TILE INSTALLER'S MANUAL
PRODUCTS FOR CERAMIC TILES

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MAPEI®

ADHESIVES • SEALANTS • CHEMICAL PRODUCTS FOR BUILDING

From Mapei Research & Development laboratories, the **Keraflex** range of cementitious adhesives: high performances for the best installation of ceramic tiles and stone material.

EVERYTHING'S OK WITH MAPEI

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MAPEI
ADHESIVES · SEALANTS · CHEMICAL PRODUCTS FOR BUILDING

From our experience, all the solutions you need...

This document has been issued by the MAPEI Technical Services Department to present the most common bonding systems for ceramic and stone material, and contains a step-by-step guide that illustrates the main application techniques of the various products employed in bonding systems (adhesives, grouts, sealants, etc.).

The various situations covered by this manual and the recommendations for each situation is for indication purposes only and do not cover all the problems and conditions encountered on site. In the event of encountering such situations, the MAPEI Technical Services team is always on hand to help identify the most appropriate solution for each specific intervention.
For further in-depth information about our products, make sure you always consult the relative product Technical Data Sheets available at our website www.mapei.com.

MORE THAN 80 YEARS IN THE BUSINESS WITH THE AIM OF SUPPLYING SOLUTIONS OF EXCELLENCE. **MAPEI'S LEADERSHIP** IS BASED ON KNOW-HOW THAT IS SECOND TO NONE.

Over the course of more than 80 years in the business, MAPEI has played an important role on both **small and large building** sites and in **restoration and conservation** projects on buildings which are a part of the cultural and artistic heritage of Italy and the world.
The story of MAPEI obviously has a close tie with that of the country which witnessed its foundation, and it is also the story of a Company that operates with enormous success **all around the world**, ready to meet the challenges of the new millennium.

All this following a well-defined corporate philosophy: **specialisation** in the building world, **internationalisation**, research and development into increasingly technologically-advanced products, tailor-made service and support for our clientele, teamwork, **concern** for the health and safety of all those who use our products and the care taken by our Human Resources department.

CERTIFIED QUALITY AND COMMITMENT TO THE ENVIRONMENT ...beyond apparent sustainability

MAPEI CONCRETELY PROMOTES SUSTAINABILITY BY DEVELOPING TECHNOLOGICALLY-ADVANCED PRODUCTS AND SOLUTIONS WHICH CONTRIBUTE TO SAFEGUARDING THE ENVIRONMENT AND OUR HEALTH...

BioBlock
Mapei technology that impedes the formation and proliferation of various types of mould in damp conditions.

DropEffect
Mapei technology based on the use of special hydrophobising admixtures, which allows surfaces to be created that are characterised by high water repellence, their tendency to attract less dirt and excellent durability.

Low Dust
Mapei's Low Dust technology allows dust emissions during the mixing, working and application phases of powdered products to be reduced by 90%, with advantages for the environment and the health of those who use them.

Ultralite
Lightweight adhesives characterised by their low density and higher yield compared with traditional adhesives.

Mapei was awarded Certiquality certification in 2016 for their EDP (Environmental Product Declaration) issuing process. An EDP describes the effect of product on the environment throughout its entire life cycle by measuring its impact using standard LCA (Life Cycle Assessment) methods.

MAPEI BONDING PRODUCTS AND SYSTEMS COMPLY WITH THE REQUIREMENTS OF THE EUROPEAN CONSTRUCTION PRODUCTS REGULATIONS (CPR 305/2011, formerly CPD)

Adhesives for ceramic tiles and stone material, renders, screed materials, masonry mortars, products for restoring and protecting concrete, admixtures for concrete, fastening systems, thermal cladding systems, etc. all comply with European Standards and carry the **CE mark**, as required by the CPR.
Special logos are used in our catalogues and on Technical Data Sheets to indicate that a product meets the requirements and the relative reference standard.

Other logos indicate the characteristics of the product according to the designation of the relative European Standards.

Since 2005 these products, tested and certified by internationally-qualified institutes, have earned the right to carry the "EC1" (very low emission of volatile organic compounds) mark and, since 2010, the "EMICODE EC1 PLUS" (very low emission level of volatile organic compounds-PLUS) mark. Both marks are awarded by the GEV Institute (Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.), an association which checks emission levels of products used for floors, adhesives and various materials used in the building industry, and of which MAPEI is a member.

MAPEI APPLIES QUALITY, ENVIRONMENTAL AND HEALTH & SAFETY MANAGEMENT SYSTEMS CERTIFIED ACCORDING TO INTERNATIONAL STANDARDS ISO 9001, ISO 14001 AND OHSAS 18001

Since 1994, Mapei SpA has applied a Quality System certified by Certiquality, in compliance with ISO 9001 standards. The number of MAPEI group companies and facilities which boast this certification is increasing each year.

Mapei SpA's Italian-based facilities apply an Environmental Management System, certified by Certiquality in compliance with ISO 14001 standards.
As with the quality system, this certification is being applied in an increasing number of the group's companies and facilities.

SUMMARY

STANDARD FOR THE INSTALLATION OF CERAMIC FLOOR AND WALL COVERINGS

In 2013 a new technical standard was introduced in Italy regarding the laying of **ceramic tiles**. *UNI 11493-1 (version updated June 2016) – Ceramic floor and wall tiling – Design, installation and maintenance instructions*, that applies to all internal and external ceramic floor and wall tiling bonded mainly with adhesive, but also with cementitious mortar.

In June 2016 the second part of the standard covering the figure of professional tile layers was introduced:
UNI 11493-2 – *The knowledge, ability and skill-set required for layers of ceramic floor and wall tiles* – which disciplines the professional figure of ceramic tile layers. It contains methods to assess the ability of tile layers and defines the requirements of organisations that wish to carry out these assessments.

DEFINITION OF THE MAIN ACTORS AND TRACEABILITY

A traceability document is included in the standard, consisting of a technical report compiled by the Works Director (or the installer) that is handed over to the client upon consignment of the completed work. This document identifies all those persons that have contributed to the execution of the tiling work as follows:

CLIENT
The client defines the technical and aesthetic specifications and performance requirements of the tiling, and also chooses which tiles are to be used. The client may be the builder, the Works Director, the tile installer or the owner of the property.

TILING DESIGNER
The designer's task is to identify the most appropriate installation solution and dimensions of the tiling, according to the design specifications and the needs of the client.

WORKS DIRECTOR
The Works Director checks the design, ensures work is executed in compliance with design specifications, coordinates all the quality aspects of the materials and analyses and acts upon any feedback received from the installer.

TILE INSTALLER (tiling company)
The tile installer is responsible for the correct execution of the work in compliance with design specifications and the decisions and instructions from the Works Director, checking the quality of the materials employed (tiles, adhesive, etc.) and the condition of the substrate and making sure materials are stored correctly. The tiler must also take care of the work area and make sure it is protected both during and after installation until it is consigned to the client.

MANUFACTURER OF THE MATERIALS
The manufacturer is responsible for checking that the materials they produce comply with current standards.

RETAILER OF THE MATERIALS
The retailer is responsible for the correct storage of the materials and products until they are delivered, and for communicating any warranties, technical documentation and safety data sheets issued by the manufacturer.

The standard contains guidelines to illustrate how to lay ceramic tiles correctly in all their normal areas of use.

MAIN CONCEPTS COVERED BY THE STANDARD

Choosing the adhesive

The main factors (schematically represented by appendix D in the standard) to consider when choosing the correct adhesive are as follows:
- type and format of the material;
- type and characteristics of the substrate;
- final use;
- work execution restraints and requirements;
- work execution requirements.

Minimum requirements of substrates

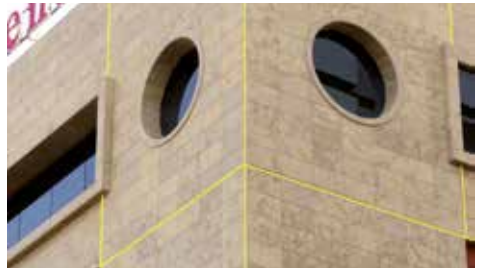
Whatever the type of substrate, prior to installation it must be well cured, clean, dry and flat and be free of all materials and substances that could potentially affect adhesion of the adhesive or skim coat.
The cohesive tensile (pull-off) and adhesion strength of **render** to the underlying load-bearing layer must be at least 1 N/mm² 10 (kg/cm²).
Screeds must have the following mechanical properties:
– residential use: ≥ 15-20 N/mm²;
– industrial use: ≥ 30-40 N/mm².

Double-buttering

The adhesive must be applied using the double-buttering technique (the adhesive is applied on the back of the tiles as well as on the substrate) in those cases where full contact of the adhesive with the installation bed must be guaranteed.

Joint specifications

The definition and prescriptions of the joints (structural, distribution, expansion and perimeter joints) and the pitch of the joints.



Mechanical fasteners

If the longest side of the tile is more than 30 cm, the designer must evaluate the use of an additional mechanical fastening system for extra security (such as steel hooks fastened to the substrate).

Minimum width of joint

In the design prescriptions, the width of the joints may be ≥ 2-3 mm for rectified tiles in internal environments bonded on rigid, dimensionally-stable substrates, or up to 6-8 mm for the opposite conditions.
Butt joints, therefore, are no longer allowed.

Optional characteristics of cementitious adhesives

As far as cementitious adhesives are concerned, EN 12004 distinguishes between two main classes, C1 and C2, depending on the level of adhesion of the product, which, in the case of fast-setting adhesives, are followed by the letter F.

Apart from the classes mentioned previously, EN 12004 also includes optional classes. These are not obligatory as far as CE marking is concerned and are used to identify important characteristics regarding the performance qualities of an adhesive. These characteristics are as follows:

– slip resistance (T);
– extended open time (E);
– deformability (S1 or S2).

As far as deformability is concerned, UNI 11493-1 considers two installation situations, as mentioned in appendix D, in which an S1 or S2 class cementitious deformable adhesive must be used.

For example, when bonding ceramic tiles inside residential environments, table D.2 of UNI 11493-1 specifies the use of class S1 or S2 deformable adhesive to bond large format tiles, that is, with one side longer than 90 cm, on heated cementitious or anhydrite screeds.

Example of Table D.2

Area of use	**Tiles - Water absorption - Length of longest side (cm)**									
INDOOR RESIDENTIAL FLOORS	AA ≤ 3%					AA ≥ 3%				
	≤ 30	≤ 60	≤ 90	≤ 120	> 120	≤ 30	≤ 60	≤ 90	≤ 120	> 120
Heated cementitious screed	C2			C2S1/S2		C2			C2S1/S2	
Heated anhydrite screed	C2			C2S1/S2		C2			C2S1/S2	

When installing tiles on façades, on the other hand, as specified in table D.7 of UNI 11493-1, a class S1 or S2 deformable adhesive is specified for tiles with sides longer than 30 cm.

Example of Table D.7

Area of use	**Tiles - Water absorption - Length of longest side (cm)**				
EXTERNAL WALL EXTERNAL CEILING	AA ≤ 3% and AA > 3%				
	≤ 30	≤ 60	≤ 90	≤ 120	> 120
Site cast concrete	C2	C2- C2S1/S2	C2- C2S1/S2	C2S1/S2	

UNI 11493-1 also specifies that a traceability card must be filled in when work has been completed, in which the tile layer must specify which type and class of adhesive according to EN 12004 standards has been used, including its optional classes.

This type of card is required so that the client has a document to certify the characteristics of the work carried out.
Also, in the case of complaints, this document may be used to verify that all the correct products were used for the work, including the adhesive.

STANDARDS FOR THE INSTALLATION OF STONE MATERIAL

The Italian standard that currently provides the guidelines to be followed when choosing materials and for the design, installation and maintenance of stone floor and wall coverings is the following:

UNI 11714-1 *STONE FLOOR, WALL and CEILING COVERINGS - INSTRUCTIONS FOR THE DESIGN, INSTALLATION AND MAINTENANCE*

There is an enormous variability in the type, behaviour and performance characteristics of stone materials. For this reason, the evaluation of the various materials has been standardized by taking into consideration previous experience and by carrying out preliminary tests, mainly to verify some of the typical characteristics of stone material.
The problems normally encountered when installing stone material (to be analysed independently) may be summarised as follows.

DIMENSIONAL STABILITY AND WARPING

Problem

Certain types of stone material (especially some types of green marble, slate and recomposed polyester) can warp due to the effect of moisture from the **adhesive** or **installation mortar**. A material's tendency to warp is also highly dependent on the shape, size and thickness of the slab.

Solution

By measuring the amount of bending during laboratory tests (UNI 11714-1 standards) it is possible to divide stone materials into three classes according to their sensitivity to water.

Class A: materials not prone to warping.

Class B: materials prone to warping.

Class C: material highly prone to warping.

DEFORMATION CLASS		
CLASS A	CLASS B	CLASS C
NORMAL-SETTING CEMENTITIOUS ADHESIVE	RAPID-SETTING CEMENTITIOUS ADHESIVE	RESIN-BASED REACTIVE ADHESIVE
Keraflex Keraflex Maxi S1 Kerabond + Isolastic Ultralite S1 Ultralite S2	Granirapid Elastorapid Keraquick Maxi S1	Ultrabond Eco PU 2K Keralastic Kerapoxy

STAINING AROUND ELASTIC JOINTS

Problem

The use of certain types of **sealants** in elastic joints may cause staining of the stone around the joints.

