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PANARIAgroup®

PORCELAIN STONEWARE TECHNICAL AND INSTALLATION MANUAL

TRADITIONAL PORCELAIN STONEWARE

Panariagroup porcelain stoneware combines premium raw materials and cutting-edge manufacturing technology to deliver compact, durable surfaces of superior quality.

A wide selection of sizes, thicknesses and exclusive finishes makes it possible to create contemporary and sophisticated spaces.

Advanced digital technologies bring to life deep graphics and authentic colours, capable of reproducing with striking realism stones, woods, marbles, concretes and modern textures.

Safe and long-lasting, Panariagroup stoneware is non-combustible, hygienic and free from harmful emissions: the ideal solution for projects that combine aesthetics and performance.

→ [discover more about Porcelain Stoneware](#)



HIGH QUALITY
FOR EVERY NEED

→ [intended uses on page 5](#)

from 8 mm...

...up to 20 mm



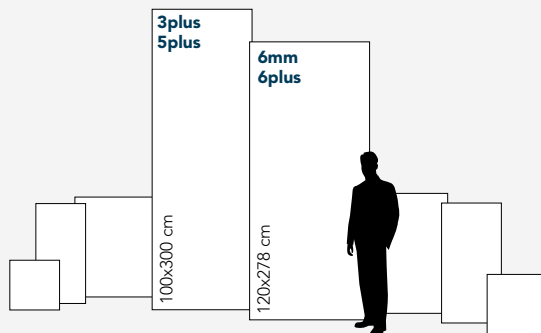
LAMINATED PORCELAIN STONEWARE

Laminated porcelain stoneware is distinguished by the extraordinary size of its slabs, reaching formats of 100x300 cm and 120x278 cm, and by its reduced thickness, from 3.5 mm to 6.5 mm.

It is a product whose strengths lie in **lightness**, **durability**, **extreme versatility** and **ease of use**.

The result of Panariagroup research, always focused on beauty and technical excellence, laminated porcelain stoneware is a truly universal ceramic surface: ideal for multiple applications in the world of architecture and design, it is suitable not only for floors and walls, but also for furniture, furnishings, kitchens and worktops, façades and ventilated walls, tunnels and large public works.

→ [discover more about Laminated Stoneware](#)



THIN AND RESISTANT

→ [intended uses on page 5](#)



THIN AND ULTRA-RESISTANT (3plus)

→ [intended uses on page 5](#)

6mm

± 6 mm

formats up to 120x278 cm

3plus

± 3,5 mm

formats up to 100x300 cm

Reinforced with fiberglass mesh on the back

5plus

± 5,5 mm

formats up to 100x300 cm

Reinforced with fiberglass mesh on the back

6plus

± 6,5 mm

formats up to 120x278 cm

Reinforced with fiberglass mesh on the back



GUIDE TO USING THIS MANUAL

This Manual provides rules and instructions to be followed in the **ADHESIVE INSTALLATION** of Panariagroup porcelain stoneware, in order to ensure the achievement and long-term maintenance of the high levels of quality and performance that Panariagroup porcelain stoneware can deliver.

The **THREE** phases of ceramic tiling installation are covered:

1.DESIGN

2.INSTALLATION

3.MAINTENANCE

Panariagroup porcelain stoneware coverings can be installed on any floor or wall substrate, provided that it has been designed and constructed taking into account the relevant design data and in compliance with current regulations. In detail, it is essential to:

- Verify that the substrate on which installation takes place has the required characteristics;
- Choose an adhesive suitable for the substrate and intended use;
- Install Panariagroup porcelain stoneware on the substrate correctly.

If these three points are respected, Panariagroup porcelain stoneware will fully express all its characteristics over time.

1 DESIGN



Design consists in the specification and development, based on design data, of the constituent materials and the sizing of the tiling.

The activities that fall under the “design” function are as follows:

- Analysis of design data;
- Substrate condition → [page 4](#);
- Tile selection → [page 5](#);
- Layout and installation pattern;
- Joint width → [page 6](#);
- Evaluation and selection of joints → [pages 6-7](#);
- Slopes and other specific points;
- Slip resistance;
- Definition of the design solution in significant situations;
- Project validation.

2 INSTALLATION



The installation of ceramic tiling includes all activities that, starting from the design phase, lead to the completed tiling.

These activities, which fall under the “installation” function, are as follows:

- Work analysis and planning;
- Control of environmental conditions;
- Storage and control of materials → [page 10 \(fig. 01\)](#);
- Cutting, shaping and drilling of tiles → [pages 12-13-14-15](#);
- Adhesive preparation and installation → [page 16](#);
- Application of adhesive (or mortar) to the tiles → [page 17](#);
- Installation of movement joints;
- Joint filling material;
- Post-installation cleaning → [page 18](#);
- Protection of installed material → [page 19](#);
- Testing and acceptance → [pages 20-21](#);
- Waste management → [pages 47-48](#).

3 MAINTENANCE



Maintenance of ceramic tiling includes all operations necessary to preserve its functionality and efficiency.

Maintenance can be divided into routine and extraordinary:

- Routine maintenance → [page 22](#);
- Extraordinary maintenance → [page 23](#);

Inspection of ceramic tiling for routine and extraordinary maintenance purposes is the responsibility of the end user.





DESIGN

THE SUBSTRATE AND ITS REQUIREMENTS

The substrate of the tiling, at the time of installation, must comply with the **requirements described below**. Responsibility for ensuring and verifying the following characteristics lies with the designer and the contractor.

CURED

The substrate must be properly cured and dimensionally stable.

For the correct timing and procedures, reference should be made to good construction practices and to the instructions and specifications provided by the manufacturers of the substrate components.

Before tile installation, if a radiant heating system is present, it must undergo the initial heating cycle in accordance with UNI EN 1264-4.

FLAT

This refers to the surface layer of the substrate (installation surface). It can be measured and assessed using the same methods adopted for measuring the flatness of the finished tiling, namely by using a straightedge of at least 2 m, placing it on the substrate in all directions. The permitted tolerance is 2 mm.

If the surface does not meet the specified requirements, it must be levelled by grinding or smoothing.

DRY

The substrate must be surface dry in order to prevent the risk of efflorescence.

Residual moisture within the substrate is determined by measurement using a carbide hygrometer.

In the case of screeds with a radiant climate control system, moisture measurement must be carried out after

the initial heating cycle, once the screed has returned to ambient temperature.

If the limit (3% for CT-class screeds and 0.3% for CA-class screeds) is not met, an additional waiting period under suitable environmental conditions may be required, or appropriate materials and systems may be used (possibly allowing for the release of vapor pressure), strictly following the instructions and specifications provided by the respective manufacturers.

CLEAN

The substrate surface must be clean and free from contaminants (e.g. cement laitance, release oils, traces or residues of paints, adhesives, etc.). If present, these must be removed using appropriate removal methods.

INTACT

This is initially assessed by visual inspection. At the time of installation, the substrate must be intact, continuous, free from cracks and/or defects, and free from detachment of its constituent parts.

If more in-depth information on integrity is required, reference must be made to the investigation methods specified in the relevant standards according to the type of substrate.

In the case of existing floor or wall coverings (tiles, stone materials, parquet, etc.), these must be bonded to the underlying layer (this can be verified by percussion

inspection). Elements/portions that are not perfectly bonded must be removed.

Depending on the specific condition of the substrate, preparation treatments may be required (for example: cleaning with suitable detergents, washing, mechanical abrasion, application of appropriate primers, etc.), for which reference must be made to the manufacturer's instructions

SURFACE-RESISTANT

This corresponds to the mechanical strength of the surface layer of the substrate and provides an assessment of the risk that, under service conditions, this layer may exhibit failures that could cause detachment of tiling elements.

The evaluation of this characteristic is particularly important in the case of tiling exposed to high loads, both static and dynamic, or subjected to severe thermo-hygrometric conditions.

In the case of insufficient surface strength, the substrate must undergo consolidation treatment, consisting of mechanical removal of the weak surface layer, thorough dust removal, and finally treatment with a suitable consolidating primer, to be selected and applied in accordance with the manufacturer's technical data sheets.

If verification of surface strength is required, reference should be made to the specific standards for each type of substrate.





DESIGN

WHICH STONEWARE TO CHOOSE

Tile selection must be carried out based on a comparison between the technical specifications of the products and the expected service conditions of the intended environment (levels of stress and corresponding performance requirements).

More specifically, in environments where high mechanical, chemical or thermo-hygrometric stresses are expected, tile types with correspondingly high performance levels must be specified, in order to ensure adequate durability of the tiling.

Legend of icons for the Panariagroup porcelain stoneware product range:



Laminated Porcelain Stoneware
6mm



Laminated Porcelain Stoneware reinforced with fiberglass
3plus - 5plus - 6plus



Porcelain Stoneware
From 8 mm to 20 mm

Intended uses		RESIDENTIAL	PUBLIC	INDUSTRIAL
FLOOR	Indoor	 All Panariagroup porcelain stoneware	 EXCLUDING 3plus	 ONLY <u>porcelain stoneware with thicknesses of 14 and 20 mm</u>
	Outdoor	 6mm, 6plus e 5plus ONLY when using certified decoupling mats approved by their manufacturer. EXCLUDING 3plus.	 6mm, 6plus e 5plus ONLY when using certified decoupling mats approved by their manufacturer. EXCLUDING 3plus.	 ONLY <u>porcelain stoneware with thicknesses of 14 and 20 mm</u>
WALL	Indoor	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware
	Outdoor	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware
CEILING	Indoor	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware
	Outdoor	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware	 All Panariagroup porcelain stoneware



- Products with special finishes may have limitations in their intended uses. Check the individual collection catalogues.
- **Glossy, Touch, Levigata (Lev), Lux** and **P_polished** finishes are recommended, in addition to wall applications, also for floors in residential or light commercial environments not subject to high stress, where anti-slip performance is not required. The occasional presence of small irregularities or dots on the surface is to be considered a characteristic of the material and its specific manufacturing process.
- If the product is installed in direct contact with outdoor environments, it is recommended to use protective solutions to prevent the formation of scratches.





DESIGN

GROUT JOINTS AND MOVEMENT JOINTS

(1/2)



Excellent aesthetic results can be achieved by creating silicone expansion joints with the same size as the grout joints.

Grout joints

So-called “butt joint” installation is not permitted.

In no case may a joint width of less than 2 mm be specified or adopted, except for indoor wall coverings, where installation with a 1 mm joint is permitted. The assessment of the joint size is the responsibility of the designer / construction supervisor.

Indicatively, in design specifications, joint widths may range from 2 mm - 3 mm, in the case of tiles produced by pressing, with good dimensional regularity (rectified tiles), in indoor environments, on rigid and dimensionally stable substrates — up to 6 mm - 8 mm in opposite situations.

Joint filling (grouting) must be carried out after a time period has elapsed following slab installation, defined according to the type of installation, environmental conditions and above all the type of adhesive used.

In this regard, check the technical data sheet of the selected adhesive for grouting times and commissioning times.

It is recommended to take into account the characteristics of the materials used and to follow the instructions of the grout manufacturer.

Joint size	FLOOR	WALL
INTERNO	joint ≥ 2 mm	joint ≥ 2 mm
ESTERNO	joint ≥ 2 mm	joint ≥ 2 mm

Values in accordance with UNI 11493-1

Movement joints

Joints must be installed according to the paths specified by the designer. Joints must manage discontinuities / interruptions in the ceramic tiling such as:

- Existing joints in the substrate;
- Indoors: internal corners between surfaces with both horizontal and vertical orientation;
- Outdoors: internal corners and external edges between tiled surfaces with both horizontal and vertical orientation;
- Perimeter of elements interrupting the tiled surface;
- Isolation of vertical structural elements and their connection with other elements (such as columns);
- Reduction of surface areas in order to obtain geometries as square as possible;
- Door thresholds or similar;
- Substrate discontinuities (beams, channels, etc.).

The width of structural joints in the tiling must, as stated, take into account the width of the corresponding joints in the structure.

Similarly, the width of subdivision joints must be specified according to the width of the joints in the substrate. As for expansion joints and perimeter joints, width and material must be specified taking into account the different design data (intended environment and service conditions; substrate characteristics), as well as the design choices made, such as: tile type and format; installation pattern;

type and properties of adhesive and grout material; joint layout.

