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RMC in the Exterior

Technical Documentation for Professionals

RMC
beyond the stone

V2025.2

RMC for Exterior

RMC
beyond the stone

Welcome,

RMC material is suitable for both interior and exterior applications. Just like ceramic, engineered or natural stone, there are certain best practices that should be followed before and during installation.

This document will guide you through the most important ones to ensure you get the best look and performance that RMC can deliver.

RMC for Exterior

Highlights

RMC
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GENERAL RECOMMENDATIONS

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General Notes

In order to achieve the best performance, please take in consideration the following recommendations

- The performance of RMC tiles is directly related to the **quality of the installation**. The correct type of adhesive, its method of application and respect for the dilation of the material are absolutely essential.

- As RMC material contains approximately 95% of natural marble, it is **sensitive to contact with acids** (e.g. lemon juice), especially in a combination with strong pigments (e.g. red wine). These can damage the surface of RMC material (usually loss of gloss, corrosion or a stain).

- RMC tiles applied on interior or exterior **walls over 2.4 meters** high must be also mechanically fixed. Chemical fixation only is not recommended for safety reasons.

GENERAL RECOMMENDATIONS

Thickness

In order to achieve the best performance, please take in consideration the following recommendations

- The most common thicknesses of RMC tiles are 12, 20 and 30 millimeters. Which one to use depends on the **tile size**, expected **load** and **local regulations**. In general, for RMC tiles larger than 1.44 square meters and for exterior floors, please use a thickness equal to or greater than 20 millimeters.

- For special applications such as high-traffic pavements, raised floors or ventilated facades, please contact your sales representative for specific technical details to help you to calculate the required thickness of RMC tiles. For floorings where slip resistance is required, RMC has several finishes that comply with **PTV>36**, for more information please contact our sales representative.

- In case of **special surfaces** like Bush-hammered, Satin or Sandy, the thickness of the tile must be equal to or greater than 20 millimeters.

GENERAL RECOMMENDATIONS

Colors

In order to achieve the best performance, please take in consideration the following recommendations

- As with other natural materials, **dark colors tend to fade faster than light colors** outdoors. However, this doesn't affect the stability of the material. Color-enhancing impregnations can be applied, helping to keep colors vibrant even when installed outdoors.

- Recommended color-enhancing products for exterior:

Fila **Stoneplus**;

Akemi **Transformer Max**;

Massimo Piraccini **MGT 23 OUT**;

- Dark colors are generally **not recommended for high traffic flooring areas**. Scratches and stains caused by improper use of the tiles may be more visible. For more information on color suitability, please contact your sales representative.

TECHNICAL PARAMETERS

TECHNICAL PARAMETERS

Tolerances

RMC tiles are produced in accordance with European Standards (EN), which define several limits for technical parameters. For installation, one of the most important is the **dimensional tolerance**.

EN 15286:2013 Agglomerated stone
Slabs and tiles for wall finishes

Lenght and Width	< 600 mm	± 0,5 mm
	≥ 600 mm and ≤ 1000 mm	± 0,7 mm
	> 1000 mm and ≤ 3500 mm	± 1,0 mm
Thickness		± 0,7 mm
Diagonal lenghts	< 600 mm	± 0,9 mm
	≥ 600 mm and ≤ 1000 mm	± 1,2 mm
	> 1000 mm and ≤ 3500 mm	± 3,0 mm
Flatness		± 0,3 % referred to lenght of diagonal or max. 4 mm

EN 15285:2008 Agglomerated stone
Modular tiles for flooring and stairs

Lenght and Width	± 0,5 mm
Thickness	± 0,7 mm
Straightness of sides	± 0,3 mm
Rectangularity	± 0,9 mm
Flatness	± 0,2 % referred to lenght

EN 15388:2020 Agglomerated stone
Slabs and cut-to-size products for vanity and kitchen tops

Lenght and Width	± 1,0 mm
Other dimensions (eg. holes)	± 1,0 mm
Thickness	± 1,2 mm
Squareness	± 0,2 % *
Flatness	± 0,2 %

* percentage is calculated on the diagonals

TECHNICAL PARAMETERS

Thermal Expansion

Another important parameter for installation is the thermal expansion.

- All materials expand as the temperature rises. This expansion can be calculated using the coefficient of thermal expansion, thus predicting the size required for joints.