Solution

Use a neutral-hardening silicone sealant such as ***Mapesil LM*** to prevent staining.

STAINING and EFFLORESCENCE on the SURFACE OF STONE

Problem

Certain types of stone material (particularly marble, granite and light colours recomposed stone) may be stained by the presence of water during installation:
- on a bed of mortar or with a normal-setting adhesive;
- on substrates that are not sufficiently protected against water rising up from the ground by capillary lift (due to the lack of a vapour barrier);
- on screeds that have not been thoroughly cured with a high level of residual moisture.

Solution

- Lay a vapour barrier comprising polythene sheets under the cementitious screed to block the capillary lift of water.
- The render or screed must be dry and thoroughly cured. Installing a rapid-drying screed made from ***Topcem***, ***Topcem Pronto***, ***Mapecem*** or ***Mapecem Pronto*** reduces the waiting time before installing stone.
- Install stone material using **class F rapid-setting adhesive** (according to EN 12004).

PRODUCTS FOR MAKING AND PREPARING SUBSTRATES

HYDRAULIC BINDERS for cementitious screeds

ADVANTAGES:

- Considerably reduce curing and drying times of screeds compared with traditional sand/cement screeds, which require 7-10 days curing per cm of thickness;
- create distribution joints with a larger pitch, thus reducing the number of expansion joints required in the screed.

Topcem

- Special quick-drying, shrinkage-compensated hydraulic binder for normal-setting screeds.
- **Waiting time before installation:**
  – 24 hours for ceramic;
  – 2 days for natural stone;
  – 4 days for resilients and wood.

Mapecem

- Special rapid-setting and drying, shrinkage-compensated hydraulic binder for screeds.
- **Waiting time before installation:**
  – 3 hours for ceramic and natural stone;
  – 24 hours for resilients and wood.

READY-MIXED MORTARS for cementitious screeds

ADVANTAGES:

- Solve the problem of acquisition, storage and quality of raw materials (aggregates, binders, etc.), especially when carrying out rebuilding and renovation work in historic town centres;
- the final mechanical characteristics of the screed are known prior to installation;
- guarantee lower drying and curing times whatever type of aggregate is used;
- prevent dosage and mixing errors often caused by the inexperience of the workforce.

Topcem Pronto

- Ready-to-use, normal setting, quick drying mortar with high thermal conductivity
- **Waiting time before installation:**
  – 24 hours for ceramic;
  – 2 days for natural stone;
  – 4 days for resilients and wood.

Mapecem Pronto

- Ready-mixed, rapid-drying and hydrating, shrinkage-compensated mortar for screeds.
- **Waiting time before installation:**
  – 3 hours for ceramic and natural stone;
  – 24 hours for resilients and wood.

SELF-LEVELLING PRODUCTS for internal use

Ultraplan

- Self-levelling, ultra rapid-hardening smoothing compound applied in layers 1 to 10 mm thick.

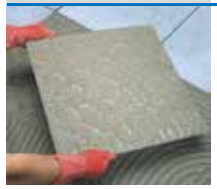
Novoplan Maxi

- Rapid-hardening, fibre-reinforced, free-flowing cementitious levelling mortar with high thermal efficiency applied in layers 3 to 40 mm thick, specifically designed for underfloor heating/cooling systems.

THIXOTROPIC CEMENTITIOUS SMOOTHING COMPOUNDS

Planitop Fast 330

- Rapid-setting, fibre-reinforced cementitious mortar applied in layers 3 to 30 mm thick to even out internal and external floors and walls.
- **Waiting time before installation:**
  – 4 hours for ceramic;
  – 24 hours for waterproofing layers.



Adesilex P4

- Rapid-hardening cementitious smoothing compound applied in layers 3 to 20 mm thick to even out internal and external floors.

Nivorapid

- Ultra rapid-drying, thixotropic, cementitious smoothing compound for internal use applied in layers 1 to 20 mm thick, also suitable for vertical surfaces.

Nivoplan

- Smoothing mortar for internal and external walls and ceilings applied in layers 2 to 20 mm thick.

Latex Plus

- Latex elasticising admixture mixed with NIVORAPID for levelling off internal substrates in sheet steel, wood, rubber, PVC, etc.

Planicrete

- Synthetic latex rubber to improve adhesion and strength of cementitious mortar.

PRIMERS and BONDING PROMOTERS

Eco Prim T

- Solvent-free acrylic primer with very low emission of volatile organic compounds (VOC) for absorbent and non-absorbent substrates.

Primer G

- Synthetic resin primer in water dispersion with very low content of volatile organic compounds (VOC).

Eco Prim Grip

- Ready-to-use, synthetic acrylic resin-based bonding promoter and primer with silica aggregates with very low emission of volatile organic compounds (VOC) for render applied on non-absorbent substrates, skim coats and adhesives for ceramic tiles.

Primer MF

- Two-component, solvent-free epoxy primer used as adhesion promoter for products from the MAPEFLOOR line, for consolidating and waterproofing cementitious surfaces against residual moisture and as an anti-dust impregnator on concrete floors.

WATERPROOFING PRODUCTS

More than for any other sector, rather than discussing just a single waterproofing product, we must consider the concept of a WATERPROOFING SYSTEM, comprising a package of products that also have the capacity to protect well known critical areas (such as joints, drainage points, changes in slope, corners and edges).
Bathrooms, swimming pools, wellness centres, balconies and terraces: environments where the interface between the substrate and tiling needs to be waterproofed, with the added advantage of preventing:
– progressive weakening of the substrate;
– the formation of unsightly efflorescence along the joints;
– the risk of tiling becoming detached.
This is why MAPEI has always offered a range of different solutions according to specific application requirements.

WATERPROOFING PRODUCTS

Mapelastic

- Two-component elastic cementitious mortar for waterproofing balconies, terraces, bathrooms and swimming pools.

Mapelastic Smart

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

Monolastic

- One-component cementitious waterproofing mortar.

Mapelastic Turbo

- Two-component, rapid-drying elastic cementitious mortar for waterproofing terraces and balconies, including at low temperatures and on substrates not completely dry.

Mapelastic AquaDefense

- Ready-to-use, ultra rapid-drying, elastic liquid membrane for waterproofing internal and external surfaces.

Mapegum WPS

- Rapid-drying elastic liquid membrane for waterproofing internal surfaces.

STRENGTHENING REINFORCEMENT

Mapetex Sel

- Macro-perforated, non-woven polypropylene fabric for reinforcing waterproofing membranes.

Mapenet 150

- Alkali-resistant glass fibre mesh (in compliance with ETAG 004 guidelines) for reinforcing protective waterproofing layers, anti-fracture membranes and cladding systems.

ACCESSORY COMPONENTS FOR THE SYSTEM

Drain Front

- TPE angular pipe union for terraces and balconies.

Mapeband TPE

- TPE tape for flexible sealing and waterproofing of expansion joints and cracks subject to movement.

Mapeband

- Alkali-resistant rubber tape with felt for cementitious waterproofing systems and liquid sheaths.

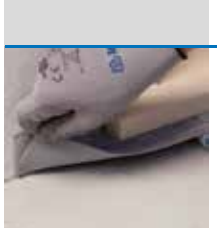
Drain Vertical/ Drain Lateral

- Kit for installing floor drains, ideal for draining off water from terraces, balconies, bathrooms, boiler rooms, wash-rooms, etc.

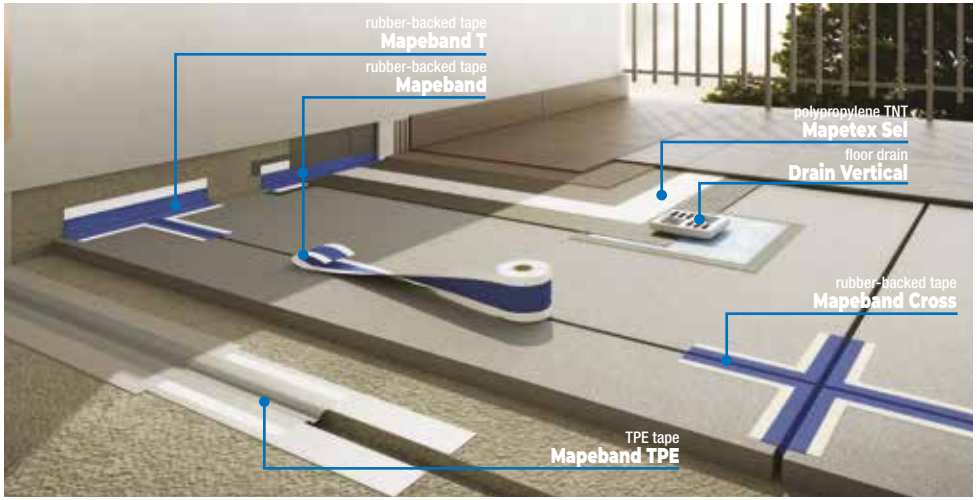
Mapeband PE 120

- PVC tape for waterproofing systems made from liquid membrane.

Mapeband SA



- Self-adhesive butyl tape with alkali-resistant, non-woven fabric for elastic waterproofing systems.



To see how to use these products VISIT OUR WEBSITE at: www.mapei.com

ADHESIVES FOR CERAMIC AND STONE MATERIAL

The performance characteristics of adhesives are identifiable by their classification code according to EN 12004 standards, as illustrated in the following table:

TYPE	
Cementitious adhesives	C
Dispersion adhesives	D
Reactive adhesives	R

FUNDAMENTAL CLASSES	
Normal adhesion	1
Improved adhesion	2
Rapid application	F

OPTIONAL CHARACTERISTICS	
Extended open time	E
Slip-resistant	T
Deformable cementititous adhesive	S1
Highly deformable cementititous adhesive	S2

Mapei bags have a lot to say for themselves

The packaging for Mapei products plays a very important role, with phrases and "talking" icons that provide all the most important information about the product it contains.

CHARACTERISTICS OF ADHESIVES

An important addition to UNI 11493-1 is contained in appendix D, a schematic summary of the minimum requirements of adhesives (in compliance with EN 12004) according to the following factors:

1. Type and format of the material

2. Type and characteristics of the substrate

3. Final use

4. Work execution restraints and requirements

5. Exposure of the surface

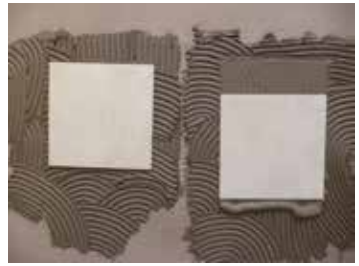
The main differences between the various adhesives are the following parameters:

Extended open time

Use **adhesives with extended open time** (class E according to EN 12004) when bonding in unfavourable climatic conditions (wind, high temperatures, low humidity, absorbent substrates, etc.).

Vertical slip

Use **slip-resistant adhesives** (class T according to EN 12004), especially when bonding tiles on unconnected walls or mosaic.



Deformability of the adhesive

Use **deformable adhesive** (class S1 or S2 according to EN 12004) with the capacity of absorbing the stresses generated between the tiles and bonding surface without damaging the tiles when required (bonding on substrates subjected to vibrations or flexion, bonding on external surfaces, etc.).

Rapid bonding

Use **rapid-setting adhesive** (class F according to EN 12004) when the time required before putting the tiling into service needs to be reduced.