With the exception of structural joints, the width of these joints is generally between 2-5 mm and 10-12 mm (lower values apply to less demanding conditions).

STRUCTURAL JOINTS

Structural joints must be created in the tiling corresponding to the joints present in the structure, and must involve both the ceramic covering and the substrate throughout their thickness. The width of structural joints must take into account that of the corresponding joints in the structure.

Structural joints in tiling are made using prefabricated elements.

SUBDIVISION JOINTS

Applicable in the case of large tiled areas, depending on the type of substrate and intended environment.

They are created in the screed, generally by cutting to a depth of at least 1/3 of the thickness, without cutting or damaging the reinforcement mesh, if present.

Location and layout must be defined considering both the technical aspects of the system and the architectural and design function of the tiling.

In principle, subdivision joints must divide the surface into square or rectangular grids, with a ratio between sides not exceeding 1.5. Indicatively, grid sizes may be as follows:





DESIGN

GROUT JOINTS AND MOVEMENT JOINTS

(2/2)

- Indoor environments: from 5 m x 5 m to 6 m x 6 m;
- Outdoor environments: from 3 m x 3 m to 4 m x 2.5 m.

These joints must correspond to and be continuous with joints in the tiling. If this continuity cannot be ensured due to tile format, tiles must be cut.

Where possible, it is advisable to define the layout of subdivision joints after selecting the tile format and installation plan.

If this is not possible and cutting tiles along screed joints negatively affects the final aesthetic result, the following solutions may be adopted:

- Rigidly seal the subdivision joints and reposition them by making, where possible, a new full-depth cut aligned with the joint. Operation feasible only on screeds without systems.
- Install a decoupling membrane allowing tiling installation without necessarily aligning substrate joints with the final covering.

In any case, always follow the instructions of the designer and the membrane manufacturer.

Subdivision joints in wall and ceiling coverings must be provided where there is discontinuity in the substrate layer, for example at floor bands or at the interface between

reinforced concrete columns and infill masonry.

Location and layout must be defined considering both the technical aspects of the system and the architectural and aesthetic function of the covering. These continuous joints must correspond to joints in the covering.

If continuity cannot be ensured due to the size of the elements, tiles must be cut or, alternatively, reinforcement mesh for crack prevention must be applied in the plaster layer or, for indoor wall coverings only, a decoupling membrane must be installed between wall and covering.

PERIMETER JOINTS

Perimeter joints must always be provided - as defined - along the perimeter of the tiling, where it meets other surfaces regardless of their orientation.

In the case of floor tiling extending across multiple interconnected rooms, it is strongly recommended to provide a perimeter joint at thresholds.

EXPANSION JOINTS

Expansion joints must be designed so as to divide large tiled surfaces into areas of the same indicative size specified for subdivision joints.

Location and layout must also be defined taking into account both the technical aspects of the tiling system

and its architectural and aesthetic functions. In addition to the intended environment (indoor/outdoor), the prescribed size of the areas must also consider tile format and joint width, characteristics of adhesives and grouting materials, substrate properties and thermo-hygrometric service conditions.

The subdivision joints described above also perform the function of expansion joints. Consequently, the layout specified for expansion joints must integrate and include any subdivision joints.





Levelling spacers



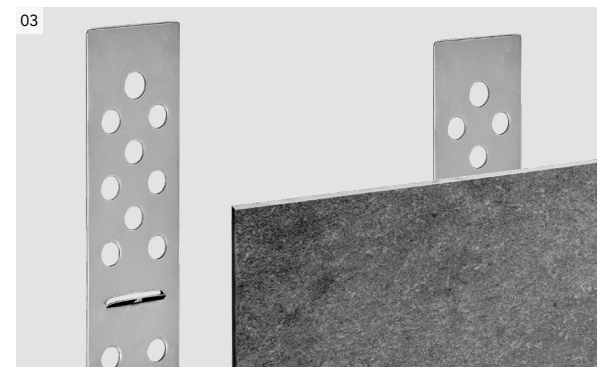
Levelling systems are available in different shapes and sizes and are used to level tile edges. They may be equipped with anti-chipping and anti-scratch systems. Always assess the choice of spacer type according to the selected ceramic product.

They can also serve as spacers for joint width.

Their use is always permitted, except for floor installation of 3plus laminated porcelain stoneware.

If necessary, please contact the Panariagroup Technical Department before proceeding with installation.

Safety retaining anti-slip hooks



The number of hooks to be applied to each tile or slab must be determined by the designer, who must assess various factors:

- size and weight of the tile/slab;
- environmental conditions (e.g. very windy areas, seismic zones, etc.);
- manufacturer's instructions;
- specific exposure conditions;
- substrate quality;
- installation design (joint size, layout of expansion joints, etc.).

Solutions available on the market include visible hook systems, such as the Fischer ATK100KL bracket (fig. 02), suitable for all types of porcelain stoneware, as well as concealed hook systems, such as the **Rai Fix system by Raimondi** (fig. 03), **usable with all types of porcelain stoneware except 3plus.**

These are generally AISI 304\316 stainless steel elements with minimum dimensions of 120x40x0.5 mm, featuring an anti-release tab obtained by punching and designed for insertion into the back of the tile after a suitable notch has been made. For further details, please refer to the technical data sheets provided by the respective manufacturers.





Membranes instead of joints. In cases where the presence of joints negatively affects the final aesthetic result of the flooring, it is possible to install a decoupling membrane that allows the tiling to be carried out without necessarily aligning the substrate joints with the final covering. In any case, always follow the instructions of the designer and the membrane manufacturer.

Underfloor membranes

Membranes are layers made of one or more materials, often polymer-based, used as a substrate for tiling with various functions, such as:

- **Decoupling**
- **Drainage**
- **Load distribution and absorption**
- **Anti-fracture**
- **Release of vapor pressure**
- **Housing and guidance for elements of electric radiant systems**
- **Waterproofing**
- **Impact sound insulation**
- **Vapor barrier or vapor control layer**

The same membrane can perform more than one function.

DECOUPLING FUNCTION

A deformable system, geometrically configured to provide an air gap between the tile and the substrate, thus allowing movement between the two and preventing the transfer of stresses from the substrate to the ceramic tiling. The decoupling function eliminates the risk that stresses parallel to the installation plane affecting the substrate after installation, during curing of the layers and during the use of the building, may cause cracks and/or detachment in the overlying covering.

According to the manufacturer's instructions, when using this type of membrane, installation may be carried out on screeds with a residual moisture content higher than the limit specified in the relevant standard.

According to the manufacturer's instructions, this type of membrane can optimize the layout pattern and expansion joints of the tiling with respect to the subdivision joints present in the substrate.

VAPOR PRESSURE RELEASE FUNCTION

A deformable system, bonded between substrate and tile, geometrically configured to provide an air gap beneath the tiling capable of compensating vapor stresses arising from a damp substrate.

This function allows installation of the membrane and the subsequent ceramic tiling on screeds with residual

moisture higher than the limit indicated in the relevant standard.

ANTI-FRACTURE FUNCTION

A system bonded between substrate and tile, designed to limit the transfer of stresses parallel to the installation plane affecting the substrate, thereby preventing potential cracking in the ceramic tiling.

DRAINAGE FUNCTION

A deformable system, bonded between substrate and tile, geometrically configured to provide an air gap beneath the tiling where infiltrated water can be collected and subsequently drained through drainage systems thanks to the required slopes.

WATERPROOFING FUNCTION

A system bonded between substrate and tile, made of waterproof material complete with accessories to create connections with walls and fixed or penetrating elements. To determine the characteristics required for a waterproofing system, reference can be made to ISO 13007-6.

IMPACT SOUND INSULATION FUNCTION

A system installed between the substrate and the tile to reduce impact noise on the ceramic surface. For correct installation, reference should be made to UNI 11516.





INSTALLATION

HANDLING

(1/2)

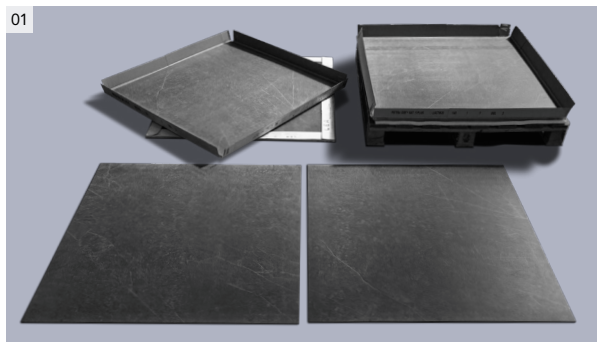


For its lightness and manufacturing characteristics, **Panariagroup laminated porcelain stoneware can always be handled by a maximum of two people**, with significant savings in site costs.

Material inspection



01

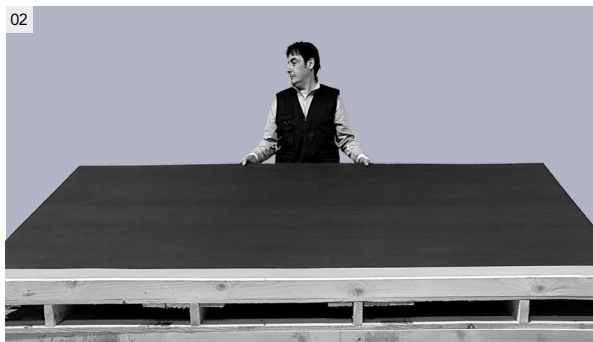


The installer must check the material before starting to use it and must promptly report, in a formal manner, any evident defects in the materials to be used for installation. Defective materials must not be installed unless authorized in writing by the client.

Handling full slabs



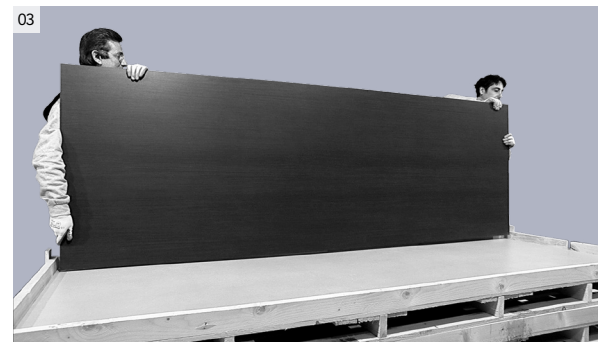
02



100x300 cm, 120x278 cm and 120x260 cm laminated porcelain stoneware slabs can be lifted by one person (fig. 02). Lift the slab with open hands and slowly raise the long side in order to eliminate the suction effect caused by adhesion with the slab underneath and allow a proper grip. For manual handling operations, the use of gloves is recommended.



03

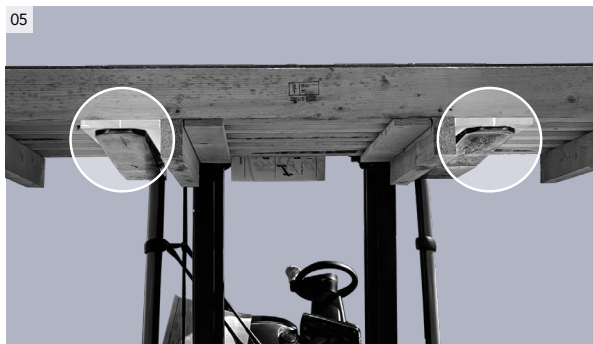


At this point, the slab can be brought into a vertical position, keeping it always straight. When the slab is in a vertical position, lift it by supporting it from the upper edge, then move while keeping it always straight with the help of a second person (fig. 03). Slabs can also be handled by two people using a specific frame. Fix the frame to the slab while it is still inside the crate. Then lift the frame and the slab to eliminate the suction effect.





Handling packages with full slabs



Formats 100x300 cm, 120x278 cm and 120x260 cm:

- **To fork the crate from the long side**, position the forks at the wooden reinforcements located in the center of the crate (figs. 04-05). The forks must have a length of at least 1.3 m and engage the entire depth of the pallet.
- **To fork the crate from the short side** (e.g. when unloading containers), it is essential to use forks at least 2.6 m long, ensuring a perfect grip and safe lifting (fig. 06).

During handling, use appropriate care according to working conditions.



Handling sub-formats



Pallets of all sub-formats (120x120 cm, 100x100 cm, 50x100 cm, etc.) must be handled one at a time. The forks must engage the entire depth of the pallet and be spaced as far apart as possible. The forks must be at least 1.3 m long.

