4**. Insert **Drain Front** and skim the coat with **Adesilex PG4**. Then fully broadcast the skim coat with quartz sand on the wet adhesive.





Waterproofing of critical areas

2

Application of a strip on a bituminous sheath

In case of bituminous sheaths (in this case only), **Mapeband SA** (prime the surface beforehand with **Primer for Aquaflex**) must be installed.



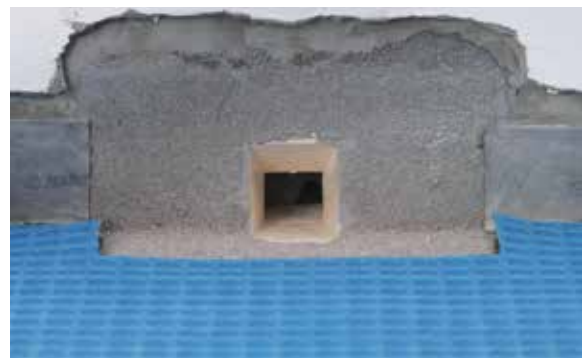
3

Laying Mapeguard UM 35

Place the previously cut membrane around the drain and bond it in place by spreading adhesive on the substrate with a suitable notched trowel (e.g. with 5 mm notches).

Use **Mapei** class C2 improved adhesives according to EN 12004 or ISO 13007-1 standards (such as **Keraquick Maxi S1**, **Ultralite S1 Flex Zero**, **Keraflex Maxi S1 Zero**, **Keraflex Extra S1 Zero**, **Keraflex Easy S1 Zero**, **Keraflex**).

When laying the membrane on wood, metal or resilient flooring, it is recommended to use a reactive adhesive such as **Keralastic** or **Ultrabond Eco PU 2K**.



4

Waterproofing of the fillets

Apply **Mapeband Easy** and bond it in place with **Mapeguard WP Adhesive** around the fillets between the vertical surface/horizontal surface and the drain/membrane fillet.





Waterproofing of **critical areas**

Waterproofing of the underside of a threshold

1

Laying **Mapeband SA**

In case of bituminous sheaths (in this case only), **Mapeband SA** (prime the surface beforehand with **Primer for Aquaflex**) must be installed.



2

Waterproofing of the fillets

After laying **Mapeguard UM 35**, apply **Mapeband Easy** and bond it in place with **Mapeguard WP Adhesive**.





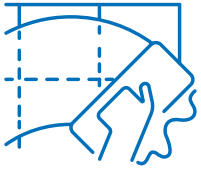
Choosing **adhesive** to install flooring

Once **Mapeguard UM 35** has been applied, **install the ceramic or stone flooring**. Install the flooring with a **suitable class C2 Mapei adhesive**. Choose the type of adhesive depending on the type and format of the ceramic or stone tile, their final use and the time available before they are ready for use.

Use the **back-buttering technique** to make sure that the tiles backsides are wetted correctly.

Apply the first layer of adhesive to fill the gaps in the membrane using the smooth edge of a trowel and then with a notched trowel suitable for the format of the tiles.





Grouting the flooring

Fill **grouts in flooring** with **cementitious grouting mortars** such as **Ultracolor Plus** (for grouts up to 20 mm wide), or **Keracolor** (**FF** or **GG**, depending on the width of the grouts: **Keracolor FF** for grouts up to 6 mm and **Keracolor GG** for grouts 4 to 15 mm wide), or with an **epoxy grouting mortar** from the **Kerapoxy** range.

If **Keracolor** grouting mortar (**FF** or **GG**) is used for exterior surfaces, mix the product with **Fugolastic**.





Sealing the joints

According to the current standards, it is mandatory to create expansion joints:

- for the interior surface, every 24-25 m² for ceramics, and 20-25 m² for stone material;
- for exterior, every 9 m² for ceramics and 16 m² for stone material.

Joints must also be formed around the perimeter of the flooring and in correspondence with corners, edges and interruptions in the tiling.

Seal expansion joints with **Mapesil AC**, **Mapesil AC ECO** or **Mapesil LM** (the latter must be used when installing natural stone).



EVERYTHING'S OK WITH MAPEI

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