- For RMC material, this coefficient ranges from 9.7 to 21.2 x 10-6 °C-1, depending on the collection. The darker the color, the higher its maximum reachable temperature and, the greater the amount of resin in the reference, the greater its expansion capacity. It is therefore important to install RMC material in accordance with the recommendations for expansion joints.

- Dilatation can be calculated using the following formula →

$$\frac{\Delta L}{L} = \alpha[\Delta T]$$

ΔL = Change in Length
ΔT = Change in Temperature
α = Coefficient of Thermal Expansion (CTE)

For example, an RMC tile of Merrazzo Algarve with dimensions of 600x600mm and thermal expansion coefficient of 17,3 x 10-6 °C-1, can dilate up to 0,62 mm during sun exposure - tests showed up to 60°C on the surface of the tiles during summer. This accumulates to just over 3 mm dilatation in 3 m of RMC material.

(Temperature difference of 60°C considered for the example)

INSTALLATION PROCESS

INSTALLATION PROCESS

Pre-Installation Tasks

Base Preparation

Primer

Waterproofing

Installation

Adhesive

Grout

Silicone

RMC
beyond the stone

INSTALLATION PROCESS

Pre-Installation Tasks

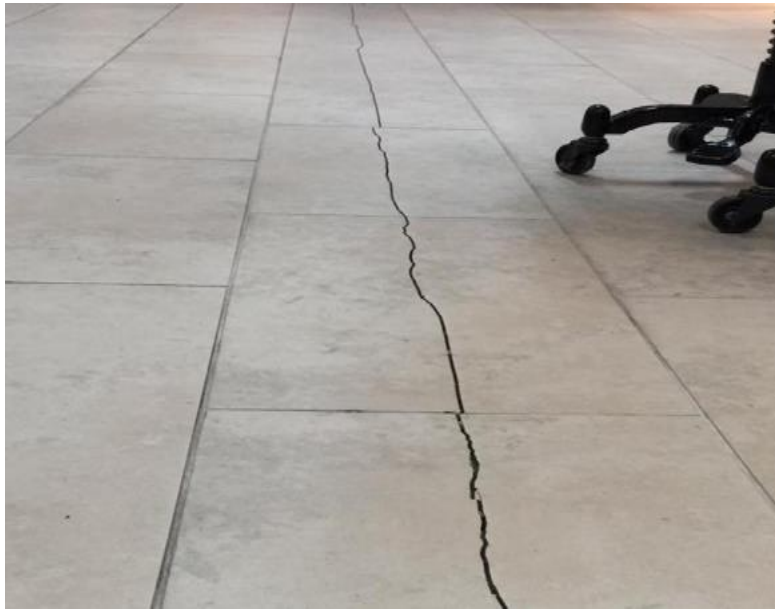
- Ensure a clean, dry substrate, free of any coatings, compounds, soap, wax, oil or silicone that may be incompatible with the fixing materials.
- Ensure a firm substrate, within the specified flatness tolerances, without any excessive bumps or grooves.
- Ensure a maximum residual humidity of:
    - 4.5% for concrete screed.
    - 0.5% for anhydrite screed.
    - 0.3% for heated floors.
- Ensure that all chemical products used are within their expiration date.

INSTALLATION PROCESS

Pre-Installation Tasks

Plan the installation scheme properly so that the expansion joints in the base are aligned with the expansion joints in the tiles, even if this means making additional cuts.

Tiles should never be installed over an expansion joint in the base, as there is a risk of cracking.



INSTALLATION PROCESS

Base Preparation

Whenever necessary, the base must be treated with a primer according to its characteristics, before the adhesive coating.

Recommended for absorbent bases:

Rako P202

Mapei Eco Prim T Plus

Recommended for non-absorbent bases:

Rako CP203

Mapei Eco Prim Grip Plus

Manufacturers of chemicals generally do not require a primer, however it is the responsibility of the installation team to ensure that the base is well prepared.

Primer can minimise potential problems by reducing water absorption, solidifying the base surface and increasing adhesion to the base in interior and exterior applications before tiling with cement adhesives and before applying waterproof coatings.

INSTALLATION PROCESS

Base Preparation

Waterproofing - Wet areas must always be waterproofed. We recommend using the following products:

RAKO SE 6

for exterior and permanent contact with water or high pressure (swimming pools, terraces, etc.).

RAKO SE 5

sealing tape for all contacts floor x wall and wall x wall.

OR

MAPEI Mapelastic

for both interior and exterior applications.