During handling, use appropriate care according to working conditions.





INSTALLATION

CUTTING, DRILLING AND SHAPING

(1/4)

To obtain regular and uniform cuts, drilling and shaping, it is necessary to use suitable equipment. Depending on the thickness and size of the tile, different solutions and cutting tools can be used, either dry or wet. Using the same tools, it is also possible to shape edges, in this case using suitable diamond grinding wheels. The finishing of these cuts can be improved using diamond polishing pads, diamond flap discs or diamond backing pads. With these systems it is possible to polish the cuts or shapes achieved.

DRILLING

Round holes



Round holes can be made using diamond drill bits/core bits, wet or dry, or with a scoring unit mounted on specific compasses. For manual drilling, tungsten drill bits up to a diameter of 10 mm can be used, mounted on electric drills (fig. 02) or cordless drivers (fig. 01). The operations to be carried out are as follows:

- Position the tile/slab on the work surface;
- Mark the position where the hole is to be made;
- Start the drilling/scoring operation using drill bit/core bit or compass;
- Clean residues once the hole has been made.

DRILLING

Square holes



Square holes can be made using diamond drill bits and discs, wet or dry (fig. 03).

- 90° angles at the internal corners of the holes are not permitted;
- Mark the sides of the quadrilateral to be removed on the slab;
- Drill holes with a minimum Ø of 6 mm inside the corners;
- Proceed with cutting by joining the holes.





INSTALLATION

CUTTING, DRILLING AND SHAPING (2/4)



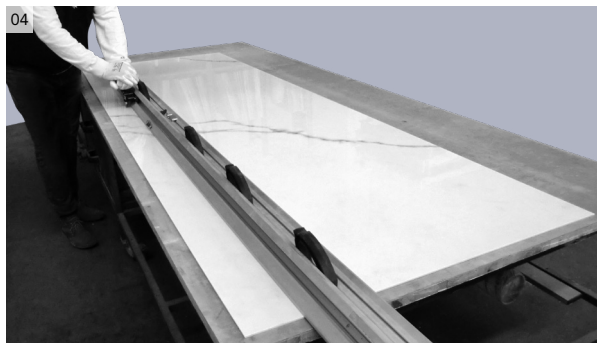
Some products decorated or manufactured using particular technologies require special care during handling, cutting, installation, etc. In this regard, for collections decorated using cold digital printing technology, please refer to the document "**Cold Decoration Warnings**", available for download in the Manuals section at the following links:

→ cottodeste.it/download

→ leaceramiche.it/download

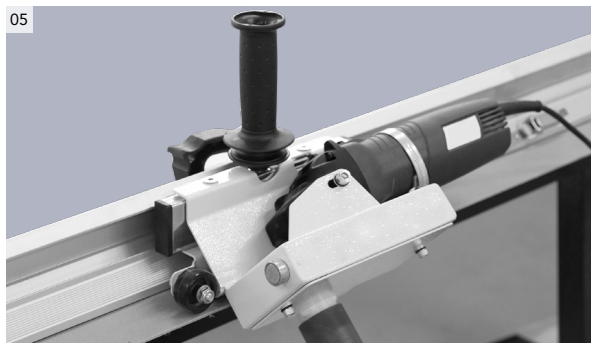
→ panaria.it/download

CUTTING - Manual processing Using a manual tile cutter



In addition to the classic tile cutter, a practical tool for making cuts is the tile cutting guide.

To cut polished surfaces or slabs with a thickness of 6 mm or 6.5 mm, use a tile cutting guide (such as Keracut by Sigma or Raizor by Raimondi), applying firm pressure on the carriage mounted on the guide, or alternatively a diamond blade for porcelain stoneware.



With the tile cutting guide, it is possible to insert a manual grinder into a specific frame (such as Power-Raizor by Raimondi) that guides it during cutting.

In this way, both 90° and 45° cuts can be made to obtain chamfers and mitres.

CUTTING - Manual processing Using diamond blades



Porcelain stoneware, in all its types, can also be cut using diamond blades mounted on electric manual grinders.

It is necessary to operate at high rotation speeds (> 10,000 rpm) and low feed speeds (< 1 m/min).

Depending on the type of blade and the length of the cut, water cooling of the blade may be required. The most suitable blades are thin ones used for cutting porcelain stoneware.

The advantages of this type of cutting are the ease of manual execution and the possibility of making cuts during installation.





INSTALLATION

CUTTING, DRILLING AND SHAPING (3/4)

CUTTING Chamfers



Combined with special guides, the grinder allows the execution of flat chamfers with an angle between 35° and 55° (with guides such as Jolly-angle by Sigma) or rounded chamfers (with guides such as Power-Razor by Raimondi).

CUTTING Edge finishing



Edge finishing can be carried out manually using diamond sponges or sandpaper.

With a light pass along the edge of the slab, a **chamfer-breaking effect** can be achieved, or with repeated passes a **bevel effect** can be obtained.



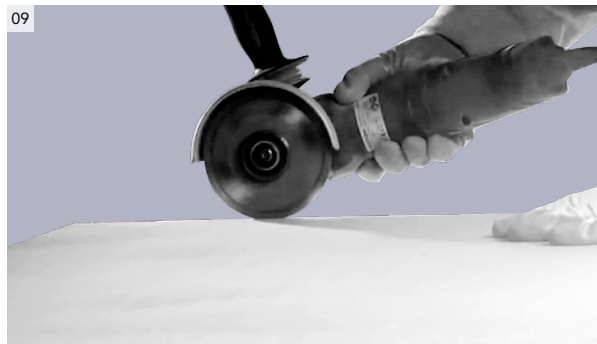
Further information on safety rules is available in the technical manuals that can be consulted and downloaded from the websites of the brands:

→ cottodeste.it/download

→ leaceramiche.it/download

→ panaria.it/download

We also recommend consulting the basic information on RESPIRABLE FREE CRYSTALLINE SILICA on pages → [45-46](#).



It is also possible to achieve the same results using sanding discs applied to a manual grinder.



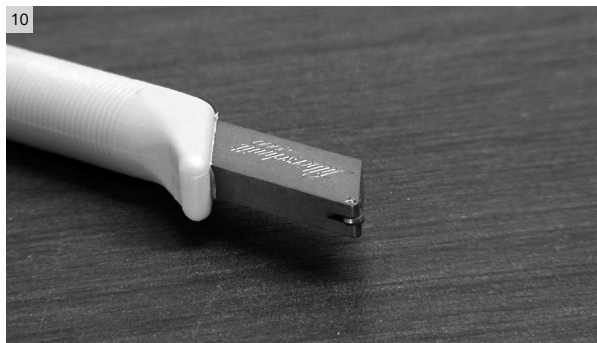


INSTALLATION

CUTTING, DRILLING AND SHAPING (4/4)

MANUAL CUTTING

Using a glass cutter



Excellent cuts and shaping can be achieved by scoring laminated porcelain stoneware, in its various types, using glass cutters (fig.10) such as Silberschnitt 2000 by Bohle Italia or manual tile cutters by Würth. To perform the scoring, it is important not to lift the cutter from the scoring axis during the entire operation.

To cut polished surfaces or slabs with a thickness of 6 mm or 6.5 mm, use a tile cutting guide (such as Keracut by Sigma or Raizor by Raimondi), applying firm pressure on the carriage mounted on the guide, or alternatively a diamond blade for porcelain stoneware.

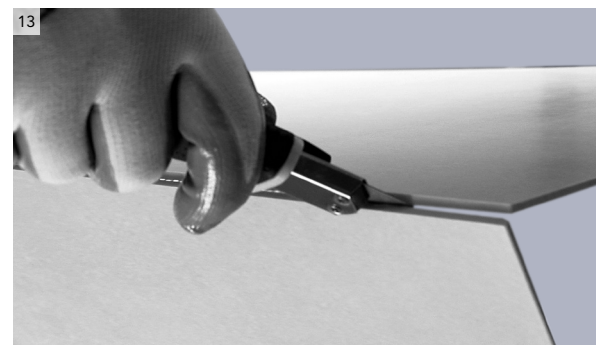


To achieve the straightest possible scoring line, aluminum straightedges commonly used by masons can be used (fig. 11).

Once the scoring has been made, a simple flexing motion is sufficient to separate the two pieces (fig. 12).

For laminated porcelain stoneware 3plus, 5plus and 6plus, once the ceramic part has been scored and the slab broken, the cut is finished by scoring the fiberglass with a standard cutter (fig. 13).

To cut particularly structured surfaces, it is necessary to use a diamond blade for porcelain stoneware.





Adhesive preparation and installation

As with all building materials that require bonding, there is no universal adhesive suitable for installing porcelain stoneware on every substrate.

The choice of adhesive type must be made based on the following design data:

- Intended environment (and environmental conditions at the time of installation);
- Type of substrate;
- Type of porcelain stoneware;
- Format of the slabs used.

To support designers, we have collected in the appendix "Adhesives", included at the end of this manual, the recommendations of major adhesive manufacturers based on the above data → [page 28 and following](#).

It should be noted that the information provided has been supplied by the respective manufacturers, who are responsible for their statements; for any clarification or further details, manufacturers can be contacted directly (see the "Useful addresses" section → [page 49](#)).

FULL-BED ADHESIVES

The selected adhesive must form a compact layer without cavities or discontinuities beneath the porcelain stoneware; in other words, it must create a "full bed".

This result can be achieved using the double spreading technique, or with single spreading only when using highly wettable adhesives specifically developed to create, especially on floors, a "full bed".

When selecting and specifying the installation technique, the information, instructions and requirements of the adhesive manufacturer must be taken into account.

IN ANY CASE

When installing with adhesives, all operations must be carried out with proper consideration of the application characteristics of the materials used (for example, open time, pot life), as well as the manufacturer's instructions contained in specific technical data sheets. To ensure proper distribution, the adhesive must be applied to the substrate using a notched trowel of appropriate size, selected

according to the type of installation, substrate regularity, tile format and type of adhesive.

In the case of tiles with a back profile characterized by very pronounced ribs, it is generally required to fill all cavities created by these ribs with adhesive before installing the tiles.

All elements used to define joint width and ensure alignment must be removed before grouting.

Note: If indicated by the manufacturer, tiles must be mixed prior to installation in order to minimize the visual impact of any shade variation, even if compliant with applicable standards.

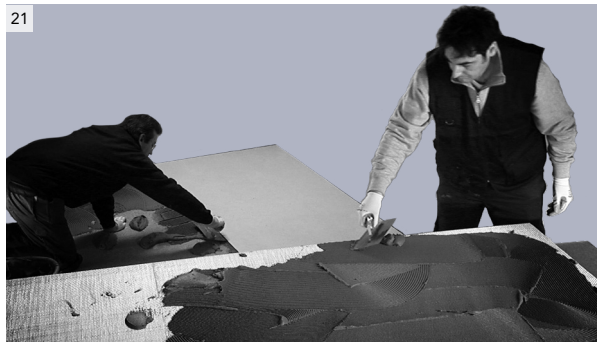




INSTALLATION

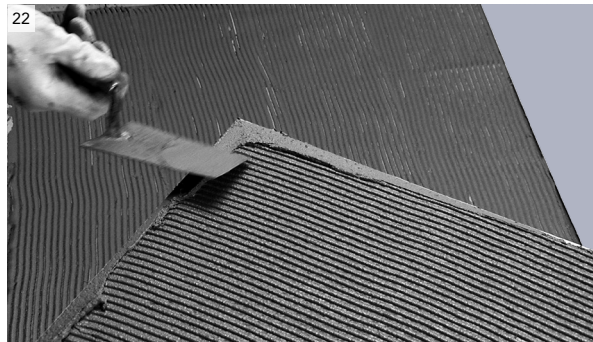
ADHESIVE APPLICATIONS

Double spreading



Apply the adhesive using the double spreading technique, i.e. spread the adhesive in a full bed on the surface to be covered using a notched trowel with teeth spaced at least 6 mm apart (e.g. Raimondi art.184HFV6).

Then apply the adhesive also on the back of the tile/slab, using a trowel with 3 mm teeth.



For floor installation of laminated porcelain stoneware, remember to go over the adhesive again along the perimeter of the slab.

Both in the case of single spreading and double spreading



Once the tile/slab has been laid, the adhesive must be made to adhere at every point, thus avoiding the formation of voids and air pockets.