	Classification according to EN 12004	GEV EMICODE	EPD		Ultralite Technology	Fast Track Ready	Colours available		Waiting time before grouting		Pot life of mix	Set to foot traffic	Open time	Waiting time before putting into service	Packaging
							White	Grey	Walls	Floors					
NORMAL-SETTING CEMENTITIOUS ADHESIVES															
Keraset	C1	EC1 R Plus					•	•	3-6 hours	24 hours	6-8 hours	24 hours	20 mins.	14 days	25 kg
Kerabond	C1	EC1 R Plus					•	•	4-8 hours	24 hours	8 hours	24 hours	20 mins.	14 days	5, 25 kg
Tixobond White	C1 TE	EC1 R Plus					•		4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Kerabond Plus	C2 E	EC1 R Plus	•				•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Adesilex P9	C2 TE	EC1 R Plus					•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	5, 25 kg
Keraflex	C2 TE	EC1 R Plus	•				•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	5, 25 kg
Ultralite Flex	C2 TE	EC1 R Plus		•	•		•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	15 kg
Adesilex P10	C2 TE	EC1 R Plus					•		4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Adesilex P10 + Isolastic 50%	C2 TE S1						•		4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Keraflex Easy S1	C2 E S1	EC1 R Plus	•				•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Keraflex Maxi S1	C2 TE S1	EC1 R Plus	•	•			•		4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Keraflex Maxi S1 zerø	C2 TE S1	EC1 R Plus	•	•				•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
Ultralite S1	C2 TE S1	EC1 R Plus		•	•		•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	15 kg
Ultralite S2	C2 E S2	EC1 R Plus			•		•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	15 kg
Kerabond + Isolastic	C2 E S2						•	•	4-8 hours	24 hours	8 hours	24 hours	20 mins.	14 days	5, 25 kg
Kerabond Plus + Isolastic	C2 E S2						•	•	4-8 hours	24 hours	8 hours	24 hours	>30 mins.	14 days	25 kg
RAPID-SETTING CEMENTITIOUS ADHESIVES															
Adesilex P4	C2 F	EC1 R Plus				•		•	4 hours	4 hours	1 hours	4 hours	15 mins.	1 day	25 kg
Adesilex P9 Express	C2 FE	EC1 R Plus				•	•	•	4 hours	4 hours	45 mins.	4 hours	20 mins.	1 day	25 kg
Granirapid	C2 F S1	EC1 R Plus	•			•	•	•	3 hours	3 hours	45 mins.	3-4 hours	20 mins.	1 day	30.5 kg
Keraquick Maxi S1	C2 FT S1	EC1 R Plus	•			•	•	•	2-3 hours	2-3 hours	45 mins.	2-3 hours	20 mins.	1 day	5, 23-25 kg
Ultralite S1 Quick	C2 FT S1				•	•	•	•	2-3 hours	2-3 hours	50 mins.	2-3 hours	20 mins.	1 day	15 kg
Keraquick S1 + Latex Plus	C2 FT S2					•	•	•	2-3 hours	2-3 hours	30 mins.	2-3 hours	20 mins.	1 day	25 kg
Ultralite S2 Quick	C2 FE S2	EC1 R Plus			•	•	•	•	2-3 hours	2-3 hours	50 mins.	2-3 hours	>30 mins.	1 day	15 kg
Elastorapid	C2 FTE S2		•			•	•	•	3 hours	3 hours	1 hour	3 hours	>30 mins.	1 day	31.25 kg
SYNTHETIC RESIN-BASED ADHESIVES															
Adesilex P22	D1 TE						•		24 hours	24 hours	ready to use	48 hours	>30 mins.	7-14 days	1, 5, 12, 25 kg
Ultramastic III	D2 TE						•		24 hours	24 hours	ready to use	48 hours	>30 mins.	7 days	1, 5, 12, 18 kg
REACTIVE ADHESIVES															
Keralastic	R2						•	•	12 hours	12 hours	30-40 mins.	12 hours	50 mins.	7 days	5, 10 kg
Keralastic T	R2 T						•	•	12 hours	12 hours	30-40 mins.	12 hours	50 mins.	7 days	5, 10 kg
Ultrabond Eco PU 2K	R2 T	EC1 R Plus					•	•	12 hours	12 hours	20-30 mins.	12 hours	20 mins.	7 days	5, 10 kg
Kerapoxy Adhesive	R2 T						•	•	-	-	45 mins.	10-12 hours	60 mins.	2 days	10 kg

The figures in the table are for indication purposes only; always refer to the Technical Data Sheet for each product which are available on our website www.mapei.com

Mapei, a world of **adhesives**

From Mapei, a wide range of high quality products for bonding ceramic tiles, stone material and mosaic, suitable for any condition at any latitude.

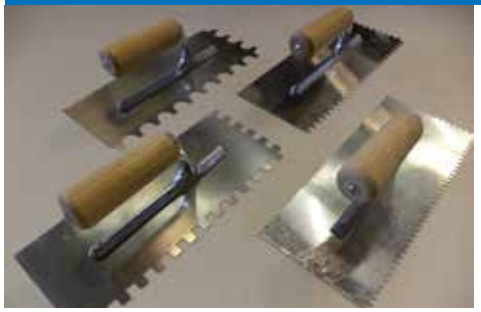
- Technologically advanced systems
- Easy to use
- For floor and wall coverings
- For internal and external use
- Eco-sustainable
- Certified according to the most severe international standards

HOW TO PREPARE AND APPLY ADHESIVE

Preparation of the mix

- Mix the powdered adhesive with the required amount of water or latex and for long enough to form a smooth, lump-free mix.
- Leave the adhesive mix to stand for at least 5 minutes and then mix again briefly before spreading.
- Only mix the amount of adhesive that can be used within its workability time.

Choosing the right trowel and applying the adhesive



- Apply the adhesive with a suitable notched trowel so that the right amount of adhesive is applied and to guarantee the back of the tile is wetted correctly. The amount of adhesive required varies according to the area of final use, the roughness of the substrate and the format of the tiles.
- If the open time of the adhesive is exceeded (already applied to the substrate), but is still soft when pressed lightly with a finger, it may still be used by going over the surface with a notched trowel. This operation must not be carried out once the adhesive has started to set.

Wetting properties of the adhesive

Use adhesive with high wetting properties such as ***Ultralite***, or self-wetting adhesive such as ***Adesilex P4*** for good wetting of the back of the tiles (bonding large formats, slim tiles, bonding on external surfaces, etc.).

Double-buttering

Apply the adhesive on the substrate and on the back of the tiles, making sure there is a seamless layer of adhesive when bonding on façades, for large formats (longest side more than 60 cm), on heated surfaces or in environments subjected to high mechanical or thermal-hygrometric stresses.

GROUTING THE TILES

The performance characteristics of grouts are identifiable by their classification code according to EN 13888 standards, as illustrated in the following table:

Reactive grouts	**RG**	–	Mixture of synthetic resins, aggregates and organic and inorganic admixtures where hardening takes place through a chemical reaction
Cementitious grouts	**CG**	Class 1	Cementitious mortar for **normal** joints
		Class 2	Cementitious mortar for **improved** joints with high resistance to abrasion (**A**) and reduced water absorption (**W**)

Mapei packaging has a lot to say for itself

Mapei technology

DropEffect® technology, developed by MAPEI, is based on the use of special polymers that allow surfaces to be created which attract less dirt characterised by their high water repellence and excellent durability.

BioBlock® technology, developed by MAPEI, consists in special organic molecules which, by distributing themselves homogeneously in the micro-structure of the joints, block the formation of the micro-organisms which cause mould to grow in the presence of damp.

	Classification according to EN 12004	GEV			Width of joint permitted	Application temperature	Pot-life of mix	Waiting time before finishing	Set to foot traffic	Ready for service	Packaging
CEMENTITIOUS GROUTS											
Ultracolor Plus	CG2WA	EC1 Plus	•	•	2 to 20 mm	+5 to +35°C	20-25 mins.	15-30 mins.	3 h	24 h	2.5 and 23 kg
Keracolor SF*	CG2WA	EC1 R Plus			up to 4 mm	+5 to +35°C	approx. 2 h	10-20 mins.	24 h	7 days	5 and 22 kg
Keracolor FF*	CG2WA	EC1 R Plus	•		up to 6 mm	+5 to +35°C	approx. 2 h	10-20 mins.	24 h	7 days	5 and 25 kg
Keracolor GG*	CG2WA	EC1 R Plus			4 to 15 mm	+5 to +35°C	approx. 2 h	10-20 mins.	24 h	7 days	5 and 25 kg
EPOXY GROUTS											
Kerapoxy	RG	EC1 R Plus			min. 3 mm	+12 to +30°C	45 mins.	–	24 h	4 days	2.5 and 10 kg
Kerapoxy CQ	RG	EC1 R Plus		•	min. 3 mm	+12 to +30°C	45 mins.	–	12 h	3 days	3 and 10 kg
Kerapoxy Design	RG	EC1 R Plus			2 to 7 mm	+12 to +30°C	45 mins.	–	24 h	4 days	3 kg
Kerapoxy P	RG				min. 3 mm	+12 to +30°C	45 mins.	–	24 h	4 days	10 kg
Kerapoxy IEG	RG	EC1 R Plus			min. 3 mm	+12 to +30°C	45 mins.	–	24 h	4 days	10 kg
READY-TO-USE GROUTING PASTES											
Fix & Grout Brick	–			•	–	+5 to +30°C	ready to use	–	–	–	5 and 12 kg
Flexcolor	–		•	•	2 to 10 mm	+5 to +35°C		10-15 min	48 h	7 days	5 kg

* Product mixed with water or FUGOLASTIC

The figures in the table are for indication purposes only; always refer to the Technical Data Sheet for each product which are available on our website www.mapei.com

And to give existing cementitious joints a new lease of life...

Fuga Fresca

Acrylic resin-based paint in water dispersion to bring back the colour of tile joints in ceramic tiles.

reference guide to calculate consumption rates
www.mapei.com
JOINTS

HOW TO GROUT JOINTS

Before grouting joints, whatever type of mortar is used, wait until the adhesive has completely hardened and that the waiting times indicated in the relative Technical Data Sheet have been respected. The joints must be clean, free of all traces of dust and empty for at least two thirds of their thickness.

CEMENTITIOUS grouts

Pour the powdered grout into a clean container of water or latex while mixing according to the quantities indicated on the Technical Data Sheet. Use a mixer at low-speed to form a smooth paste. Leave it to stand for 2-3 minutes and quickly mix again before use.

Apply the grout in the joints in the wall and/or floor tiles using the appropriate MAPEI trowel or rubber spreader without leaving any gaps or uneven areas. Remove the excess grout from the surface of the tiles by passing the trowel or spreader diagonally to the joints while the grout is still wet.

When the grout loses its elasticity and becomes opaque, wash off any excess grout with a damp cellulose sponge (such as a MAPEI sponge) working diagonally to the joints. Rinse the sponge frequently using two separate containers of water: one to rinse the excess grout from the sponge and a second container with clean water to rinse the sponge.

Finish off the joints when the grout is partially hardened using an abrasive grout pad (such as a damp *Scotch-Brite*® pad along the joints to even out the surface). A single-head sander with a special felt disk may also be used for this operation. If the joints are cleaned too soon (while the grout is still plastic) the grout may be pulled from the joints and leave gaps, which could then change colour more easily.

If the surface of the tiles is still dirty with traces of grout because it has not been applied correctly, an acid-based cleaner may be used (such as ***Keranet***) at least 24 hours after grouting the joints. Only use ***Keranet*** on acid-resistant surfaces and never on marble or limestone.

EPOXY grouts

Pour all the catalyser (component B) into the container of component A and blend together with a mixer at low-speed to form a smooth paste. Never use partial quantities of the components otherwise the grout may not harden correctly. When using ***Kerapoxy Design***, various amounts of ***MapeGlitter*** may be added according to the effect required.

Apply the mix carefully in the joints (which must be dry prior to application) using a special MAPEI trowel, making sure the joints are completely filled to the bottom. Remove excess material by passing the edge of the same trowel diagonally over the tile joints.

Epoxy grout must be cleaned while still "wet". Wet the grouted surface and emulsify using a *Scotch-Brite*® pad, taking care not to remove grout from inside the joint. Clean the tiling with the same type of pad, but saturated with more water.

Remove any excess liquid from the surface with a hard, cellulose sponge (such as a MAPEI sponge). Replace the sponge when it is too impregnated with resin. It is important that there are no traces of grout on the surface of the tiling after the cleaning operation. Once hardened it is very difficult to remove, which is why the sponge must be rinsed frequently.

The final cleaning operation may be carried out using ***Kerapoxy Cleaner***, a special cleaning agent for epoxy grout. This product may also be used to remove light traces of grout several hours after application. In such cases, the product may be left to react for longer (at least 15-20 minutes). The efficiency of ***Kerapoxy Cleaner*** depends on the amount of resin residues and how much time has passed since application. Cleaning must always be carried out while the product is still “wet” as described above.

SEALANTS FOR ELASTIC JOINTS

MAPEI offers a complete range of silicone sealants in compliance with the requirements of the reference standard for products used to form elastic seals in joints: **EN ISO 11600** "*Jointing products - Classification and requirements for sealants*".

reference guide to calculate consumption rates

www.mapei.com

ELASTIC SEALANTS

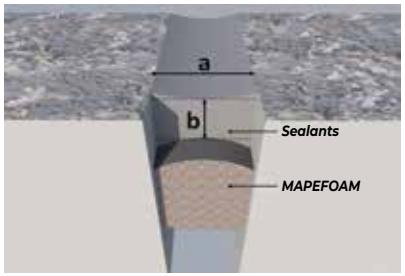
	Description and main areas of use	GEV		Paintable	Type of application: Hi-flow	Type of application: Thixotropic	Elongation in service	Packaging
Mapesil AC	Pure acetic silicone sealant, ideal for floor joints and ceramic tiling in damp environments and swimming pools	EC1 Plus	•			•	25%	310 ml
Mapesil LM	Neutral silicone sealant, ideal for joints in natural stone tiling and façades	EC1 Plus	•			•	25%	310 ml
Mapesil Z Plus	Pure acetic silicone sealant, ideal for fillet joints between bathroom fittings, shower booths and sinks	EC1 Plus				•	20%	280 ml
Mapeflex PU20	Two-component epoxy-polyurethane sealant ideal for industrial floors, car-parks, garages, courtyards and commercial areas				•		10%	5 and 10 kg
Mapeflex PU21	Two-component epoxy-polyurethane sealant ideal for internal joints in covered car parks, supermarkets, warehouses and storage areas				•		5%	5 and 10 kg
Mapeflex PU30	Two-component epoxy-polyurethane sealant ideal for vertical and horizontal joints in car-parks, garages, courtyards, commercial areas and warehouses					•	10%	5 and 10 kg
Mapeflex PU40	One-component polyurethane sealant ideal for expansion and fillet joints on pre-fabricated buildings and traditional and ventilated façades			•		•	25%	300 and 600 ml
Mapeflex PU45 FT	One-component polyurethane sealant and adhesive ideal for sealing joints in civil and industrial floors			•		•	20%	300 and 600 ml
Mapeflex PU50 SL	One-component polyurethane sealant ideal for civil and industrial floors, shopping centres, car-parks and runways			•	•		25%	600 ml and 12 kg
Mapeflex MS45	Hybrid elastic sealant and adhesive ideal for sealing joints in civil and industrial floors, suitable also for damp substrates	EC1 R Plus		•		•	20%	300 ml

The figures in the table are for indication purposes only; always refer to the Technical Data Sheet for each product which are available on our website www.mapei.com

SIZE OF THE JOINT

The size of joints is fundamental and its importance is often underestimated. The **width of the joint** (**a**), which refers to the distance between the two sides, must be dimensioned according to the amount of expansion in the tiles and must never be less than 5 mm.
To set the depth of the joint and prevent sealant adhering to the bottom, insert ***Mapefoam*** closed-cell, extruded foam polyethylene cord, supplied in rolls in various lengths according to the diameter of the cord, at the bottom of the joint. The **depth** (**b**) of the joint must be according to the following table:

a- width of joint	b - depth of joint
from 0 to 4 [mm]	increase the width of the joint
from 5 to 9 [mm]	b = a
from 10 to 20 [mm]	b = 10 [mm]
from 21 to 40 [mm]	b = a/2 [mm]
> 40 [mm]	reduce the width of the joint



HOW TO SEAL ELASTIC JOINTS

Joints must be sealed as follows:

All the surfaces to be sealed must be dry, sound and free of all traces of substances that could affect adhesion of the sealant.