MAPEI Mapeband Easy

sealing tape for all contacts floor x wall and wall x wall

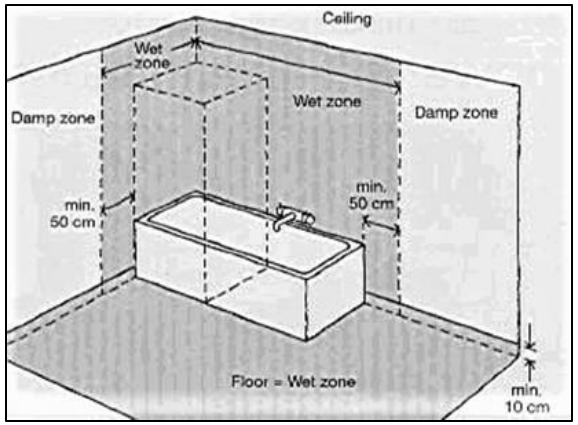
INSTALLATION PROCESS

Base Preparation

Waterproofing Steps

- Sealing tape must be applied to all expansion joints and to all contacts floor <-> wall and wall <-> wall.

- Waterproofing screed such as RAKO SE 6 should only be applied with a trowel.

INSTALLATION PROCESS

Installation

Recommended adhesive type for RMC installations outdoors:

C2TE S2

C : Cementitious Adhesives

2 : Improved Adhesives

T : Adhesive with Reduced Slip

E : Adhesive with Extended Open Time

S2 : Highly Deformable Adhesives

Please note that the only currently approved cement-based adhesive for exterior applications that delivers the best results is Kolstone Gel 4.0 S2.

If you wish to use a different adhesive, please contact the chemical manufacturer directly for a compatibility evaluation, or use an R2T adhesive.

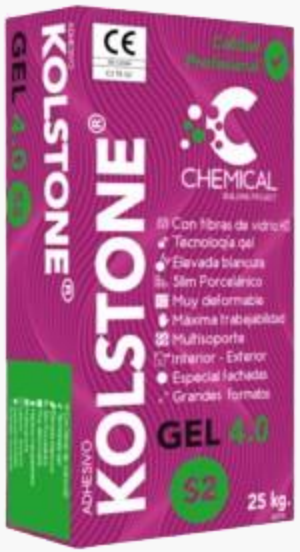
INSTALLATION PROCESS

Installation

For exterior applications, we strongly recommend using the following installation products:

Adhesive

KOLSTONE GEL 4.0 S2



&

Grout

KOLORSTONE SUPRA FLEXIBLE

&

Silicone

MAPEI Mapesil LM

INSTALLATION PROCESS

Installation

Tiles laying

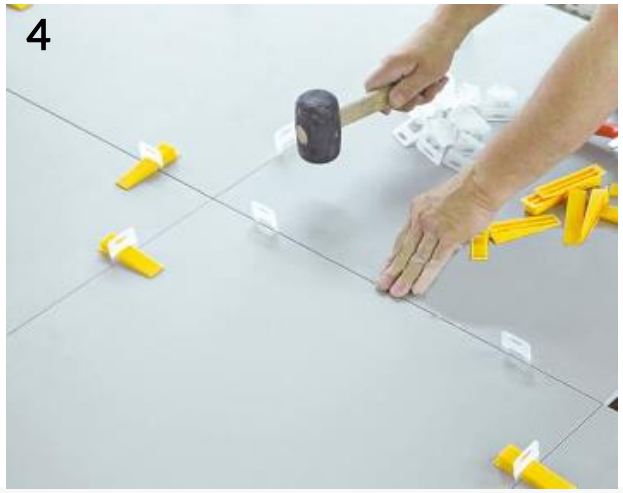
- Ensure that any previously applied product is completely dry and cured.
- Follow the instructions recommended on the packaging regarding the dilution ratio, mixing time and drying time of the products used.
- Use a trowel with 10x10mm teeth.
- Always use the double-coating technique to ensure 100% coating of the backside.
- Consider this process the only correct procedure for gluing RMC tiles.

INSTALLATION PROCESS

Installation

Tiles laying

- Tap on each tile with a rubber mallet and push back and forth in a perpendicular direction to the trowel lines to help spread the glue evenly on the backside of each tile.
- Press or tap on the tiles to align with adjacent tiles.
- Joints should be at least 4mm wide and 10mm deep.
- Any excess of fixing material should be removed, before drying, with a damp cloth or sponge.
- Use spacers of the recommended width to ensure joints between the tiles.
- Remember that RMC tiles have a thickness tolerance of +/- 0.7mm. To obtain a well-levelled surface, the use of levelling wedges is recommended.