For this purpose, rubber floats (e.g. Raimondi "142G") should be used for wall and floor installation, or electric tile beaters with a plastic plate (e.g. Raimondi "Volpino") for floor installation.





INSTALLATION

POST-INSTALLATION CLEANING



The installer must provide the tiling in a clean condition, also for any acceptance testing.

“Post-installation” cleaning is intended to remove grout residues, cement, lime and slurry, and is absolutely mandatory at the end of the jobsite. Cleaning must not be carried out if the tiled surfaces are very hot (e.g. exposed to the sun during the hottest months), because the action of chemical agents becomes more aggressive. In summer, carry it out during the coolest hours of the day. Anti-slip surfaces: due to their characteristics, rough or structured anti-slip surfaces are more difficult to clean.

It is therefore recommended to pay particular attention to cleaning methods, specifically by acting quickly and using a single-disc machine with white and beige pads.

Type of grout used	When to clean	What to use	Instructions for use
CEMENT-BASED GROUT MIXED WITH WATER	After 4/5 days and within 10 days from grouting	Acid-based detergent (see the table below “List of acid-based detergents”)	Follow the detergent manufacturer’s instructions. Carry out a preliminary test on the slabs before use, especially on lapped or honed products. The surfaces to be cleaned must be thoroughly moistened with water before washing. At the end of washing, collect the liquid from the floor (if possible with a wet vacuum machine), then rinse abundantly and repeatedly with water. Collect the rinse water with a wet vacuum machine or cloth.
EPOXY, TWO-COMPONENT AND REACTIVE GROUT	Immediately	Follow the grout manufacturer’s instructions	Cleaning must be carried out immediately and very thoroughly because these grouts harden very quickly, even within a few minutes. Strictly follow the cleaning procedures indicated by the manufacturer of the grout used and verify their effectiveness (also against the light) with a preliminary cleaning test before grouting the entire floor/wall.

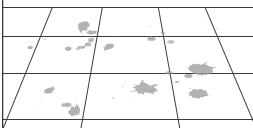
LIST OF ACID-BASED DETERGENTS

Carefully follow the instructions for use provided by the manufacturers on the packaging. Carry out a preliminary test on the slabs before use, especially on lapped or honed products.

Detergent name	Manufacturer
Ultracare Keranet	Mapei
Ultracare Acid Cleaner	Mapei
Cement Remover	Faberchimica
Deterdek	Fila
Trek	Kiter
Zementschleierentferner	Lithofin
HMK R63	HMK
Solvacid	Geal
Litoclean Plus	Litokol
Bonaclean / Bclean	Bonasystems Italia
Bonadecon (*) / Bdecon (*)	Bonasystems Italia

(*) Specific for materials NOT resistant to acids

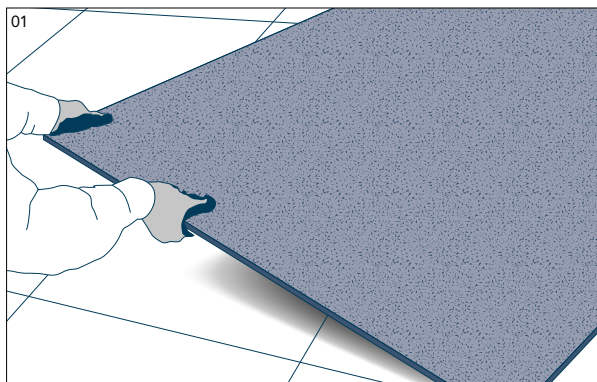
IF POST-INSTALLATION CLEANING HAS NOT BEEN CARRIED OUT CORRECTLY

Type of grout used	What you will see	How to intervene
CEMENT-BASED GROUT MIXED WITH WATER	Residues, glossy films. 	Repeat the post-installation wash as already described above, possibly using the same detergents at a higher concentration.
EPOXY, TWO-COMPONENT AND REACTIVE GROUT	Halos mainly around the joints. 	Once dried, these grouts are extremely difficult to remove, and sometimes impossible. Contact the grout manufacturer.





It is the installer's responsibility to ensure the protection of the finished and cleaned tiling. The protection of the ceramic covering during the period between completion of installation and handover to the client is all the more important where a significant presence of other construction operators (painters, electricians, builders, etc.) is expected. The protection of the tiling is carried out by applying suitable protective materials.



Installation of a chipboard panel on the installed floor.



Installation of protective cardboard on the installed wall.

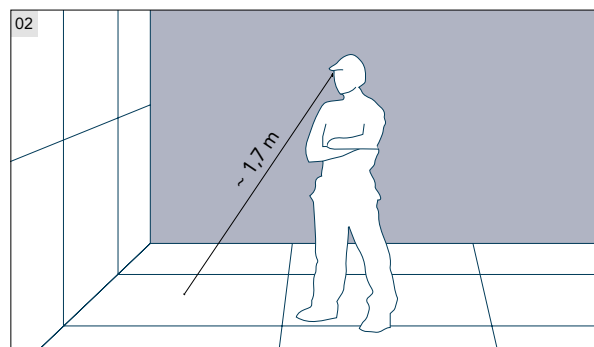
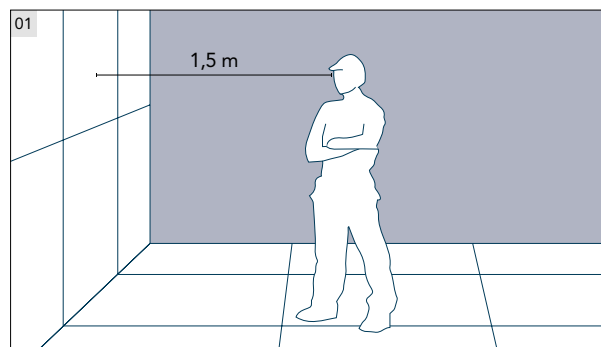




Testing of a tiling installation is the process of verifying the quality of the tiling itself. **Testing is the responsibility of the client and must be carried out before commissioning, in the presence of the designer and the installer.** At the end of the testing process, a report on acceptance by the client may be drawn up. If the testing is successful, the installation of laminated porcelain stoneware has been carried out correctly.

TESTING CONSISTS OF THE FOLLOWING CHECKS:

Visual inspection



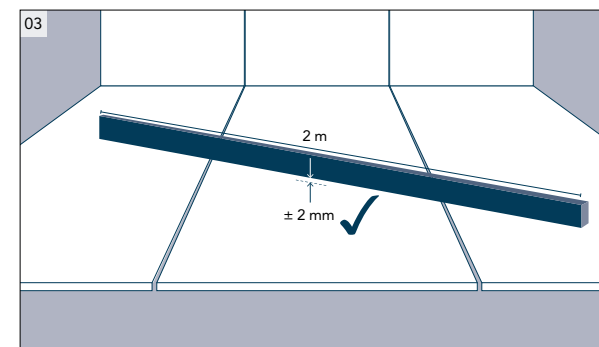
A visual examination of floor and wall tiling is carried out, observing the surface with the naked eye from a minimum distance of 1.5 m and at eye level. Grazing light is not permitted. Surface effects not detectable under these conditions are not to be considered defects. Appearance defects also include the regularity of any cuts and holes made.

The presence of installation material residues is also considered a visual defect

It should be noted that the installer must provide the tiling fully cleaned, including the surface of the porcelain stoneware, the joints, the movement joints and any profiles.

The cleaning process is considered correctly carried out if all installation material residues have been completely removed and no damage (for example, resulting from chemical attack or mechanical abrasion) is present on the tiling as a whole and on the individual elements mentioned above.

Flatness and lippage check



The measurement of flatness applies to both floor and wall tiling. It is carried out using a straightedge at least 2 m long, placing it on the tiled surface in all directions. The permitted tolerance is 2 mm. To measure lippage, the straightedge is placed on the slab at the highest level.

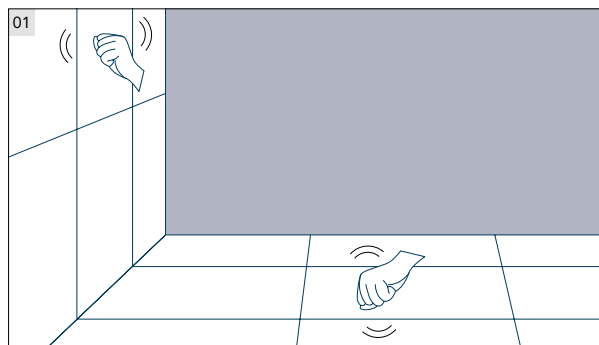
The difference in level between the protruding straightedge and the surface of the underlying tiling is measured using a calibrated ruler or other thickness gauge. The maximum permissible lippage depends on joint width:

- 1 mm max for joints up to 6 mm;
- 2 mm max for joints greater than or equal to 6 mm.

The check must be carried out on a sample basis across several joints.

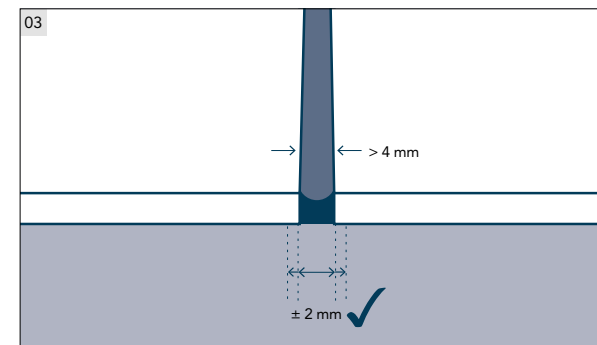
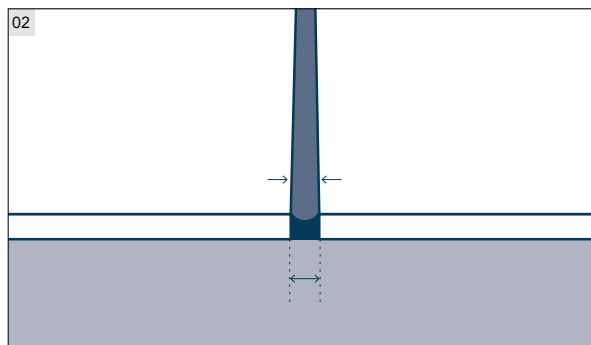


Adhesion check



The check consists of inspecting the tiling, also by percussion, in order to ensure that there are no existing or even incipient detachments.

Joint and grouting check



The check applies to both floor and wall tiling. It consists of an initial visual assessment of the tiling, in order to verify the possible presence of disturbances due to visually appreciable differences in grout width. In the absence of such effects, the tiling is considered compliant.

In areas affected by such effects, spot checks of joint width may be carried out at several points.

The permissible tolerances are:

- 1 mm for prescribed joint widths up to 4 mm;
- 2 mm for joint widths greater than 4 mm.





MAINTENANCE

ROUTINE CLEANING



Routine maintenance of tiling consists of the following cleaning operations.

DAILY CLEANING

- Perform routine cleaning using warm water and a high-quality microfiber cloth, such as Magic Clean by Bonasystems Italia.
- Avoid using any chemical products, unless otherwise specifically indicated.

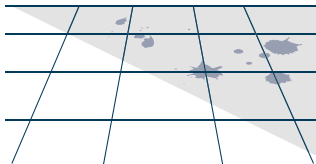
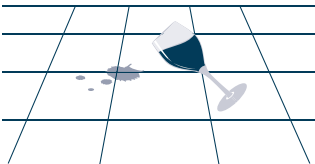
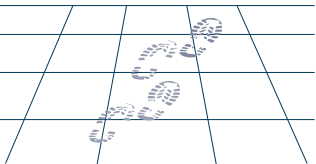
PERIODIC CLEANING

- Carry out more thorough cleaning approximately every 10–20 days, depending on the condition of the flooring;
- Use neutral detergents (see table below), highly diluted in warm water, that do not contain waxes or leave glossy films. **DO NOT use alcohol, acids, solvents, abrasive detergents, abrasive sponges or scouring pads;**
- After washing, dry the surface with a high-quality microfiber cloth;
- Final rinsing and drying:
 - At the end of cleaning, rinse thoroughly with clean water to remove any detergent residues;
 - Completely dry the surface using a second high-quality microfiber cloth, preferably Magic Clean by Bonasystems Italia.



It is not recommended to use cleaning products containing polishing agents, film-forming agents, etc., which can create a consistent film adhering to the surface of the tiling. This film generally tends to retain stains and dirt more strongly than the underlying ceramic surface, making cleaning progressively more difficult.