Place masking tape along the edges of the joint to make it easier to clean the tiles.

Insert ***Mapefoam*** cord in the joint to set the correct depth and to make sure the sealant sticks only to the sides of the joint and not to the bottom.

Apply primer with a brush on the surface of the areas of the joint to be sealed and leave it to dry for a few minutes.

Cut the tip off the cartridge and insert the cartridge in a sealant extrusion gun to extrude and apply the appropriate MAPEI sealant in the joint protected with masking tape.

Finish off the surface of the sealant with a suitable damp tool or a tool dipped in soapy water before skin forms on the surface. Remove the masking tape from along the sides of the joint.

SEALING CRITICAL AREAS

Seal around the grate of floor drains with ***Mapesil AC***.

Sealing in correspondence with skirting board-wall fillet joints with ***Mapesil AC***.

Seal joints in stone and on external façades with ***Mapesil LM***.

TYPES OF JOINT COVERED BY UNI 11493 ITALIAN STANDARDS

Structural joints: joints created in correspondence with joints in the structure, they must include both the ceramic tiling and the entire thickness of the substrate.

Expansion joints: joints in the ceramic tiling only, they split the tiling into smaller pitch areas and limit the mechanical stresses due to temperature changes, for example.

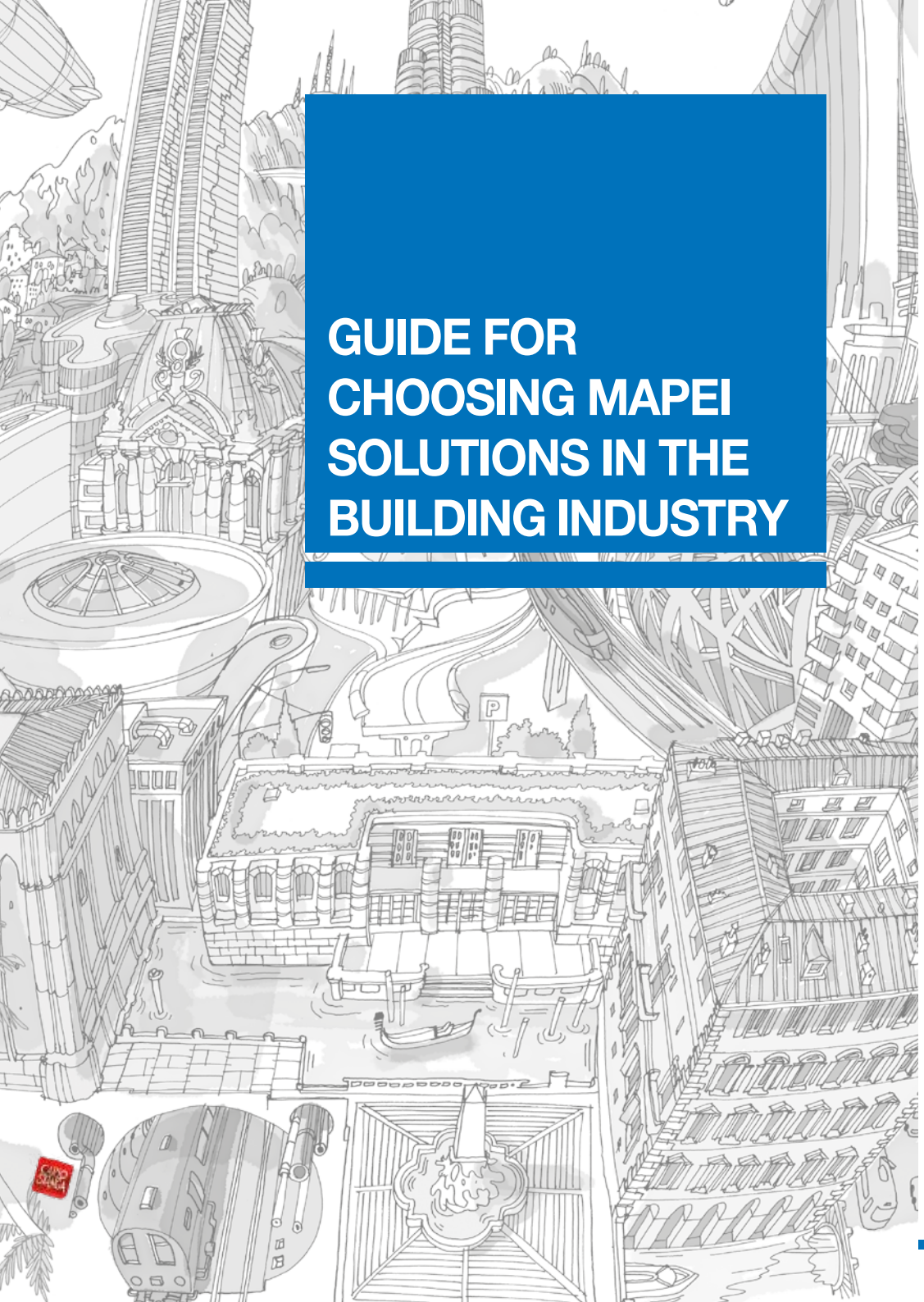
Distribution joints: joints that go through the ceramic tiling and 1/3 of the thickness of the substrate to limit the mechanical stresses caused by movements of the building and members.

Perimeter joints: joints around the edge of tiling, for example floor tiles which border with vertical elements such as pillars, walls and kerbs.

Mapei Coloured Grouts	Ultracolor Plus	Keracolor SF	Keracolor FF	Keracolor GG	Keracolor PPN	Flexcolor	Kerapoxy	Kerapoxy CQ	Kerapoxy IEG	Kerapoxy P	Kerapoxy Design	MapeGlitter	Fix & Grout Brick	Mapesil AC	Mapesil LM
100 WHITE	●	●	●	●		●	●	●					●	●	●
799 WHITE											●				
103 MOON WHITE	●		●								●			●	
710 ICE WHITE											●				
700 TRANSLUCENT											●				
111 SILVER GREY	●		●	●		●	●	●			●			●	●
110 MANHATTAN 2000	●		●	●		●	●				●			●	●
112 MEDIUM GREY	●		●	●		●	●							●	●
282 BARDIGLIO GREY								●							
720 PEARL GREY											●				
728 DARK GREY											●				
113 CEMENT GREY	●		●	●	●		●	●	●	●	●		●	●	●
115 RIVER GREY	●										●			●	
116 MUSK GREY	●										●			●	
174 TORNADO	●										●			●	
119 LONDON GREY	●										●			●	
114 ANTHRACITE	●		●	●			●	●			●			●	●
120 BLACK	●						●	●						●	●
137 CARIBBEAN	●										●			●	
130 JASMINE	●		●	●			●	●	●		●			●	●
290 CREAM								●							
131 VANILLA	●		●	●			●							●	
138 ALMOND											●			●	
729 SAHARA YELLOW											●				
132 BEIGE 2000	●		●	●		●	●	●			●		●	●	●
133 SAND	●										●			●	
134 SILK	●										●			●	

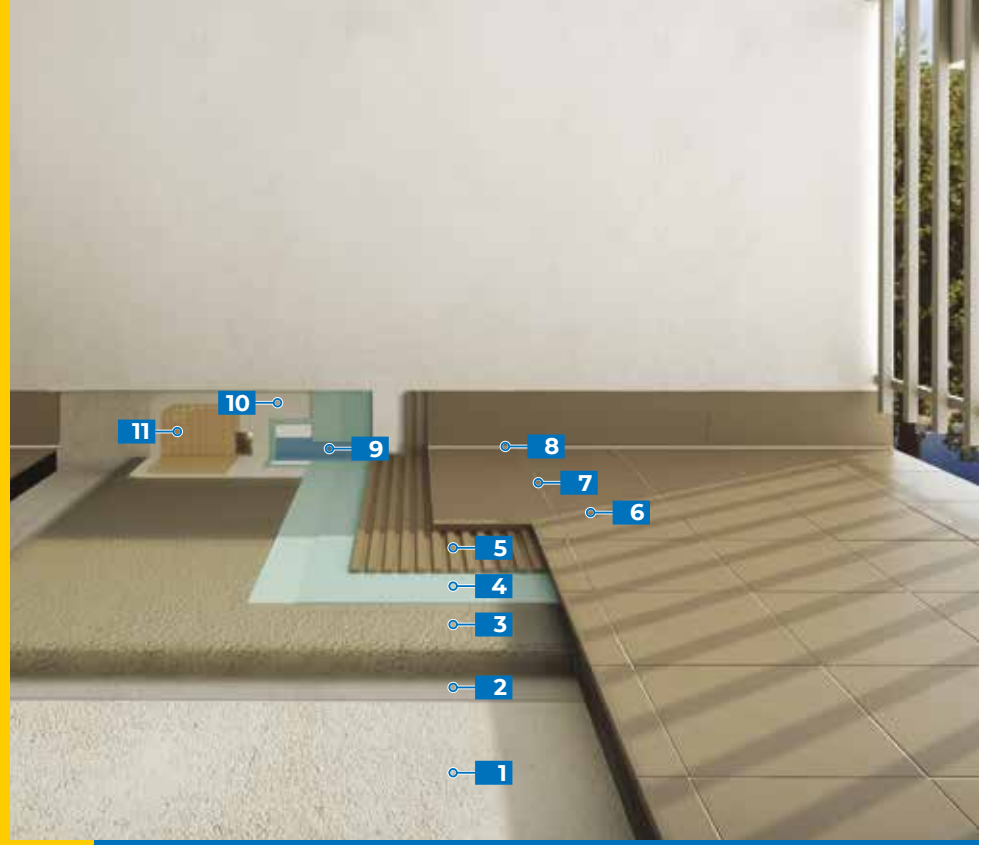
Mapei Coloured Grouts	Ultracolor Plus	Keracolor SF	Keracolor FF	Keracolor GG	Keracolor PPN	Flexcolor	Kerapoxy	Kerapoxy CQ	Kerapoxy IEG	Kerapoxy P	Kerapoxy Design	MapeGlitter	Fix & Grout Brick	Mapesil AC	Mapesil LM
139 PINK POWDER	●										●			●	
141 CARAMEL	●		●	●			●							●	
135 GOLDEN DUST	●										●			●	
152 LIQUORICE	●										●			●	
142 BROWN	●		●	●			●				●			●	
147 CAPPUCCINO								●							
136 MUD	●										●			●	
144 CHOCOLATE	●		●	●			●							●	
146 RICH BROWN								●			●				
149 VOLCANO SAND	●										●			●	
145 TERRA DI SIENA	●		●	●			●							●	
143 TERRACOTTA	●						●							●	
172 SPACE BLUE	●						●							●	
170 CROCUSBLUE	●		●	●			●	●						●	
162 VIOLET	●						●	●						●	
171 TURQUOISE	●						●							●	
173 OCEAN BLUE								●			●				
283 SEA BLU								●			●				
182 TORMALINE								●							
183 LIME GREEN								●							
150 YELLOW	●						●				●			●	
151 MUSTARD YELLOW								●							
165 CHERRY RED								●			●				
999 TRANSPARENT														●	●
LIGHT GOLD												●			
SILVER												●			

The colours illustrated are for demonstration purposes only and may vary due to print limitations.