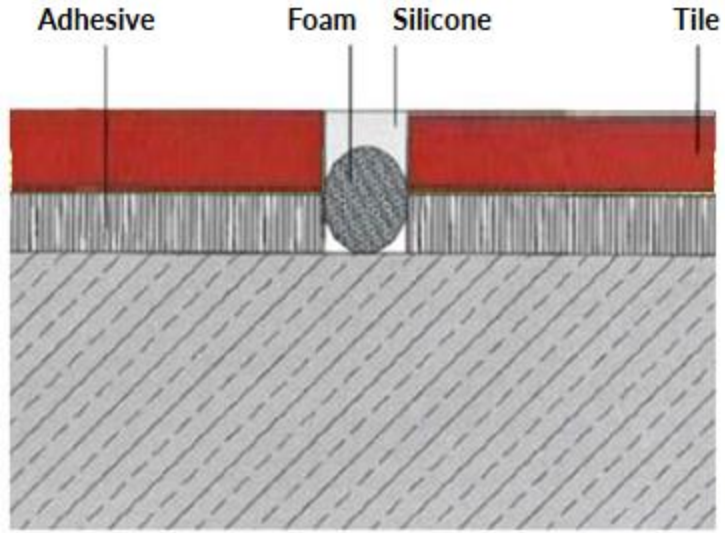


INSTALLATION PROCESS

Installation

Dilatation Joints

- Silicone joints must be ensured every 3x3m during installation.
- It is not recommended to use open joints without any silicone.
- It is very important to use silicone with a neutral pH.
- Silicone joints should never be filled with grout.
- The recommended width of the joints is 4mm for exterior applications.



INSTALLATION PROCESS

Installation

Silicone joints

- Clean any adhesive residue from the joints.
- Insert the separation cord - this ensures that the expansion joint functions correctly and prevents the silicone from tearing.
- We recommend covering both sides of the joints with adhesive tape to make it easier to apply the sealant and remove the residues.

INSTALLATION PROCESS

Installation

Silicone joints

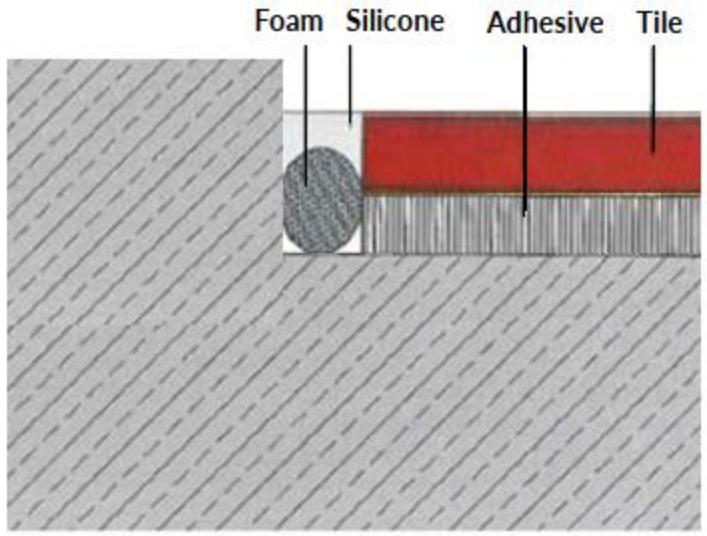
- Apply the sealant and shape it with a spatula.
- The final finish can be made with water and suitable tools to the desired shape.
- After allowing the sealant to dry slightly, remove the excess tape.

INSTALLATION PROCESS

Installation

Perimeter joints

- The perimeter expansion joint should be made around the room at every floor-to-wall and wall-to-wall contact.
- The recommended width of the perimeter joint is 5mm for exterior applications.
- Use foam and silicone to fill the perimeter joint.



Installation

Raised floors – general comments

- Raised floors, especially in an exterior environment, may be a complex topic requiring proper design and testing in consideration of local conditions.
- A certified pedestal system must be used.
- The general rule for RMC tiles is to use a thickness of 30 mm.
- All tiles must have corner supports and a central support. However, the total number and position of supports depends on the size and shape of the tiles.
- It is important to avoid the permanent presence of water under the tiles. The base must be sloped to drain water away, and the height of the raised floor must allow proper airflow.

- For more details, please contact our sales representative.