IF ROUTINE CLEANING HAS NOT BEEN CARRIED OUT WITH SUITABLE DETERGENTS

WHAT YOU SEE	Dull halos visible against the light / floor overall more glossy compared to unused spare tiles. 	Dull halos visible against the light in contact with various liquids. 	Footprints remain visible. 
HOW TO INTERVENE	Apply a detergent such as Tile Cleaner by Faberchimica undiluted and leave it to act for 5–10 minutes. Then scrub with a white pad, rinse thoroughly with water, collect rinse water using a wet vacuum machine or cloth, and dry with a good-quality microfiber cloth such as Magic Clean by Bonasystems Italia.		

LIST OF NEUTRAL DETERGENTS	Detergent name	Manufacturer
Carefully follow the instructions for use provided by the manufacturers on the packaging. Carry out a preliminary test on the slabs before use, especially on lap-ped or honed products.	Ultracare Multicleaner	Mapei
	Floor Cleaner	Faberchimica
	Fila Cleaner	Fila
	Pflegereiniger	Lithofian
	HMK P15	HMK
	Bonamain+ (*) / Bmain+ (*)	Bonasystems Italia
	Bonatitania Clean / Btitania Clean	Bonasystems Italia
	Belgres	Geal

(*) DO NOT use for cleaning DECORATIONS.





MAINTENANCE

EXTRAORDINARY CLEANING



SURFACE TO BE CLEANED	 LAMINATED PORCELAIN STONEWARE 6mm  REINFORCED LAMINATED PORCELAIN STONEWARE 3plus - 5plus - 6plus  PORCELAIN STONEWARE from 8 mm to 20 mm								DECORATIONS
TYPE OF DIRT	COFFEE, COCA COLA®, FRUIT JUICES	GREASE, FOOT TRAFFIC DUST, DEEP CLEANING	WINE	LIMESCALE RESIDUES	RUST	TYRES, PENCIL MARKS, METAL MARKS	INK, MARKER	GROUT DIRT	ANY
WHAT TO USE	Alkaline-based detergent	Alkaline-based detergent	Oxidizing detergent	Acid-based detergent	Acid-based detergent	Abrasive paste	Solvent-based detergent	Grout cleaner	Wax-free neutral detergent
METHOD OF USE	Follow the detergent manufacturer's instructions.	Follow the detergent manufacturer's instructions.	Follow the detergent manufacturer's instructions.	Follow the detergent manufacturer's instructions. Carry out a preliminary test on the slabs before use, especially on lapped or honed products.	The product must be applied diluted directly to the affected stain and left to act for 10/20 minutes, then rinse thoroughly. Repeat the application if necessary. Carry out a preliminary test on the slabs before use, especially on lapped or honed products.	Follow the detergent manufacturer's instructions. Carry out a preliminary test on the slabs before use, especially on lapped or honed products.	Solvents must be applied pure directly to the affected stain and left to act for approximately 15/30 seconds. Repeat the application if necessary. For “Coloured stain remover”, follow the manufacturer's instructions.	Follow the detergent manufacturer's instructions.	Use water and a wax-free neutral detergent. DO NOT use alcohol, acids, solvents, abrasive detergents, abrasive sponges or scouring pads.
DETERGENT NAME (Manufacturer)	• ULTRACARE HD CLEANER (Mapei) • COLOURED STAIN REMOVER (Faberchimica) • PS87 (Fila) • SUPER DETERJET (Geal) • BLEACH (various manufacturers)	• ULTRACARE HD CLEANER (Mapei) • PS87 (Fila) • LITONET (Litokol) • INTENSIVREINIGER (Lithofin) • HMK R55 (HMK) • TASKI R20-STRIP (Johnsontdiversey) • BONADECOR / BDECON (Bonasystems Italia) • DETERFLASH (Geal) • DEEPDEGRASER (Faberchimica)	• ULTRACARE HD CLEANER (Mapei) • OXIDANT (Faberchimica) • BLEACH (various manufacturers)	• ULTRACARE ACID CLEANER (Mapei) • VIAKAL (Proctor & Gamble)	• ULTRACARE RUST REMOVER (Mapei) • DILUTED MURIATIC ACID (various manufacturers)	• ULTRACARE EPOXY OFF GEL (Mapei) • POLISHING CREAM (Faberchimica) • STRONG REMOVER (Faberchimica) • VIM CLOREX (Guaber) • DETERGUM (*) (Zep Italia)	• ULTRACARE EPOXY OFF GEL (Mapei) • NITRO THINNER (various manufacturers) • WHITE SPIRIT (various manufacturers) • COLOURED STAIN REMOVER (Faberchimica)	• ULTRACARE GROUT CLEANER (Mapei) • FUGANET (Fila) • FUGENREINIGER (Lithofin)	• ULTRACARE MULTICLEANER (Mapei) • FLOOR CLEANER (Faberchimica) • FILA CLEANER (Fila) • PFLEGEREINIGER (Lithofin) • HMK P15 (HMK) • BONATITANIA CLEAN / BTITANIA CLEAN (Bonasystems Italia) • BELGRES (Geal)

(*) DO NOT use on lapped or honed products.





IN-DEPTH SHEET FLEXIBILITY



Laminated porcelain stoneware in 3.5 mm, 5.5 mm and 6.5 mm thickness is characterized by high flexibility.

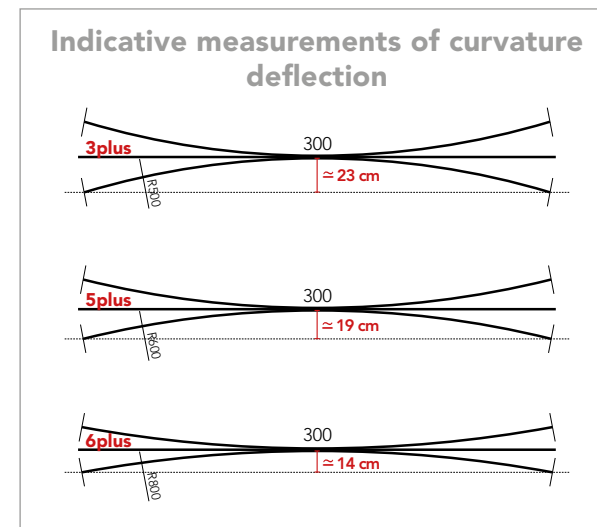
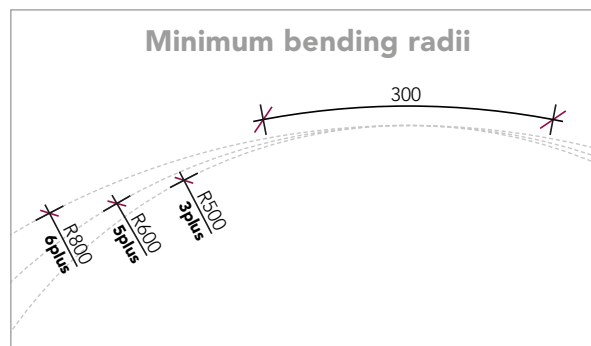
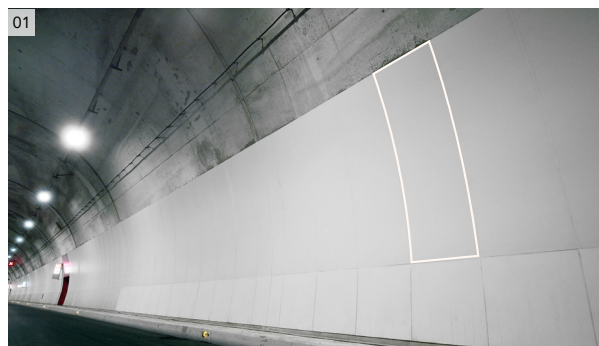
Thanks to the quality of raw materials, the innovative production process and the fiberglass reinforcement mesh, it is able to conform to curved surfaces, both concave and convex. For all available formats, the minimum bending radius varies according to thickness and is equal to:

- 500 cm for 3.5 mm thickness
- 600 cm for 5.5 mm thickness
- 800 cm for 6.5 mm thickness

It is important to note that the achievable minimum bending radii are also linked to slab geometry: a 100x300 cm slab allows greater flexibility if bent along the 300 cm side rather than the 100 cm side.

Products with certain finishes may behave differently. Before proceeding with installation on curved surfaces, always contact the Panariagroup Technical Department.

Installation on curved surfaces



Fiberglass-reinforced laminated porcelain stoneware can be installed on both concave and convex curved surfaces.

Products with specific finishes may behave differently also depending on slab geometry; therefore, please contact the Panariagroup Technical Department before proceeding with installation.

Installation guidelines are those described in the section "Adhesive preparation and installation" (→ [page 16](#)) and "Grout joints and expansion joints" (→ [pages 6-7](#)).

Double spreading installation is recommended; however, always refer to the adhesive manufacturer's instructions, including any measures required to maintain slab position during adhesive curing (e.g. shoring and/or mechanical retaining hooks).





PROCESSING WITH AUTOMATIC MACHINES

(1/3)



Any processing system used requires the underlying surface to be completely flat and must not allow vibrations or movements of the slab that could cause breakage or compromise the finish. The use of diamond tools for porcelain stoneware in good condition is recommended.

If drilling is required for pipe passages, cuts for electrical boxes or other processing, it is recommended to use laminated porcelain stoneware 3plus, 5plus or 6plus. For internal cuts and "L" cuts, it is recommended to round the corners of the opening using drill bits with a diameter of at least 5 mm to reduce the risk of breakage. It is advisable to carry out test cuts before proceeding, in order to test and set up the machine properly.

The operating parameters specified in this guide are indicative and must be verified by the user based on the material to be processed and the operations to be carried out.

Score cutting



Laminated porcelain stoneware can be cut by scoring. Scoring is performed on a cutting table and carried out on the front side of the slab. In the case of laminated porcelain stoneware 3plus, 5plus or 6plus, it is necessary to cut the fiberglass mesh manually with a cutter if it is not possible to perform this operation automatically on the cutting table.

It is recommended to maintain a feed rate of 10 m/min, depending on the finish and color of the slab, applying an average pressure of approximately 1.2 bar. For light-colored slabs, a pressure of approximately 1.5 bar may be required.

Disc cutting



Laminated porcelain stoneware can be cut using diamond discs. The discs must be suitable for porcelain stoneware and in good condition.

It is recommended to operate at high rotation speeds (> 2,000 rpm) and feed speeds between 0.5 and 1 m/min. Depending on the type of disc and the length of the cut, water cooling of the disc may be required.

It is also recommended to reduce the rotation speed when the tool enters and exits the slab.

CNC machine cutting



Laminated porcelain stoneware can be cut using CNC machines.

The milling cutter for these machines requires a rotation speed between 12,000 and 18,000 rpm, with a feed speed between 0.5 and 1 m/min.





PROCESSING WITH AUTOMATIC MACHINES

(2/3)



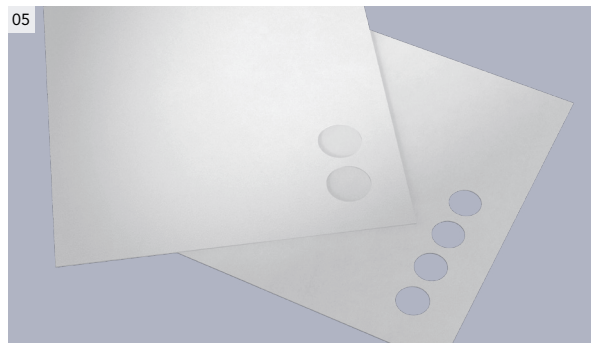
Waterjet cutting



Laminated porcelain stoneware can be cut using waterjet machines.

We recommend using an operating speed between 2 and 3 m/min.

Drilling with CNC machine

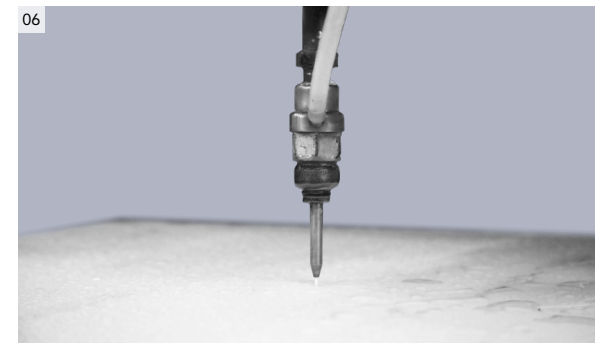


Laminated porcelain stoneware can be drilled using CNC machines.