GUIDE FOR CHOOSING MAPEI SOLUTIONS IN THE BUILDING INDUSTRY

Index



1 Rapid system for waterproofing and bonding ceramic on balconies

1 Concrete substrate
CONCRETE
Vaga RCK 37

2 Bonding slurry made from
Planicrete

3 Screed
Topcem Pronto

4 Ready-to-use waterproofing product (2 coats)
Mapelastic AquaDefense

5 Adhesive
Elastorapid

6 Ceramic tiles

7 Grouting
Ultracolor Plus

8 Sealant
Mapesil AC

9 Rubber-backed tape
Mapeband

10 Epoxy adhesive
Adesilex PG4 broadcast with
Quartz 0.5

11 Wall drain
Drain Front

MAKING the BONDED SCREED

If a screed less than 4 cm thick needs to be made, it is important to apply ***Topcem Pronto*** in adherence with the substrate over a wet coat of epoxy resin such as ***Eporip*** or cementitious bonding slurry made from ***Planicrete***, water and cement at a ratio of 1:1:3.

WATERPROOFING SYSTEM

When the screed is dry and cured, waterproof the surface by applying two criss-cross coats of ***Mapelastic AquaDefense*** with a roller, brush or trowel. Waterproof the fillets between horizontal/vertical surfaces and joints using ***Mapeband***. Install the wall drain using a ***Drain Front*** kit sanded down to roughen the surface prior to embedding it in two layers of ***Adesilex PG4***.

BONDING the TILES

"Rapid" bonding of the tiles may be carried out using rapid-setting, deformable cementitious adhesive (compatible with the elastic layer of ***Mapelastic AquaDefense***), such as ***Elastorapid***, ***Keraquick Maxi S1*** or ***Ultralite S1 Quick***.

GROUTING the TILES

Once the adhesive has hardened, grout the tiles with ***Ultracolor Plus***, rapid-setting and hardening, anti-efflorescence, water-repellent grout.

SEALING the JOINTS

Seal the joints, changes in slope, corners and edges with a suitable elastic sealant such as ***Mapesil AC*** after setting the depth of the sealant with ***Mapefoam***.

2 System for waterproofing and bonding ceramic in bathrooms and damp rooms

1 Concrete substrate

2 Isolating layer

3 Screed
Topcem Pronto

4 Ready-to-use waterproofing product
Mapegum WPS (2 coats)

5 Adhesive
Keraflex

6 Ceramic tiles

7 Grouting
Kerapoxy CQ

8 Sealant
Mapesil AC

9 Rubber-backed tape
Mapeband PE 120

10 Plasterboard

11 Ready-to-use waterproofing product
Mapegum WPS (2 coats)

12 Adhesive
Ultramastic III

13 Ceramic tiles

14 Grouting
Keracolor FF

15 Sealant
Mapesil Z Plus

MAKING the ISOLATED SCREED

Make the isolated screed by laying a vapour barrier and a sufficiently thick layer (more than 4 cm) of ***Topcem Pronto*** ready-mixed mortar. The rapid drying time of this product allows tiling to be bonded after 24 hours.

WATERPROOFING SYSTEM

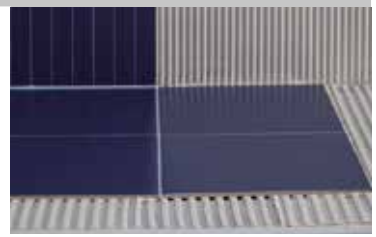
After preparing the substrate as specified, apply two criss-cross coats of ***Mapegum WPS*** with a trowel, roller or brush to form a thick, elastic, seamless film. Waterproof the fillet joints between horizontal/vertical surfaces and joints with an elastic waterproofing product such as ***Mapeband PE 120***. ***Mapegum WPS*** may also be applied on walls if the surface has been correctly prepared.

BONDING the TILES

When ***Mapegum WPS*** has dried bond the wall and floor tiles with a cementitious adhesive such as ***Keraflex*** and ***Keraquick Maxi S1***.

GROUTING the TILES

When the adhesive has hardened, grout the tiles with ***Kerapoxy CQ*** two-component, easy-to-apply, anti-acid epoxy filler with excellent cleanability, or alternatively with ***Ultracolor Plus*** or ***Keracolor FF***.



SEALING the JOINTS

Seal the joints, changes in slope, corners and edges with a suitable elastic sealant such as ***Mapesil AC*** after setting the depth of the sealant with ***Mapefoam***. Seal the fillet joints between bathroom fittings and tiling, shower booths, etc. with an elastic sealant such as ***Mapesil Z Plus***.

3 System for bonding ceramic on heated screeds and soundproofed screeds

1 Concrete substrate

2 Soundproofing membrane
Mapesilent Comfort

3 Soundproofing strips
Mapesilent Band R

4 Soundproofing tape
Mapesilent Tape

5 Vapour barrier

6 Under-floor heating system

7 Screed
Topcem Pronto

8 Adhesive
Keraflex Maxi S1 zerø

9 Porcelain tiles

10 Grouting
Keracolor FF

11 Sealant
Mapesil AC

12 Skim/smoothing layer
Planitop 560

13 Primer
Malech

14 Finishing product
Colorite Performance

Under-SCREED SOUNDPROOFING SYSTEM

When the substrate is dry, lay out rolls of ***Mapesilent Comfort*** and seal all the overlaps with ***Mapesilent Tape*** soundproofing tape. Apply ***Mapesilent Band R*** along the bottom of the perimeter walls and around elements passing through the screed and seal the joints with ***Mapesilent Tape***.

RADIATING SCREED

After laying a vapour barrier over the soundproofing material and installing the heating/cooling system, make the heated screed using ***Topcem Pronto***, ramming the mortar around the pipework through which the water for the heating system flows. The thickness of the screed over the heating elements must be at least 3 cm, with metal mesh positioned at the mid-point to help distribute the stresses more evenly.

BONDING the PORCELAIN TILES

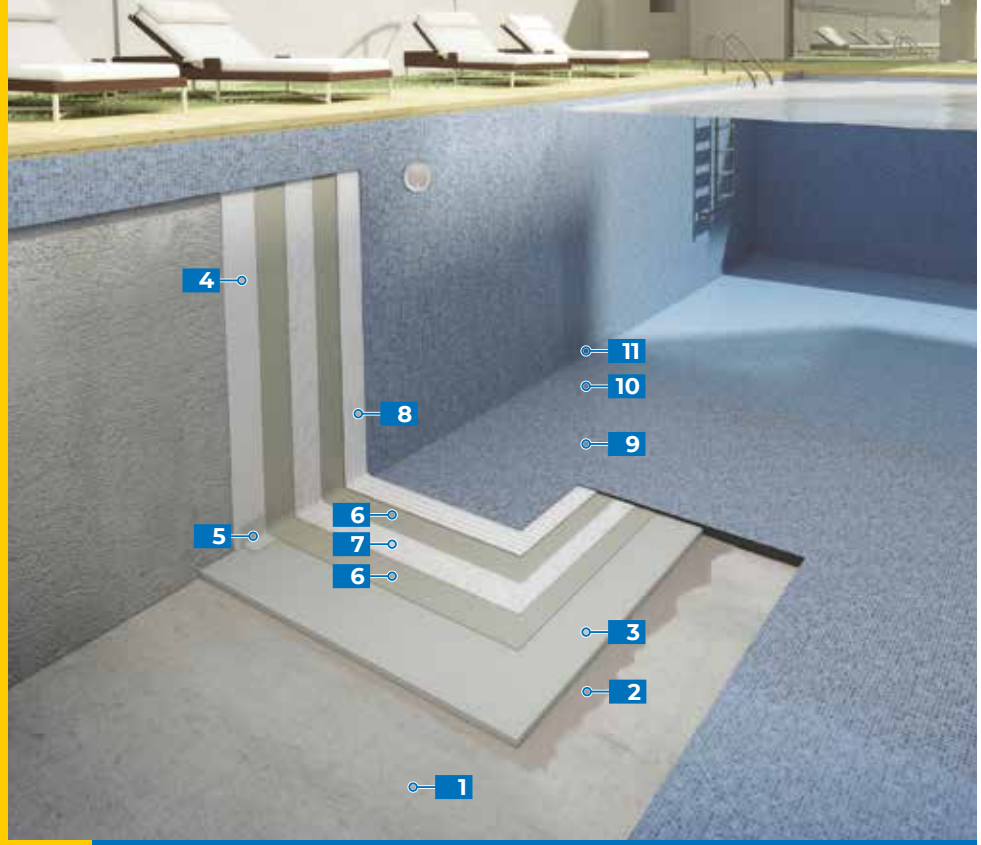
When the screed is dry, run the heating system (according to 1264-4 standards) and then bond the tiles using a deformable cementitious adhesive (class S1 according to EN 12004) such as ***Keraflex Maxi S1 zerø***, ***Ultralite S1*** or ***Kerabond*** mixed with ***Isolastic***.

GROUTING the TILES

When the adhesive has hardened, grout the tiles with cementitious mortar such as ***Ultracolor Plus*** or ***Keracolor FF***. After grouting the tiles trim the excess portions of the ***Mapesilent Band R*** strip.

SEALING the JOINTS

Seal the joints and the skirting board with a suitable sealant such as ***Mapesil AC***. Make sure the skirting board is not in direct contact with the flooring to get the best soundproofing effect from the system.



4 System for waterproofing and bonding glass mosaic in swimming pools

1 Reinforced cement structure

2 Bonding slurry
Planicrete

3 Underfloor
Planitop Fast 330 or
Topcem Pronto bonded

4 Smoothing compound
Planitop Fast 330

5 Monolithic sealing of the coving to the substrate
Eporip + ***Mapegrout 430***

6 Cementitious waterproofer
Mapelastic Smart

7 Polypropylene TNT
Mapetex Sel

8 Adhesive
Adesilex P10 + ***Isolastic***

9 Glass mosaics

10 Grouting
Kerapoxy Design

11 Sealant
Mapesil AC

PREPARATION of the SUBSTRATE

Even out the surface of the substrate (well cured and mechanically strong with no traces of form-release compound), for both walls and floors, with ***Planitop Fast 330***. Alternatively, even out the surface of floors with ***Topcem Pronto*** bonded to the substrate with ***Eporip***. Form coving around the perimeter made from ***Mapegrout 430*** bonded to the substrate with ***Eporip***.

WATERPROOFING SYSTEM

After evening out the vertical and horizontal surfaces, waterproof the surfaces prepared as specified with two coats of ***Mapelastic Smart*** reinforced with ***Mapetex Sel*** non-woven fabric. The total thickness of the waterproofing layer must be at least 2 mm.

BONDING the GLASS MOSAIC

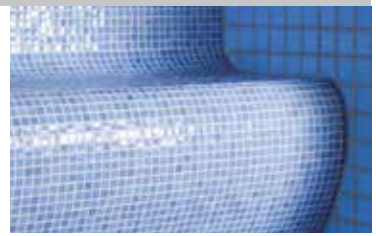
Bond the glass mosaic in swimming pools with ***Adesilex P10*** cementitious adhesive mixed with ***Isolastic*** latex at a ratio of 1:1 with water. This adhesive stands out from the others for its high white balance which makes it particularly suitable for bonding glass mosaics.

GROUTING the TILES

When the adhesive has hardened, grout the mosaic with ***Kerapoxy Design*** acid-resistant, decorative, translucent epoxy mortar.

SEALING the JOINTS

Apply ***Mapesil AC*** elastic sealant in correspondence with the edges, corners, joints and changes in slope.



5 System for bonding strips of terracotta on walls and overlaying porcelain tiles on existing floors

1 Substrate
Old tiles

2 Adhesive
Keraflex

3 Tiles
Porcelain tiles

4 Grouting
Ultracolor Plus

5 Sealant
Mapesil AC

6 Render
Nivoplan + ***Planicrete***

7 Adhesive and grouting
Fix & Grout Brick

8 Material
Terracotta strips (blocks)

LEVELLING OFF and PREPARING the SUBSTRATE

Repair areas of detached render with ***Nivoplan*** mixed with ***Planicrete*** or with ***Planitop Fast 330***. Before overlaying old ceramic flooring (with no cracks and well bonded to the substrate) clean the surface with a suitable dewaxing product or caustic soda diluted in water or sand the surface of the tiles.

BONDING the PORCELAIN TILES and STRIPS of TERRACOTTA

Class C2 MAPEI cementitious adhesives according to EN 12004 standards, such as ***Keraflex***, bond well to the flooring as long as there are no materials or substances that could affect its adhesion (dust, oil, wax, etc.).
Use ***Fix & Grout Brick*** adhesive to bond strips of terracotta and ornamental elements in lightweight cementitious conglomerate.

GROUTING the TILES

Smooth over traces of ***Fix & Grout Brick*** applied on walls with a damp brush to grout the gaps between the strips of terracotta. Grout the porcelain floor tiles, on the other hand, with cementitious mortar such as ***Ultracolor Plus***.

SEALING the JOINTS

Seal the joints, changes in slope, corners and edges with a suitable elastic sealant such as ***Mapesil AC*** after setting the depth of the sealant with ***Mapefoam***.

6 System for bonding large, thin ceramic tiles on façades and installing porphyry block flooring

1 Substrate
Concrete

2 Isolating layer
Non-woven fabric

3 Installation mortar
Mapestone TFB 60

4 Material
Porphyry

5 Grouting
Mapestone PFS 2

6 Sealant
Mapesil LM

7 Render
Into+ Vaga

8 Adhesive
Ultralite S2 Quick

9 Grouting
Ultracolor Plus

10 Thin porcelain tiles

11 Sealant
Mapesil LM

PREPARATION of the SUBSTRATE

Render must be clean, well cured, dry, flat and sound and with sufficient pull-off strength. Repair detached areas of render with ***Into+*** made by ***Vaga***. The pull-off strength of the render must be at least 1 N/mm^2.