INSTALLATION PROCESS

Installation

Facades – general comments

- Using RMC panels for façades requires proper design of the entire system, as well as adherence to mandatory or recommended tests according to local regulations and conditions.
- Several fixing systems have been proven to be compatible with compact marble panels of different sizes and thicknesses.
- Designers and engineers are always responsible for designing a compatible set of fixing elements, panels, and installation methods. RMC Surfaces is ready to support this phase of the project by providing material samples, conducting the necessary tests, and offering consultancy on the behaviour of compact marble.

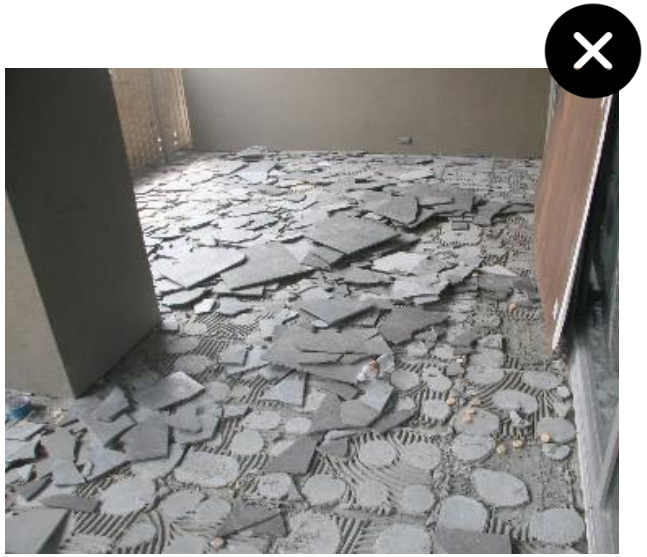
- For more details, please contact our sales representative.

INSTALLATION PROCESS

Installation

Best practices

- Never apply adhesive in isolated spots, always use the trowel to evenly distribute the fixing material to ensure a well-spread layer when double-coating the tiles with 100% coverage and always ensure the same orientation during double-coating laying.
- If too much adhesive is used to coat the backside, residues will fill the joints during laying and pressing, this excess must be removed before drying to leave the joints empty.

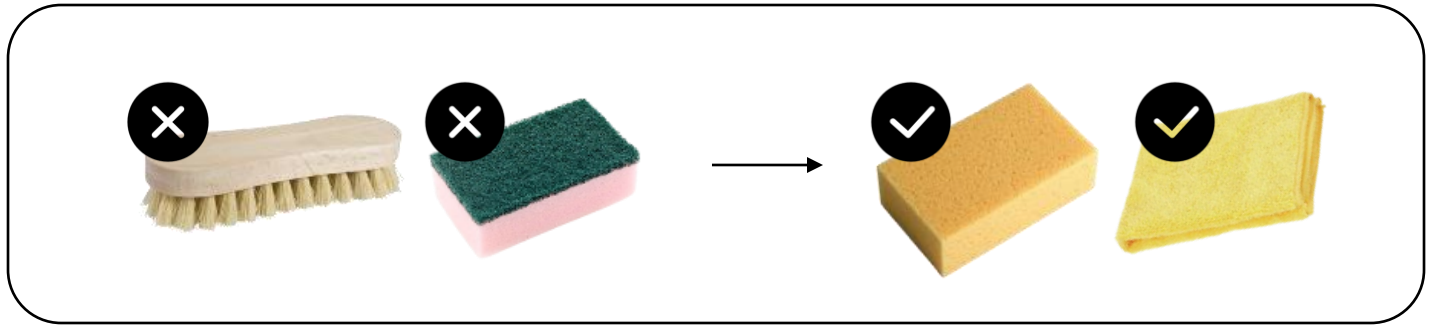


INSTALLATION PROCESS

Installation

Best practices

- Ensure that no excess water is trapped under the installed tiles due to incorrect dilutions or external sources.
- Use spacers and levelling wedges to ensure the minimum recommended width and alignment of the joints, as well as the alignment of the surface of the tiles.
- Residues of the fixing material should be quickly removed before drying, using cloths or sponges with water or neutral detergent.
- Never use acidic products, anti-calcar or abrasive brushes and sponges to clean RMC tiles.



INSTALLATION PROCESS

Installation

Best practices

- Compare received shades and respect the color code on each package.
- Do not mix tiles from different shades and always compare adjacent tiles to ensure color continuity.

Contact us for more information

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