A preliminary hole must be made using a diamond drill bit; then, if necessary, a milling cutter should be used to enlarge the hole to the required dimensions. Use a drill bit with a diameter between 4 and 8 mm.

The operating speed is 40 mm/min, with a spindle rotation of 900 rpm. With these tools, it is recommended to cool the contact point with water, to start drilling at a low rotation speed, not to apply excessive pressure and in any case to adjust according to the resistance offered by the type of laminated porcelain stoneware being processed.

Drilling with waterjet machine



Laminated porcelain stoneware can be drilled using waterjet machines. Waterjet allows the creation of holes with a smaller diameter compared to those achievable with CNC machines.

The operating speed must be between 2 and 3 m/min.





PROCESSING WITH AUTOMATIC MACHINES

(3/3)



Edge polishing



For edge shaping, abrasive diamond grinding wheels compatible with the required shape and size must first be used.

For polishing, a polishing wheel is used instead. By using different wheels, numerous types of edge finishes can be achieved.

The operating speed must be tested beforehand.

45° cutting



To create a 45° cut, angled diamond discs at 45° can be used.

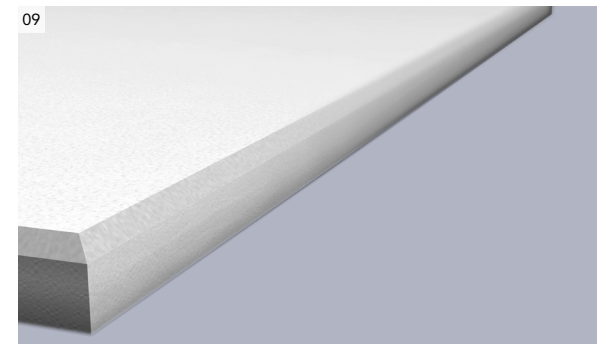
In this way, it is possible to create the edge between two laminated porcelain stoneware slabs.

The resulting edge must then be chamfered.

Numerous types of edge finishes can be achieved using different grinding wheels.

The operating speed must be tested beforehand.

Chamfering



Laminated porcelain stoneware can be chamfered.

To chamfer curved cuts, a CNC machine with a 5-axis grinding wheel must be used.

Numerous types of edge finishes can be achieved using different grinding wheels.

The operating speed must be tested beforehand.





INTRODUCTION TO ADHESIVES



As with all building materials that must be bonded, laminated porcelain stoneware does not have a universal adhesive suitable for installation on every substrate. The choice of adhesive type must be made according to the following design data:

- Intended environment (and environmental conditions at the time of installation);
- Type of substrate;
- Type of laminated porcelain stoneware;
- Format of the slabs used.

To support designers, we have collected below the recommendations of the main adhesive manufacturers based on the data described above.

It should be noted that the information provided has been supplied by the manufacturers, who guarantee what is stated; for any clarification or further details it is possible to contact the respective manufacturers directly (references are provided in the section "Useful addresses") → [page 49](#).

Strictly follow all information, instructions and specifications provided by adhesive manufacturers, paying particular attention to "open time and groutability" and "commissioning time", as reported in the following sheets listed in the table alongside.

- Finishes **Glossy, Touch, Levigata (Lev), Lux** and **P_polished** are recommended, in addition to wall coverings, also for floors in residential or light commercial environments not subject to high stress, where anti-slip performance is not required. The occasional presence of small irregularities or dots on the surface is to be considered a characteristic of the material and its specific processing.
- If the product is placed in direct contact with the outdoors, it is recommended to use protective solutions to prevent the formation of scratches.
- Products with special finishes may have limitations in their intended uses. Check the individual collection catalogues.

INSTALLATION WITH ADHESIVE ON FLOOR

Application situations both for new construction and renovation work with installation over existing floors.



INDOOR		RESIDENTIAL: Kitchens, bathrooms, living rooms and any other residential environment. LIGHT COMMERCIAL: Offices, public offices, waiting rooms, shops, public bathrooms, common condominium areas, restaurant rooms, car showrooms, bars, cinemas, clinics/outpatient facilities, hotel rooms and bathrooms. In areas characterized by mandatory passage, the use of products with Glossy, Touch, Levigata (Lev), Lux and P_polished finishes is not recommended.	Cement screeds, calcium sulphate screeds and heated screeds, self-levelling compounds, concrete, existing ceramic, marble chips, natural stone.	page 40
		INTENSIVE COMMERCIAL: Common areas of shopping centers, hotel lobbies, canteens, fast food outlets, discos, hospitals, schools, museums, places of worship, airports, stations excluding areas subject to heavy concentrated loads (e.g. carts with hard wheels). Excluding 3plus.	Wood, PVC, rubber, linoleum, metal, resin.	page 41
OUTDOOR		Cement screeds, calcium sulphate screeds and heated screeds, self-levelling compounds, concrete, existing ceramic, marble chips, natural stone.		page 40
		Wood, PVC, rubber, linoleum, metal, resin.		page 41
		Certified decoupling mat suitable for this intended use according to the manufacturer. Excluding 3plus.		page 42

INSTALLATION WITH ADHESIVE ON WALL

Application situations both for new construction and renovation work with installation over existing surfaces.



INDOOR		RESIDENTIAL AND COMMERCIAL Any environment	Plaster, gypsum-based plaster, plasterboard, fiber cement panels.	page 30	page 33	page 30
			Concrete, existing ceramic, marble chips, natural stone.	page 31	page 34	page 31
			Wood-based panels, metal.	page 32	page 35	page 32
OUTDOOR		RESIDENTIAL AND COMMERCIAL Any environment	Plaster.	page 36	page 38	page 36
			Concrete.	page 37	page 39	page 37





GUIDE TO READING THE ATTACHMENTS



DESCRIPTION OF THE CATEGORY HEADINGS OF THE ADHESIVE TABLES ON THE FOLLOWING PAGES:

At the discretion of the Works Director	The Works Director must assess whether, based on site conditions, the use of a normal-setting or rapid-setting adhesive is required.
Manufacturer	List of adhesive manufacturers.
Slab size (cm)	The slab sizes in cm are specified based on the adhesive recommended by the manufacturer.
Product (*) (****)	List of adhesives recommended by individual manufacturers according to the intended use and slab size.
Primer, if necessary (*) (****)	List of any primers to be applied before the adhesive, according to the manufacturers' specifications depending on the intended use.
Mixing ratio (**) (****)	Indicates the mixing ratio of a single unit of product (a bag, a container, etc.) to obtain the characteristics declared by the manufacturer.
Class (*)	Indicates the classification of the adhesive according to UNI EN 12004 (see table alongside on adhesive classification).
Theoretical yield (*)	Indicates how many square meters of surface can be installed with a single unit of product prepared according to the mixing ratio.
Foot traffic and groutability (****)	The time that must strictly elapse before the installed floor can be walked on in order to carry out grout filling is specified.
Commissioning (****)	The time that must strictly elapse before the installation can be put into service is specified, i.e. subjected to static and/or dynamic loads.
Installation (*)	The installation technique and the characteristics of the trowel to be used are specified depending on the type of adhesive.

CLASSIFICATION AND DESIGNATION OF TILE ADHESIVES ACCORDING TO UNI EN 12004

TYPES OF ADHESIVES (classified into three types , according to chemical composition)	Class
CEMENT-BASED: mixture of hydraulic binders, aggregates and organic additives (note: to be mixed with water or with a liquid additive immediately before use).	C
REACTIVE: mixture of synthetic resin, mineral fillers and organic additives in which hardening occurs by chemical reaction (note: adhesives consisting of one or more components).	R
DISPERSION: mixture of binder/organic agent, in the form of an aqueous polymer dispersion, with organic additives and mineral fillers (note: ready-to-use mixture).	D

Depending on their characteristics, adhesives are further classified into:

PERFORMANCE CLASSES	Class
Adhesives with normal adhesion values	1
Adhesives with improved adhesion values	2

There are also optional classes:

OPTIONAL CHARACTERISTICS	Class
Rapid-setting adhesives	F
Slip-resistant adhesives	T
Extended open-time adhesives	E

Only for cement-based adhesives, a fourth optional class is defined, that of **deformable adhesives (S)**, subdivided according to transverse deformation value in accordance with UNI EN 12002:

Deformable adhesives	S1
Highly deformable adhesives	S2





ANNEX A.1a

INDOOR WALL INSTALLATION

Substrate: cement plaster, gypsum-based plaster, plasterboard, fiber cement panels.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (***)	Commissioning (***)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats Only for substrates: plasterboard, fiber cement panels: 120x278, 100x300	KERAFLEX MAXI S1 ZERO	MANDATORY for gypsum- or anhydrite-based or absorbent surfaces: PRIMER G or ECO PRIM T PLUS	1 bag (25 kg) + 7/7.7 liters of water	C2 TE S1	7 sqm	8 hours	14 days	Installation with double spreading
			ULTRALITE S1 FLEX ZERO		1 bag (15 kg) + 8.4/8.7 liters of water	C2 TE S1				
			ULTRALITE S2 FLEX		1 bag (15 kg) + 5.9/6.2 liters of water	C2 E S2	6.3 sqm			
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	6.5 sqm			
	KERAKOLL	All formats	H40 NO LIMITS	For gypsum-based surfaces: ACTIVE PRIME FIX	GREY: 1 bag (25 kg) from 6.5 to 7 liters of water WHITE: 1 bag (25 kg) from 6.5 to 8.5 liters of water	C2 TE	6 sqm	20 hours	3 days	
	LATICRETE	All formats	254 PLATINUM	For gypsum-based surfaces: PRIMER PLUS	1 bag (20 kg) + 5.4/5.6 liters of water	C2 TE S1	4 sqm	14 hours	7 days	
			335 MAXI S		1 bag (25 kg) + 8 liters of water		5 sqm			
	LITOKOL	All formats	POWERGEL S1+ POWERGEL S2+	For gypsum-based surfaces: X-PRIME	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
					WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water					
					GREY: 1 bag (20 kg) + 4.8/5.4 liters of water					
					WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water					
PCI - BASF	All formats	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 liters of water	C2 TE S1	7.1 sqm	12 hours	3 days		
SAINT GOBAIN WEBER	All formats	WEBER.COL PROGRES TOP S1	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6.7/8 liters of water	C2 TE S1	6 sqm	8 hours	14 days		
		WEBER.COL ULTRAGRES 400								
ARDEX	All formats	ARDEX X 77 MICROTEC	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 11 liters of water	C2 T(T) E(E) S1	10 sqm	8 hours	1 day	Installation with single spreading (6 mm notched trowel)	
		ARDEX X78								
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats Only for substrates: plasterboard, fiber cement panels: 120x278, 100x300	KERAQUICK MAXI S1	MANDATORY for gypsum- or anhydrite-based or absorbent surfaces: PRIMER G or ECO PRIM T PLUS	GREY: 1 bag (25 kg) + 5.5/6 liters of water	C2 FTE S1	6.3 sqm	3 hours	3 days	Installation with double spreading
			ULTRALITE S1 FLEX QUICK		1 bag (45 kg) + 5.1/5.7 liters of water		6 sqm			
			ULTRALITE S2 FLEX QUICK		1 bag (15 kg) + 5.9/6.2 liters of water	C2 FE S2	6 sqm			
			ELASTORAPID		Component A: 1 bag (25 kg) Component B: can (5.5 kg)	C2 FTE S2				
	KERAKOLL	All formats	H40 REVOLUTION	For gypsum-based surfaces: ACTIVE PRIME FIX	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
	LATICRETE	All formats	335 RAPID	For gypsum-based surfaces: PRIMER PLUS	1 bag (20 kg) + 5.4/5.6 liters of water	C2 FT S1	4 sqm	3 hours	3 days	
	LITOKOL	All formats	FASTGEL S1+	For gypsum-based surfaces: X-PRIME	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours	
					WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water					
	PCI - BASF	All formats	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 liters of water	C2 FT S1	6.5 sqm	3 hours	1 day	
	SAINT GOBAIN WEBER	All formats	WEBER.COL PRO ULTRAGRES FAST	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6/6.2 liters of WEBER L50	C2 FTE S1	6 sqm	3 hours	1 day	
	ARDEX	All formats	ARDEX X 77 S MICROTEC	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 8.5 liters of water	C2 FT(T) E S1	10 sqm	90 minutes	6 hours	
ARDEX X80 S										