BONDING THIN PORCELAIN TILES on FACADES

In order to bond tiles on façades, particularly large thin tiles, it is very important to use deformable adhesive (class S1 or S2 according to EN 12004) such as ***Ultralite S2*** applied using the double-buttering technique so that there are no gaps on the back of the tiles.

GROUTING the TILES

The joints must be at least 5 mm wide and may be grouted with ***Ultracolor Plus*** rapid-setting and hardening, anti-efflorescence, water-repellent cementitious mortar.

SEALING the JOINTS

Seal all the corners, edges and expansion joints (dimensioned according to the pitch of the tiles) using a product with low modulus of elasticity and low dirt pick up, such as ***Mapesil LM***.

ARCHITECTONIC STONE FLOORS

The ***Mapestone*** system is used to make architectonic stone floors (made from small blocks, smolleri bricks, cobblestones, etc.).

7 Mapetherm Tile System for bonding thin porcelain tiles on thermal cladding systems

1 Substrate
CONCRETE
Vaga RCK 37

2 Isolating layer
Non-woven fabric

3 Installation mortar
Mapestone TFB 60

4 Bonding slurry made from
Planicrete

5 Paving

6 Grouting
Mapestone PFS 2

7 Sealant
Mapesil LM

8 Substrate
Structural concrete
Into+ Vaga

9 Adhesive ***Mapetherm AR1***
ETA 04/0061 - ETA 10/0024 - ETA 10/0025

10 Insulating panel
Mapetherm EPS
ETA 10/0025

11 Structural render
Planitop HDM Maxi

12 AR glass fibre mesh
Mapegrid G 120

13 Fasteners
Mapetherm Tile Fix 15

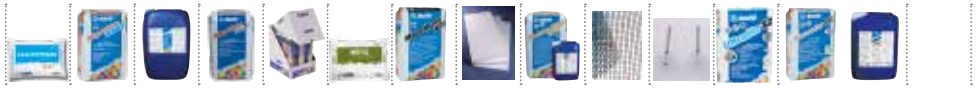
14 Structural render
Planitop HDM Maxi

15 Adhesive
Ultralite S2

16 Thin porcelain tiles

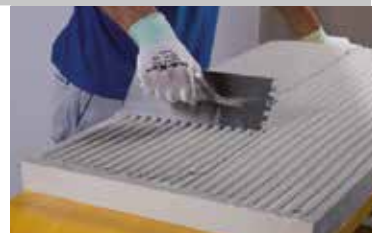
17 Grouting
Keracolor GG + ***Fugolastic***
Large thin porcelain tiles

18 Sealant
Mapesil LM



BONDING the INSULATING PANELS

On a clean, well-cured, dry substrate with sufficient pull-off strength (1 N/mm²), bond the ***Mapetherm EPS*** insulating panels (or alternatively ***Mapetherm XPS***) with ***Mapetherm AR1*** cementitious adhesive applied using the double-buttering technique (over all the surface of the panel and on the substrate).



REINFORCED RENDER

Form a layer of structural render over the insulating panels (around 1 cm thick) made from ***Planitop HDM Maxi*** two-component fibre-reinforced mortar with ***Mapegrid G 120*** A.R. glass fibre mesh embedded in the mortar. Stainless steel ***Mapetherm Tile Fix 15*** fasteners, with the washers positioned over the mesh, complete the support system for the ceramic covering.

BONDING the THIN PORCELAIN TILES

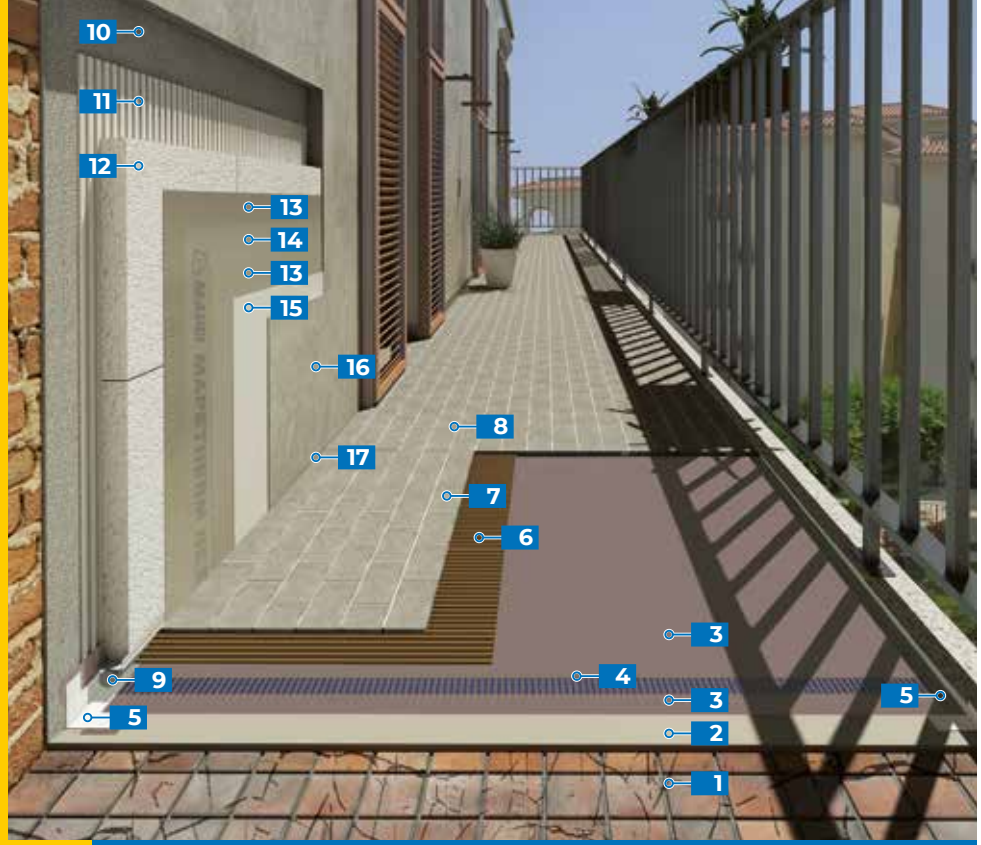
Bond the thin porcelain tiles (maximum size 50x150 cm) with highly deformable adhesive (class S2 according to EN 12004) such as ***Ultralite S2*** applied using the double-buttering technique.

GROUTING the TILES

The joints must be at least 5 mm wide and may be grouted with a cementitious product such as ***Keracolor GG*** mixed with the polymer admixture ***Fugolastic***.

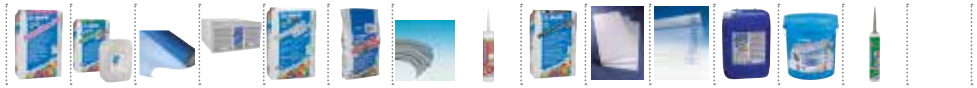
SEALING the JOINTS

Seal all the corners, edges and expansion joints (dimensioned according to the pitch of the tiles) using a product with low modulus of elasticity and low dirt pick up, such as ***Mapesil LM***.



8 Rapid system for repairing and waterproofing old terraces without demolition

1. Old ceramic tiles
2. Smoothing compound **Adesilex P4**
3. Waterproofer **Mapelastic Turbo**
4. Glass fibre mesh **Mapenet 150**
5. Self-adhesive tape **Mapeband SA**
6. Adhesive **Keraquick Maxi S1**
7. Klinker
8. Grouting **Ultracolor Plus**
9. Polyurethane foam cord **Mapefoam** + Sealant **Mapesil AC**
10. Smoothing compound **Mapetherm AR1 Light**
11. Adhesive **Mapetherm AR1 Light**
12. Insulating layer **Mapetherm EPS** ETA 10/0025
13. Smoothing compound **Mapetherm AR1 Light**
14. Glass fibre mesh **Mapetherm Net**
15. Hygenizing siloxane base coat **Silancolor Primer Plus**
16. Hygenizing wall coating **Elastocolor Tonachino Plus 1.2 mm**
17. Sealant **Mapeflex PU 45 FT**



LEVELLING OFF and PREPARING the SUBSTRATE

Smooth over the old flooring with **Adesilex P4** after cleaning the surface with a suitable detergent and/or by abrading the surface with power tools.

WATERPROOFING SYSTEM

Waterproof the surface by applying two criss-cross coats of **Mapelastic Turbo** over the smoothing layer with a trowel, roller, brush or by spray to form a thick, elastic, seamless film. Waterproof the fillets between horizontal/vertical surfaces and joints using **Mapeband SA** self-adhesive tape or alternatively with **Mapeband**.

BONDING the FLOORING

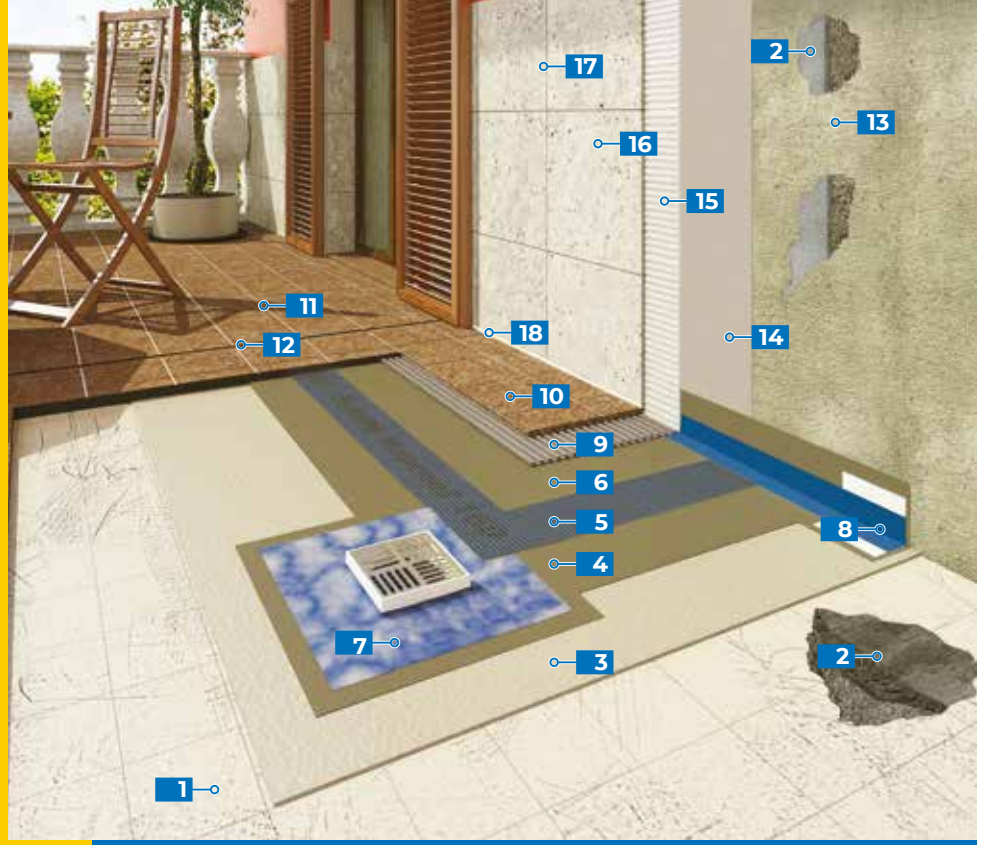
Bond the tiles with a sufficiently deformable adhesive (compatible with the elastic layer of **Mapelastic Turbo**) such as **Keraquick Maxi S1** or, as an alternative, **Elastorapid**.

GROUTING the TILES

When the adhesive has hardened, grout the tiles with a cementitious product such as **Ultracolor Plus** or, as an alternative, **Keracolor GG** mixed with the polymer admixture **Fugolastic**.

SEALING the JOINTS

Seal the joints, corners and edges with a suitable elastic sealant such as **Mapesil AC** after setting the depth of the sealant with **Mapefoam**.



9 System for waterproofing and bonding ceramic on terraces and flat roofs by overlaying existing flooring and for bonding natural stone on façades

1. Substrate
   Old ceramic tiles
2. Closing holes with
   Planitop Fast 330
3. Smoothing compound
   Adesilex P4
4. Cementitious waterproofer
   Mapelastic
5. Glass fibre mesh
   Mapenet 150
6. Cementitious waterproofer
   Mapelastic
7. Floor drain
   Drain Vertical
8. Rubber-backed tape
   Mapeband
9. Adhesive
   Keraflex Maxi S1 zerø
10. Ceramic tiles
    Klinker
11. Grout
    Ultracolor Plus
12. Sealant
    Mapeflex PU 45 FT
13. Old render
14. Render
    Nivoplan + ***Planicrete***
15. Adhesive
    Ultralite S2 Quick
16. Natural stone
17. Grout
    Ultracolor Plus
18. Sealant
    Mapesil LM

LEVELLING OFF and PREPARING the SUBSTRATE

Smooth over the old flooring with ***Adesilex P4*** after cleaning the surface with a suitable detergent and/or by abrading the surface with power tools. Remove the skirting boards along with at least 1.5 cm of the render behind the skirting. Fill the gap in the render with ***Planitop Fast 330***.