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.1b

INDOOR WALL INSTALLATION

Substrate: concrete, existing ceramic, marble chips, natural stone.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (***)	Commissioning (***)	Installation (*)						
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	ULTRALITE S1 FLEX ZERO	Not required depending on manufacturer	1 bag (15 kg) + 8.4/8.7 liters of water	C2 TE S1	7 sqm	8 hours	14 days	Installation with double spreading						
			KERAFLEX MAXI S1 ZERO		1 bag (25 kg) + 7.2/7.7 liters of water											
			KERAFLEX EXTRA S1 ZERO													
	KERAKOLL	All formats	H40 NO LIMITS	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7 liters of water WHITE: 1 bag (25 kg) from 6.5 to 8.5 liters of water	C2 TE	6 sqm	20 hours	3 days							
			LATICRETE		All formats						254 PLATINUM 335 MAXI S	For gypsum-based surfaces: PRIMER PLUS	1 bag (20 kg) + 5.4/5.6 liters of water 1 bag (25 kg) + 8 liters of water	C2 TE S1	4 sqm 5 sqm	14 hours
	LITOKOL	All formats		POWERGEL S1+ POWERGEL S2+		Not required depending on manufacturer	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 TE S1 C2 TE S2	6.5 sqm		12 hours		5 days			
			PCI - BASF	All formats	PCI FLEXMOERTEL S1		For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 liters of water				C2 TE S1		7.1 sqm	12 hours	3 days
					SAINT GOBAIN WEBER			All formats								
	ARDEX	All formats	ARDEX X 77 MICROTEC	For existing ceramic, marble chips and natural stone, alternatively: ARDEX P4 READY - ARDEX X 77 (soiled skim coat)		1 bag (25 kg) + 11 liters of water	C2 T(T) E(E) S1		10 sqm		8 hours	1 day	Installation with single spreading (6 mm notched trowel)			
	 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	KERAQUICK MAXI S1 ULTRALITE S1 FLEX QUICK	Not required depending on manufacturer	GREY: 1 bag (25 kg) + 5.5/6 liters of water 1 bag (45 kg) + 5.1/5.7 liters of water	C2 FTE S1	6.3 sqm 6 sqm	3 hours		3 days	Installation with double spreading				
KERAKOLL				All formats		H40 REVOLUTION		Not required depending on manufacturer		GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water			C2F TE	6 sqm	2 hours	1 day
		LATICRETE	All formats		335 RAPID	For gypsum-based surfaces: PRIMER PLUS	1 bag (20 kg) + 5.4/5.6 liters of water		C2 FT S1	4 sqm	3 hours					
LITOKOL		All formats	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours							
			PCI - BASF		All formats					PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND		1 bag (20 kg) + 5.2 liters of water	C2 FT S1	6.5 sqm	3 hours
SAINT GOBAIN WEBER		All formats	WEBER.COL ULTRAGRES FAST	For existing ceramic, marble chips and natural stone: WEBER FLOOR 4716 PRIMER	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day							
			ARDEX	All formats	ARDEX X 77 S MICROTEC	For existing ceramic, marble chips and natural stone, alternatively: ARDEX P4 READY - ARDEX X 77 (soiled skim coat) - ARDEX X80 S	1 bag (25 kg) + 8.5 liters of water	C2 FT(T) E S1	10 sqm	90 minutes	6 hours	Installation with single spreading (6 mm notched trowel)				

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(*****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.1c

INDOOR WALL INSTALLATION

Substrate: wood-based panels, metal.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	ULTRABOND ECO PU 2K	Not required depending on manufacturer	1 container (10 kg)	R2T	3 sqm	12 hours	7 days	Installation with double spreading
			KERALASTIC T			R2				
			KERALASTIC							
			ULTRABOND EP 2K							
	KERAKOLL	All formats	H40 NO LIMITS	ACTIVE PRIME FIX ACTIVE PRIME GRIP	GREY: 1 bag (25 kg) from 6.5 to 7 liters of water	C2 TE	6 sqm	20 hours	3 days	
			H40 GEL		WHITE: 1 bag (25 kg) from 6.5 to 8.5 liters of water	C2 TE S1				
					GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water					
					WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water					
	LATICRETE	All formats	LATALASTIK	Not required depending on manufacturer	1 bucket part A (5 kg) - 1 bucket part B (2 kg)	R2T	3 sqm	1 day	7 days	
	LITOKOL	All formats	POWERGEL PRO MAX	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	12 hours	5 days	
PCI - BASF	All formats	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 liters of water	C2 TE S1	7.1 sqm	12 hours	3 days		
SAINT GOBAIN WEBER	All formats	WEBER.COL FIX CR	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 hours	2 days		
ARDEX	All formats	ARDEX X 77 MICROTEC	ARDEX P 82	1 bag (25 kg) + 11 liters of water	C2 T(T) E(E) S1	10 sqm	8 hours	1 day	Installation with single spreading (6 mm notched trowel)	
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	KERAQUICK + LATEX PLUS	Not required depending on manufacturer	1 bag (25 kg) + 8.5 kg of LATEX PLUS	C2 FT S2	7 sqm	12 hours	7 days	Installation with double spreading
	KERAKOLL	All formats	H40 REVOLUTION	ACTIVE PRIME FIX ACTIVE PRIME GRIP	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
			WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water							
		H40 EXTREME	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours		
	LATICRETE	All formats	LATALASTIK	Not required depending on manufacturer	1 bucket part A (5 kg) - 1 bucket part B (2 kg)	R2T	2 sqm	1 day	7 days	Installation with single spreading (6 mm notched trowel)
	LITOKOL	All formats	FASTGEL PRO	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	Installation with double spreading
	PCI - BASF	All formats	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 liters of water	C2 FT S1	6.5 sqm	3 hours	1 day	
	SAINT GOBAIN WEBER	All formats	WEBER.COL FIX CR	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 hours	2 days	
	ARDEX	All formats	ARDEX X 77 S MICROTEC	ARDEX P 82	1 bag (25 kg) + 8.5 liters of water	C2 FT(T) E S1	10 sqm	90 minutes	6 hours	Installation with single spreading (6 mm notched trowel)
ARDEX X80 S										

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(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(*****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.2a

INDOOR WALL INSTALLATION

Substrate: cement plaster, gypsum-based plaster, plasterboard, fiber cement panels.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	Up to 120x120	KERAFLEX MAXI S1 ZERO	MANDATORY for gypsum- or anhydrite-based or absorbent surfaces: PRIMER G	1 bag (25 kg) + 7.2/7.7 liters of water	C2 TE S1	7 sqm	8 hours	14 days	Installation with double spreading
			ULTRALITE S1 FLEX ZERO		1 bag (15 kg) + 8.4/8.7 liters of water	C2 TE S1				
		100x300; 120x278	ULTRALITE S2 FLEX		1 bag (15 kg) + 5.9/6.2 liters of water	C2 E S2	6.3 sqm			
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	6.3 sqm			
	KERAKOLL	All formats	H40 GEL	For gypsum-based surfaces: ACTIVE PRIME FIX	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water	C2 TE S1	6 sqm	20 hours	3 days	
			H40 TECH		WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water	C2 TE S2	4 sqm			
	LATICRETE	All formats	254 PLATINUM	For gypsum-based surfaces: PRIMER PLUS	GREY: 1 bag (20 kg) + from 5.2 to 5.8 liters of water	C2 TE S1	4 sqm	14 hours	7 days	
			335 MAXI S		1 bag (20 kg) + 5.4/5.6 liters of water		5 sqm			
	LITOKOL	All formats	POWERGEL S1+	For gypsum-based surfaces: X-PRIME	1 bag (25 kg) + 8 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
			POWERGEL S2+		GREY: 1 bag (20 kg) + 5.6/6.2 liters of water					
					WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water					
			GREY: 1 bag (20 kg) + 4.8/5.4 liters of water							
PCI - BASF	All formats	PCI FLEXMOERTEL S2	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm				
SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES 400	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (20 kg) + from 5.4 to 6 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days		
ARDEX	All formats	WEBER.COL PROGRES TOP S1	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 6.7/8 liters of water	C2 TE S1	6 sqm	8 hours	14 days		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	Up to 120x120	KERAQUICK MAXI S1	MANDATORY for gypsum- or anhydrite-based or absorbent surfaces: PRIMER G	GREY: 1 bag (25 kg) + 5.5/6 liters of water	C2 F S1	6 sqm	3 hours	3 days	Installation with double spreading
			ULTRALITE S1 FLEX QUICK		1 bag (15 kg) + 5.1/5.7 liters of water	C2 FTE S1	7 sqm			
		100x300; 120x278	ULTRALITE S2 FLEX QUICK		Component A: 1 bag (25 kg)	C2 FE S2				
			ELASTORAPID		Component B: can (6.5 kg)	C2 FTE S2	6 sqm			
	KERAKOLL	All formats	H40 REVOLUTION	For gypsum-based surfaces: ACTIVE PRIME FIX	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
			H40 EXTREME	For gypsum-based surfaces: EP 21	WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water		R2T	4 sqm	4 hours	
	LATICRETE	All formats	335 RAPID	For gypsum-based surfaces: PRIMER PLUS	1 bucket (10 kg)	C2 FT S1	4 sqm	3 hours	3 days	
	LITOKOL	All formats	FASTGEL S1+	For gypsum-based surfaces: X-PRIME	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours	
			FASTGEL PRO	Not required depending on manufacturer	WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water		R2T	4 sqm	4 hours	
	PCI - BASF	All formats	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	
	SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FAST	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day	
	ARDEX	All formats	WEBER.COL ULTRAGRES FAST	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day	
			ARDEX X 77 S MICROTEC + ARDEX E 90	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 liters of water	C2 FT(T) E S2	10 sqm	2 hours	6 hours	
			ARDEX X80 S							

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.2b

INDOOR WALL INSTALLATION

Substrate: concrete, existing ceramic, marble chips, natural stone.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Installation with double spreading (6 mm notched trowel) Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)	
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	KERAFLEX MAXI S1	If a skim coat is required, on the mentioned substrates apply ECO PRIM GRIP PLUS beforehand	1 bag (25 kg) + 7.2/7.7 liters of water	C2 TE S1	7 sqm	8 hours	14 days	Installation with double spreading	
			ULTRALITE S1 FLEX ZERO		1 bag (15 kg) + 8.4/8.7 liters of water						
	KERAKOLL	All formats	H40 GEL	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water	C2 TE S1	6 sqm	20 hours	3 days		
			H40 TECH		WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water						
	LATICRETE	All formats	254 PLATINUM	For gypsum-based surfaces: PRIMER PLUS	GREY: 1 bag (20 kg) from 5.2 to 5.8 liters of water	C2 TE S2	4 sqm	14 hours	7 days		
			335 MAXI S		1 bag (20 kg) + 5.4/5.6 liters of water						
	LITOKOL	All formats	POWERGEL S1+	Not required depending on manufacturer	1 bag (25 kg) + 8 liters of water	C2 TE S1	4 sqm	5 sqm	12 hours		5 days
			POWERGEL S2+		GREY: 1 bag (20 kg) + 5.6/6.2 liters of water						
			POWERGEL PRO MAX		WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water	C2TE S2	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water				
					WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water			R2T			
PCI - BASF	All formats	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + from 5.4 to 6 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days			
SAINT GOBAIN WEBER	All formats	WEBER.COL PROGRES TOP S1	For existing ceramic, marble chips and natural stone: WEBER FLOOR 4716 PRIMER	1 bag (15 kg) + 6.7/8 liters of water	C2 TE S1	6 sqm	8 hours	14 days			
		WEBER.COL ULTRAGRES 400		1 bag (15 kg) + 7.8 liters of WEBER L50	C2 E S2						
ARDEX	All formats	ARDEX X 77 MICROTEC + ARDEX E 90	For existing ceramic, marble chips and natural stone, alternatively: ARDEX P4 - ARDEX X 77 (soiled skim coat)	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 9 liters of water	C2 T(T) E(E) S2	10 sqm	8 hours	1 day	Installation with single spreading (6 mm notched trowel)		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	KERAQUICK MAXI S1	If a skim coat is required, on the mentioned substrates apply ECO PRIM GRIP beforehand	GREY: 1 bag (25 kg) + 5.5/6 liters of water	C2 FT S1	6 sqm	3 hours	1 day	Installation with double spreading	
			ULTRALITE S1 QUICK		1 bag (15 kg) + 5.1/5.7 liters of water	C2 FTE S1					
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day		
			H40 EXTREME		WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water						R2T
	LATICRETE	All formats	335 RAPID	For gypsum-based surfaces: PRIMER PLUS	1 bag (20 kg) + 5.4/5.6 liters of water	C2 FT S1	4 sqm	3 hours	3 days		
			335 RAPID		1 bag (20 kg) + 5.4/5.6 liters of water						C2 FT S1
	LITOKOL	All formats	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	6 hours		
			FASTGEL PRO		WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water						R2T
	PCI - BASF	All formats	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day		
	SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FAST	For existing ceramic, marble chips and natural stone: WEBER FLOOR 4716 PRIMER	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day		
ARDEX	All formats	ARDEX X 77 S MICROTEC + ARDEX E 90	For existing ceramic, marble chips and natural stone, alternatively: ARDEX P4 - ARDEX X 77 (soiled skim coat)	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 liters of water	C2 FT(T) E S2	10 sqm	2 hours	6 hours	Installation with single spreading (6 mm notched trowel)		
		ARDEX X80 S		1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 liters of water							