WATERPROOFING SYSTEM

Apply two coats of ***Mapelastic*** with a metal trowel over the skim/smoothing layer to form a layer at least 2 mm thick. Reinforce the waterproofing layer by placing ***Mapenet 150*** alkali-resistant glass fibre mesh between the two coats of waterproofing product. Waterproof the fillets between horizontal/vertical surfaces and joints using ***Mapeband***. Install a floor drain using a ***Drain Vertical***/***Lateral*** kit.

BONDING the TILES

Bond the tiles with a sufficiently deformable adhesive (compatible with the elastic layer of ***Mapelastic***) such as ***Keraflex Maxi S1 zerø*** or, as an alternative, ***Ultralite S2 Quick***.

GROUTING the TILES

When the adhesive has hardened, grout the tiles with a cementitious product such as ***Ultracolor Plus*** or, as an alternative, ***Keracolor GG*** mixed with the polymer admixture ***Fugolastic***.

SEALING the JOINTS

Seal the joints, corners and edges, after setting the depth of the joint with ***Mapefoam***, with a suitable sealant such as ***Mapeflex PU45 FT*** or, as an alternative, ***Mapesil LM*** if the sealant is in contact with stone material.

10 Rapid system for overlaying old flooring with underfloor soundproofing

1 Substrate
Old ceramic flooring

2 Adhesive
Ultrabond Eco S955 1K

3 Soundproofing membrane
Mapesonic CR +
Mapesonic Strip

4 Adhesive
Keraquick Maxi S1

5 Tiles
Porcelain

6 Grouting
Kerapoxy CQ

7 Sealant
Mapesil AC

8 Skim/smoothing layer
Planitop 560

9 Primer
Dursilite Base Coat

10 Finishing product
Dursilite Matt

SOUNDPROOFING against the NOISE of FOOTSTEPS

After applying ***Mapesonic Strip*** adhesive tape along the walls around the perimeter of the room, lay sheets of ***Mapesonic CR*** bonded with ***Ultrabond Eco V4 SP*** adhesive for absorbent substrates (cementitious screeds or skim/smoothing layers) or, as an alternative, ***Ultrabond Eco S955 1K*** for non-absorbent substrates.

BONDING the PORCELAIN TILES

At least 24-48 hours after laying the sheets, bond the new flooring with deformable cementitious adhesive such as ***Keraquick Maxi S1*** or ***Ultralite S1 Quick***.

GROUTING the TILES

When the adhesive has hardened, grout the tiles with ***Kerapoxy CQ*** two-component, easy-to-apply, anti-acid epoxy filler with excellent cleanability. After grouting the tiles, trim the excess portions of ***Mapesonic Strip*** along the walls. As an alternative, the tiles may be grouted with cementitious mortar such as ***Ultracolor Plus*** or ***Keracolor GG***.

SEALING the JOINTS

It is very important that, when applying the skirting boards around the room, they do not come into direct contact with the floor, so the joint between the skirting and the flooring must be sealed with ***Mapesil AC***.

11 System for bonding thin porcelain tiles on compact heating systems (UPONOR system)

1 Substrate
Old ceramic flooring

2 Primer
Eco Prim T

3 Compact under-floor heating system (UPONOR)

4 Skim/smoothing layer
Novoplan Maxi

5 Adhesive
Ultralite S1

6 Tiles
Thin porcelain tiles

7 Grouting
Keracolor FF

8 Sealant
Mapeflex PU 45 FT

9 Skim/smoothing layer
Planitop 560

10 Primer
Silexcolor Primer

11 Finishing product
Silexcolor Marmorino

COMPACT HEATED SCREED

Thoroughly clean the flooring with water and caustic soda or a special de-waxing product, and sand the surface if required.
After applying a coat of ***Eco Prim T*** primer, install the compact heating system (UPONOR) and smooth over the surface with ***Novoplan Maxi***.

BONDING the THIN PORCELAIN TILES

When ***Novoplan Maxi*** is dry, and after running the heating system, bond the porcelain tiles using a deformable cementitious adhesive such as ***Ultralite S1***, ***Keraflex Maxi S1***, ***Kerabond*** mixed with ***Isolastic*** or ***Ultralite S2*** for larger format.

GROUTING the TILES

When the adhesive has hardened grout the gaps between the tiles, which must be wide enough to cushion deformations induced by the heating system. ***Ultracolor Plus*** or, as an alternative, ***Keracolor FF*** may be used in this case.

SEALING the JOINTS

Seal the distribution joints, positioned according to design specifications, with a suitable product such as ***Mapesil AC*** or ***Mapeflex PU45 FT***.

12 Rapid system for repaired and new flooring in commercial areas

1 Old cracked ceramic flooring

2 Isolating layer

3 Screed
Mapecem Pronto

4 Adhesive
Adesilex P9 Express

5 Porcelain

6 Grouting
Ultracolor Plus

7 Sealant
Mapeflex PU20

8 Skim/smoothing layer
Planitop 540

9 Primer
Dursilite Base Coat

10 Finishing product
Dursilite

11 Sealant
Mapeflex PU40

RAPID SETTING and HARDENING ISOLATED SCREED

In commercial areas, where work needs to be carried out without removing the old flooring, an isolated screed (using sheets of polyethylene) at least 4 cm thick reinforced with electro-welded mesh at the midpoint must be installed. Make the screed from ***Mapecem Pronto***, which allows ceramic to be bonded after 3-4 hours and reaches a high level of strength very quickly.

BONDING the PORCELAIN TILES

Once the screed has dried and cured according to specification and the joints in the screed have been created, bond the tiles with ***Adesilex P9 Express*** or ***Keraquick Maxi S1***, rapid-setting, high-strength adhesive, which sets to foot traffic after just 3 hours and allows flooring to be put into service after just 24 hours.

GROUTING the TILES

When the adhesive has hardened, grout the gaps between the tiles (dimensioned according to specification) with ***Ultracolor Plus***, high-strength, rapid-setting and hardening cementitious mortar with high resistance to abrasion.

SEALING the JOINTS

Seal the joints with a high-strength, elastic product such as ***Mapeflex PU20*** after setting the depth of the joints with ***Mapefoam***.

13 System for the installation of ceramic tiles without tracing the pattern of existing distribution joints

1. Concrete substrate
2. Damp proofing barrier
3. Screed
   Topcem Pronto
4. Adhesive
   Ultralite S2 /
   Ultralite S2 Quick
5. Non-woven fabric sheet
   Mapetex System
6. Adhesive
   Ultralite S2 /
   Ultralite S2 Quick
7. Grout
   Ultracolor Plus
8. Thin porcelain tiles

MAPETEX SYSTEM

Mapetex System prevents the risk of cracks forming in ceramic or stone flooring installed on screeds with hair-line cracks, on screeds that are not fully cured or on old, deteriorated flooring. Furthermore, it may be installed without tracing the pattern of existing distribution joints. The system consists in bonding isolating fabric directly on the screed.

BONDING the PORCELAIN TILES

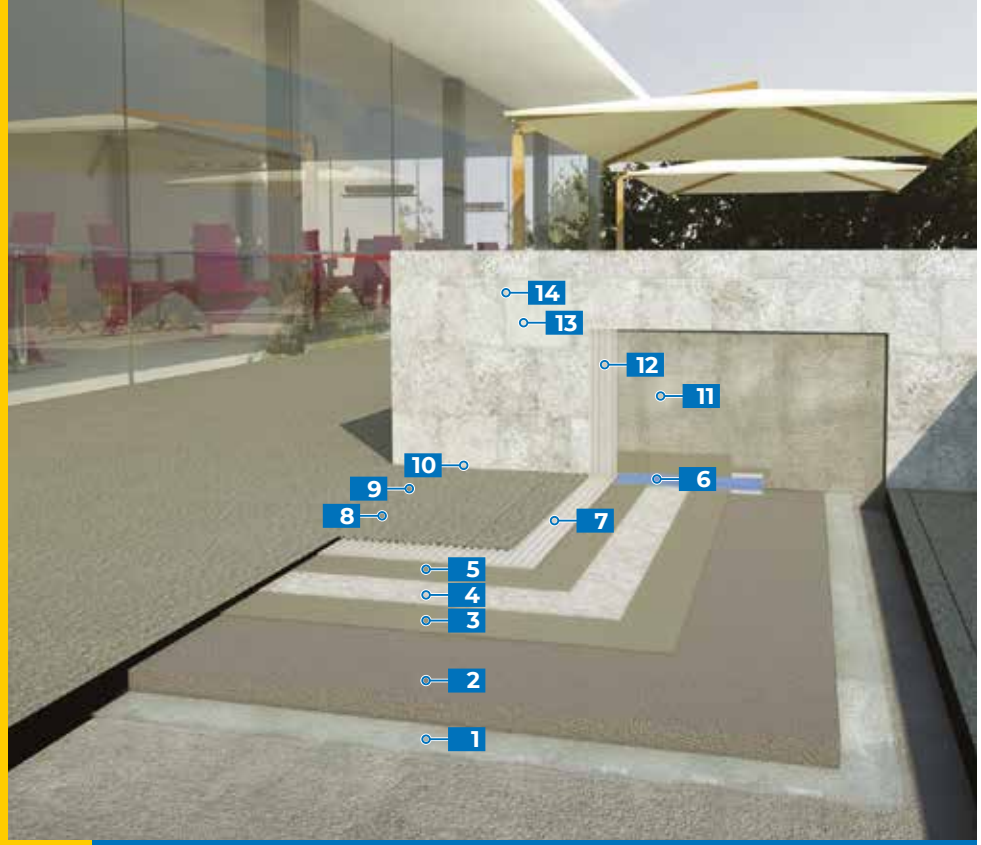
The tiles may be bonded to the floor with the same adhesive used to bond ***Mapetex*** (such as ***Ultralite S2*** or ***Ultralite S2 Quick***).

GROUTING the TILES

When the adhesive has hardened, grout the tiles with cementitious mortar such as ***Ultracolor Plus***.

SEALING the JOINTS

Seal the joints with a suitable elastic sealant such as ***Mapesil AC*** after setting the depth of the joints with ***Mapefoam***.



14 System for waterproofing and bonding ceramic on balconies and flat roofs

1 Vapour barrier

2 Screed
Topcem Pronto

3 Cementitious waterproofing mortar
Mapelastic Smart

4 Polypropylene non-woven fabric
Mapetex Sel

5 Cementitious waterproofing mortar
Mapelastic Smart

6 Rubber-backed tape
Mapeband

7 Adhesive
Ultralite S1 Quick

8 Granite

9 Grouting
Ultracolor Plus

10 Sealant
Mapesil LM

11 Concrete

12 Adhesive
Ultralite S2

13 Porcelain

14 Grouting
Ultracolor Plus

MAKING the ISOLATED SCREED

Install a sufficiently thick isolated screed (> 4 cm) made from ***Topcem Pronto*** over an adequate vapour barrier.

WATERPROOFING SYSTEM

Apply two coats of ***Mapelastic Smart*** over the substrate with a notched trowel, brush or roller to form a layer at least 2 mm thick. Reinforce the waterproofing layer with ***Mapetex Sel***. Waterproof the fillets between the horizontal/vertical surfaces and the joints by completely embedding strips of ***Mapeband*** in the layer of ***Mapelastic Smart***.

BONDING the STONE on WALLS and FLOORS

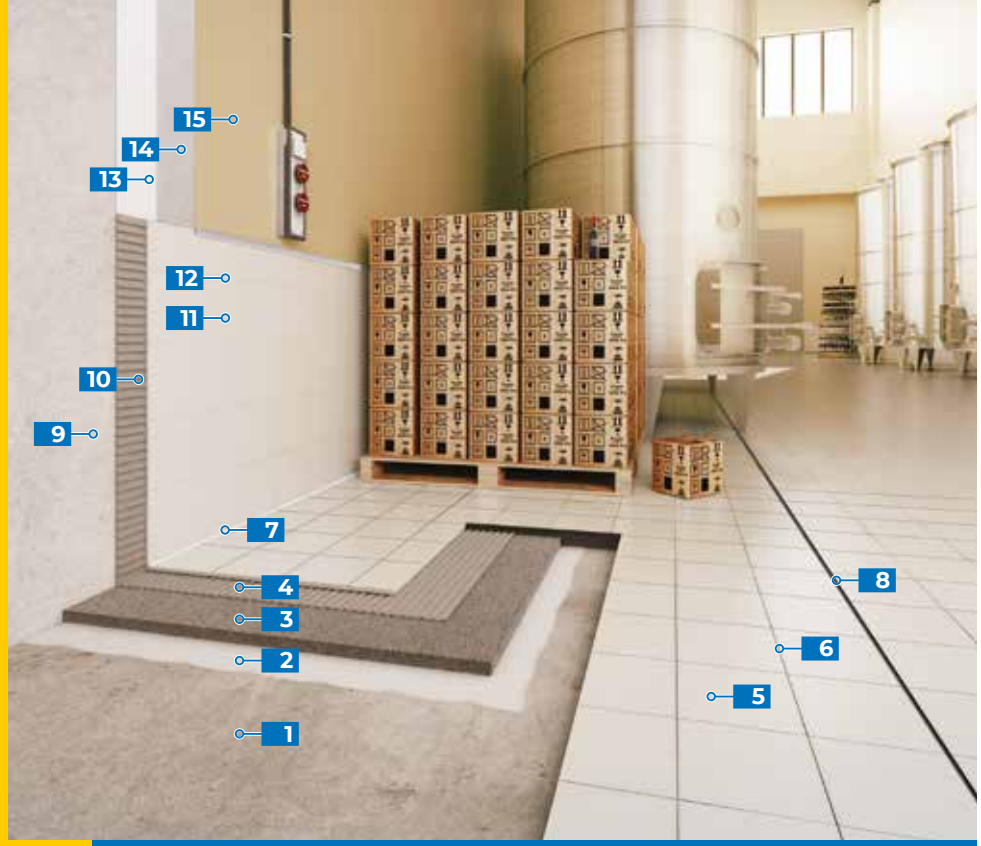
Bond the slabs of stone on floors with a sufficiently deformable adhesive (compatible with the elastic layer of ***Mapelastic Smart***) such as ***Ultralite S1 Quick*** or ***Keraflex Maxi S1*** and on walls with ***Ultralite S2*** or ***Ultralite S2 Quick***.

GROUTING the TILES

When the adhesive has hardened, grout the stone with a cementitious product such as ***Ultracolor Plus***.

SEALING the JOINTS

Seal the joints in natural stone floor and wall coverings with an elastic sealant whose neutral-hardening properties have no affect on the colour of the stone, such as ***Mapesil LM***.



15 System for bonding ceramic in areas subjected to intense traffic

1 Reinforced cement floor slab

2 Bonding promoter
Eporip

3 Screed
Topcem Pronto

4 Adhesive
Elastorapid

5 Oversized klinker

6 Grouting
Kerapoxy CQ

7 Sealant
Mapeflex PU20

8 Sealant
Mapeflex PU 45 FT

9 Render

10 Adhesive
Ultralite S1

11 Tiles
Porcelain (20x20 cm)

12 Grouting
Kerapoxy CQ

13 Skim/smoothing layer
Planitop 540

14 Primer
Mapecoat I 600 W

15 Finishing product
Mapecoat I 24

MAKING the SCREED

If a screed less than 4 cm thick needs to be made, it is important to apply ***Topcem Pronto*** in adherence with the substrate over a wet coat of epoxy resin such as ***Eporip*** or cementitious bonding slurry made from ***Planicrete***, water and cement at a ratio of 1:1:3.

BONDING the TILES

Once the screed is well cured bond the tiles with strong cementitious adhesive with high compressive strength such as ***Elastorapid*** or ***Granirapid*** using the double-buttering technique.
To bond the tiles on walls, where high mechanical strength is not required but it is important to guarantee the back of the tiles is completely bonded, use a lightweight adhesive such as ***Ultralite S1***.

GROUTING the TILES

When the adhesive has hardened grout the tiles with ***Kerapoxy CQ*** anti-acid, easy-to-apply epoxy grout with excellent cleanability.

SEALING the JOINTS

Because of the sheer size of this type of environment, it is important that the joints are dimensioned correctly and that they are sealed with products with appropriate mechanical and chemical characteristics such as ***Mapeflex PU45 FT*** and ***Mapeflex PU20*** around the perimeter of the area.

16 System for bonding porcelain tiles in areas subjected to severe chemical aggression

1 Reinforced cement floor slab

2 Isolating layer

3 Screed reinforced with electro-welded mesh
Topcem

4 Adhesive
Kerapoxy Adhesive

5 Oversized porcelain tiles

6 Grouting
Kerapoxy IEG

7 Sealant
Mapeflex PU20

8 Cementitious render
Planitop Fast 330

9 Adhesive
Kerapoxy Adhesive

10 Porcelain

11 Grouting
Kerapoxy IEG

12 Finishing product
Mapecoat I 24

3 4-9 6-11 7 8 12

MAKING the ISOLATED SCREED

Install an isolated screed made from ***Topcem*** applied over an adequate vapour barrier. Position the electro-welded mesh at the mid-point of the screed, which must be at least 4 cm thick, so that it distributes the stresses acting on the floor.
Apply a layer of ***Planitop Fast 330*** to level off or repair the vertical surface of the render.

BONDING the PORCELAIN TILES

Bond the tiles with epoxy adhesive such as ***Kerapoxy*** or ***Kerapoxy Adhesive***. The use of reactive adhesive to bond the tiles increases the chemical resistance of the flooring, which in this case is guaranteed by both the grouted tiles and the installation surface. A uniform layer of adhesive, therefore, also forms a protective barrier for the substrate.

GROUTING the TILES

When the adhesive has hardened grout the tiles, positioned to leave a suitable size gap, with ***Kerapoxy CQ*** or ***Kerapoxy IEG***, epoxy grout with very high resistance to chemicals, particularly oleic acid and aromatic hydrocarbons.

SEALING the JOINTS

Seal the joints with a high-strength product with high resistance to chemicals such as ***Mapeflex PU20*** after setting the depth of the joints, where required, with ***Mapefoam***.

17 System for bonding natural stone in damp environments

1 Concrete substrate

2 Bonding slurry
Planicrete

3 Screed
Topcem Pronto

4 Waterproofing product
Mapelastic

5 Glass fibre mesh
Mapenet 150

6 Waterproofing product
Mapelastic

7 Adhesive
Keraquick Maxi S1

8 Red marble

9 Grouting
Ultracolor Plus

10 Sealant
Mapesil LM

MAKING the BONDED SCREED

If a screed less than 4 cm thick needs to be made, it is important to apply ***Topcem Pronto*** in adherence with the substrate over a wet coat of epoxy resin such as ***Eporip*** or cementitious bonding slurry made from ***Planicrete***, water and cement at a ratio of 1:1:3.

WATERPROOFING SYSTEM

Apply two coats of ***Mapelastic*** over the substrate with a notched trowel to form a layer at least 2 mm thick reinforced with ***Mapenet 150***. Waterproof the fillets between the horizontal/vertical surfaces and the joints by completely embedding strips of ***Mapeband*** in the layer of ***Mapelastic***.

BONDING the RED MARBLE

After waiting 4 days allow ***Mapelastic*** to dry bond the stone material with ***Keraquick Maxi S1*** or ***Elastorapid***.

GROUTING the TILES

Grout the stone (minimum gap 5 mm) with ***Ultracolor Plus*** rapid-setting and hardening, anti-efflorescence, water-repellent cementitious mortar.

SEALING the JOINTS

Seal the joints in natural stone with an elastic sealant whose neutral-hardening properties have no affect on the colour of the stone, such as ***Mapesil LM***.

18 System for waterproofing and bonding ceramic in shower booths, bathrooms and changing rooms by overlaying existing flooring

1 Substrate
Old tiles

2 Primer
Eco Prim Grip

3 Smoothing layer
Nivorapid

4 Waterproofing product
Mapegum WPS (2 coats)

5 Floor drain
Drain Vertical

6 Rubber-backed tape
Mapeband PE 120

7 Adhesive
Keraflex

8 Tiles
Porcelain tiles

9 Grouting
Kerapoxy CQ

10 Sealant
Mapesil AC

11 Smoothing layer
Nivoplan + ***Planicrete***

12 Skim/smoothing layer
Planitop 560

13 Primer
Silancolor Primer Plus

14 Coating product
Silancolor Pittura Plus

15 Adhesive
Adesilex P10 + ***Isolastic***

16 Tiles
Glass mosaics

17 Grouting
Kerapoxy Design + ***MapeGlitter***

LEVELLING OFF and PREPARING the SUBSTRATE

After checking the condition of the flooring and carrying out a thorough cleaning, apply a layer of ***Nivorapid*** cementitious smoothing compound after applying a coat of ***Eco Prim Grip*** primer and bonding promoter.

WATERPROOFING SYSTEM

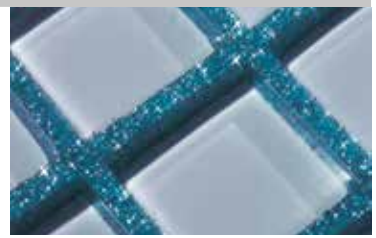
After preparing the substrate as specified, apply two criss-cross coats of ***Mapegum WPS*** with a trowel, roller, brush or spray to form a thick, elastic, seamless film. Waterproof the fillets between the horizontal/vertical surfaces and the joints with ***Mapeband PE 120*** and install a floor drain using a ***Drain Vertical***/***Lateral*** kit.

BONDING the TILES and MOSAIC

Bond the porcelain tiles with cementitious adhesive such as ***Keraflex*** and the glass mosaic with ***Adesilex P10*** cementitious adhesive mixed with ***Isolastic*** latex diluted at a ratio of 1:1 with water.

GROUTING the TILES

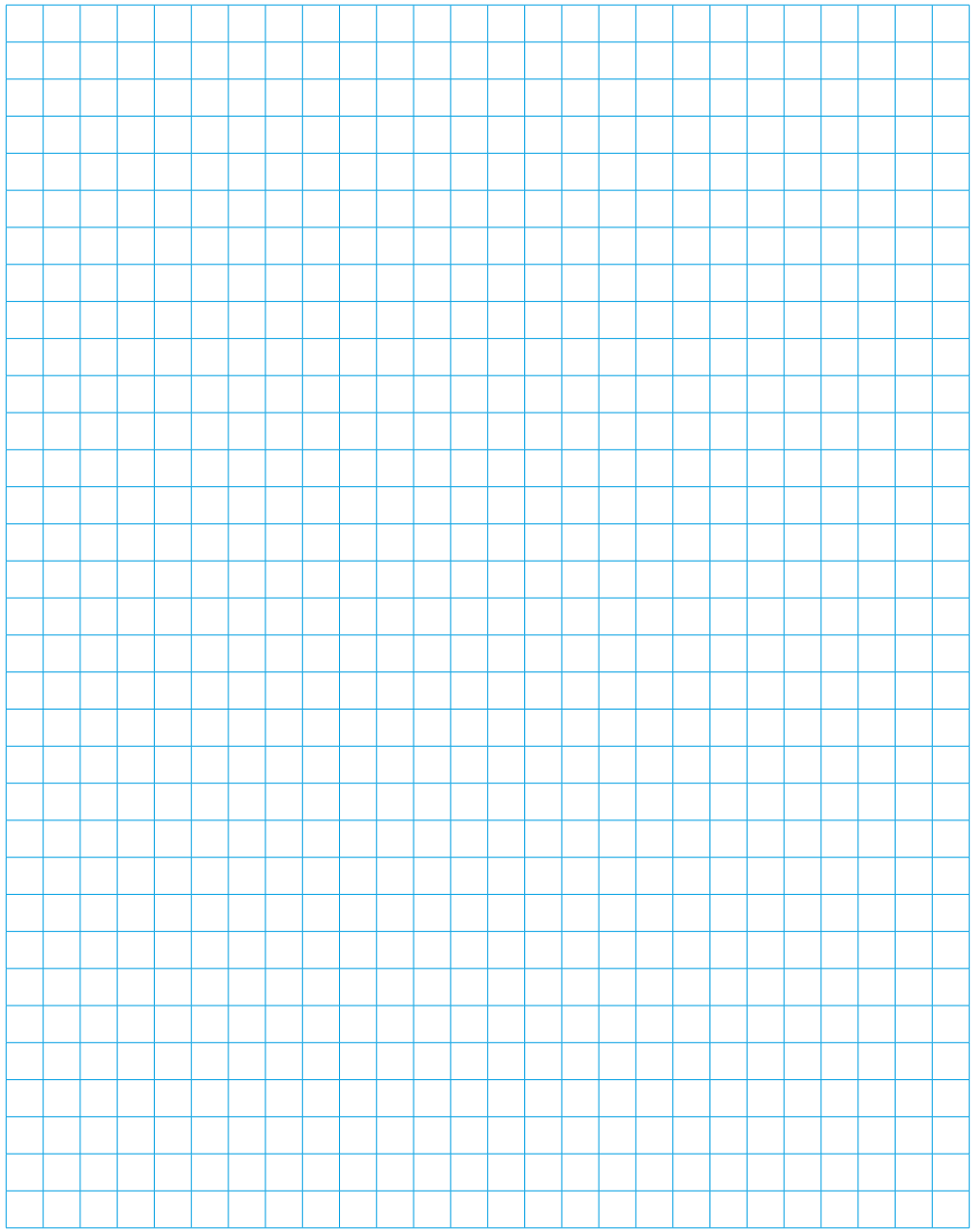
When the adhesive has hardened, grout the tiles with ***Kerapoxy CQ***, two-component, easy-to-apply, anti-acid epoxy filler with excellent cleanability. In damp environments we recommend grouting the glass mosaic with ***Kerapoxy Design*** decorative, anti-acid, translucent epoxy grout, ***MapeGlitter*** may also be added.



SEALING the JOINTS

Seal the joints, corners and edges with a suitable elastic sealant such as ***Mapesil AC*** after setting the depth of the sealant with ***Mapefoam***.

Notes



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