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.2c

INDOOR WALL INSTALLATION

Substrate: wood-based panels, metal.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (***)	Commissioning (***)	Installation (*)	
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	ULTRABOND ECO PU 2K	Not required depending on manufacturer	1 container (10 kg)	R2T	3 sqm	12 hours	7 days	Installation with single spreading (6 mm notched trowel)	
			KERALASTIC T								
			KERALASTIC								
			ULTRABOND EP 2K								
	KERAKOLL	All formats	H40 GEL	ACTIVE PRIME FIX ACTIVE PRIME GRIP	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water	C2 TE S1	6 sqm	20 hours	3 days	Installation with double spreading	
			H40 TECH		WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water	C2 TE S2	4 sqm				
					GREY: 1 bag (20 kg) from 5.2 to 5.8 liters of water						
	LATICRETE	All formats	LATALASTIK	Not required depending on manufacturer	1 bucket part A (4 kg) + 1 bucket part B (0.44 kg)	R2T	1 sqm	12 hours	7 days		
	LITOKOL	All formats	LITOELASTIC EVO	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4.5 sqm	1 giorno	5 days		
	PCI - BASF	All formats	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + from 5.4 to 6 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days		
SAINT GOBAIN WEBER	All formats	WEBER.COL FIX CR	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 hours	2 days			
ARDEX	All formats	ARDEX X 77 MICROTEC + ARDEX E 90	ARDEX P 82	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 9 liters of water	C2 T(T) E(E) S2	10 sqm	8 hours	1 day	Installation with single spreading (6 mm notched trowel)		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	KERAQUICK MAXI S1 + LATEX PLUS	Not required depending on manufacturer	1 bag (25 kg) + 8.5 kg of LATEX PLUS	C2 FT S2	7 sqm	12 hours	7 days	Installation with single spreading (6 mm notched trowel)	
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	Installation with double spreading	
			H40 EXTREME		WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water						
			1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours				
	LATICRETE	All formats	LATALASTIK	Not required depending on manufacturer	1 bucket part A (4 kg) + 1 bucket part B (0.44 kg)	R2T	1 sqm	12 hours	7 days		
	LITOKOL	All formats	LITOELASTIC	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 hours	5 days		
	PCI - BASF	All formats	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day		
	SAINT GOBAIN WEBER	All formats	WEBER.COL FIX CR	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 hours	2 days		
	ARDEX	All formats	ARDEX X 77 S MICROTEC + ARDEX E 90	ARDEX P 82	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 liters of water	C2 F(F)T E S2	10 sqm	90 minutes	6 hours	Installation with single spreading (6 mm notched trowel)	
			ARDEX X80 S								

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.3a

OUTDOOR WALL INSTALLATION

Substrate: plaster.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (***)	Commissioning (***)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	ULTRALITE S2 FLEX	Not required depending on manufacturer	1 bag (15 kg) + 5.9/6.2 liters of water	C2 E S2	6.3 sqm	8 hours	14 days	Installation with double spreading
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC		6.5 sqm			
	KERAKOLL	Fino a 100x100	H40 GEL	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water	C2TE S1	6 sqm	20 hours	3 days	
	LATICRETE	All formats	345 SUPER FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.8 liters of water	C2 TE S2	4 sqm	14 hours	7 days	
	LITOKOL	All formats	POWERGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
			POWERGEL S2+		GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 TE S2				
	PCI - BASF	All formats	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 liters of water	C2 TE S1	7.1 sqm	12 hours	3 days	
	SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.4/6.8 liters of water	C2 TE S2	6 sqm	8 hours	14 days	
ARDEX	Up to 100x100	ARDEX X 77 MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 9 liters of water	C2 T(T) E(E) S1	10 sqm	8 hours	1 day		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	ELASTORAPID	Not required depending on manufacturer	Component A: 1 bag (25 kg) Component B: can (6.5 kg)	C2 FTE S2	6 sqm	3 hours	1 day	Installation with double spreading
			ULTRALITE S2 FLEX QUICK		1 bag (15 kg) + 5.1/5.7 liters of water	C2 FE S2	7 sqm			
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
	LATICRETE	All formats	345 RAPID S	Not required depending on manufacturer	1 bag (20 kg) + 5.6 liters of water	C2 FTE S2	4 sqm	3 hours	3 days	
	LITOKOL	All formats	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5.5 sqm	3 hours	24 hours	
	PCI - BASF	All formats	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 liters of water	C2 FT S1	6.5 sqm	3 hours	1 day	
	SAINT GOBAIN WEBER	Up to 100x100	WEBER.COL ULTRAGRES FAST	Not required depending on manufacturer	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day	
		Over 100x100	WEBER.COL ULTRAGRES FAST + WEBER L50		1 bag (25 kg) + 6/6.2 liters of WEBER L50					
ARDEX	Up to 100x100	ARDEX X 80 S MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 liters of water	C2 FT(T) E S1	10 sqm	90 minutes	2 hours		

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.3b

OUTDOOR WALL INSTALLATION

Substrate: concrete.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	ULTRALITE S2 FLEX	Not required depending on manufacturer	1 bag (15 kg) + 5.9/6.2 liters of water	C2 E S2	6.3 sqm	8 hours	14 days	Installation with double spreading
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC		6.5 sqm			
	KERAKOLL	All formats	H40 GEL	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water	C2TE S1	6 sqm	20 hours	3 days	
	LATICRETE	All formats	345 SUPER FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.8 liters of water	C2 TE S2	4 sqm	14 hours	7 days	
	LITOKOL	All formats	POWERGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
			POWERGEL S2+		GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 TE S2				
	PCI - BASF	All formats	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 liters of water	C2 TE S1	7.1 sqm	12 hours	3 days	
	SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.4/6.8 liters of water	C2 TE S2	6 sqm	8 hours	14 days	
ARDEX	All formats	ARDEX X 77 MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 9 liters of water	C2 T(T) E(E) S1	10 sqm	8 hours	1 day		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	ELASTORAPID	Not required depending on manufacturer	Component A: 1 bag (25 kg) Component B: can (6.5 kg)	C2 FTE S2	6 sqm	3 hours	1 day	Installation with double spreading
			ULTRALITE S2 FLEX QUICK		1 bag (15 kg) + 5.1/5.7 liters of water	C2 FE S2	7 sqm			
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
	LATICRETE	All formats	345 RAPID S	Not required depending on manufacturer	1 bag (20 kg) + 5.6 liters of water	C2 FTE S2	4 sqm	3 hours	3 days	
	LITOKOL	All formats	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5.5 sqm	3 hours	24 hours	
	PCI - BASF	All formats	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 liters of water	C2 FT S1	6.5 sqm	3 hours	1 day	
	SAINT GOBAIN WEBER	Up to 100x100	WEBER.COL ULTRAGRES FAST	Not required depending on manufacturer	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day	
		Over 100x100	WEBER.COL ULTRAGRES FAST + WEBER L50		1 bag (25 kg) + 6/6.2 liters of WEBER L50					
ARDEX	All formats	ARDEX X 77 S MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 liters of water	C2 FT(T) E S1	10 sqm	90 minutes	6 hours		
		ARDEX X90								

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.4a

OUTDOOR WALL INSTALLATION

Substrate: plaster.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	Up to 120x120	ULTRALITE S1 FLEX ZERO	Not required depending on manufacturer	1 bag (15 kg) + 8.4/8.7 liters of water	C2 E S2	3 sqm	8 hours	14 days	Installation with double spreading
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC		5 sqm			
		120x278 100x300	ULTRABOND ECO PU 2K		1 container (10 kg)	R2T	2.5 sqm	12 hours	7 days	
			KERALASTIK			R2				
			ULTRALITE S2 FLEX		1 bag (15 kg) + 5.9/6.2 liters of water	R2T				
	KERAKOLL	All formats	H40 TECH	Not required depending on manufacturer	GREY: 1 bag (20 kg) + from 5.2 to 5.8 liters of water	C2 TE S2	4 sqm	20 hours	3 days	
			H40 EXTREME		1 bucket (10 kg)	R2		4 hours	12 days	
	LATICRETE	All formats	345 SUPER FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.8 liters of water	C2 TE S2	4 sqm	14 hours	7 days	
	LITOKOL	Up to 120x120	POWERGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
			WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water							
			POWERGEL S2+		GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 TE S2				
		WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water								
	All formats	POWERGEL PRO MAX		1 bucket (10 kg)	R2T	4 sqm				
PCI - BASF	All formats	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + da 5.4 a 6 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days		
SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.4/6.8 liters of water	C2 TE S2	6 sqm	8 hours	14 days		
ARDEX	Up to 100x100	ARDEX X 77 MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 9 liters of water	C2 T(T) E(E) S2	10 sqm	8 hours	1 day		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	ELASTORAPID	Not required depending on manufacturer	Component A: 1 bag (25 kg) Component B: can (6.5 kg)	C2 FTE S2	4 sqm	3 hours	2 days	
			ULTRALITE S2 FLEX QUICK		1 bag (15 kg) + 6 liters of water	C2 FE S2			1 day	
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
			H40 EXTREME		WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water					
					1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	
	LATICRETE	All formats	345 RAPID S	Not required depending on manufacturer	1 bag (20 kg) + 5.6 liters of water	C2 FTE S2	4 sqm	3 hours	3 days	
	LITOKOL	Up to 120x120	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours	
		All formats	FASTGEL PRO		WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water					
					1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	
	PCI - BASF	All formats	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day	
	SAINT GOBAIN WEBER	Up to 100x100	WEBER.COL ULTRAGRES FAST	Not required depending on manufacturer	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day	
		Over 100x100	WEBER.COL ULTRAGRES FAST + WEBER L50		1 bag (25 kg) + 6/6.2 liters of WEBER L50					
	ARDEX	All formats	ARDEX X 77 S MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 3 kg ARDEX E 90 + 8.5 liters of water	C2 FT(T) E S2	10 sqm	90 minutes	3 hours	
ARDEX X90										

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.4b

OUTDOOR WALL INSTALLATION

Substrate: concrete.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	Up to 120x120	ULTRALITE S1 FLEX ZERO	Not required depending on manufacturer	1 bag (15 kg) + 8.4/8.7 liters of water	C2 E S2	3 sqm	8 hours	14 days	Installation with double spreading
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC		5 sqm			
		120x278 100x300	ULTRABOND ECO PU 2K		1 container (10 kg)	R2T	2.5 sqm	12 hours	7 days	
			KERALASTIK			R2				
			ULTRALITE S2 FLEX		1 bag (15 kg) + 5.9/6.2 liters of water	R2T				
	KERAKOLL	All formats	H40 TECH	Not required depending on manufacturer	GREY: 1 bag (20 kg) from 5.2 to 5.8 liters of water	C2 TE S2	4 sqm	20 hours	3 days	
			H40 EXTREME		1 bucket (10 kg)	R2		4 hours	12 days	
	LATICRETE	All formats	345 SUPER FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.8 liters of water	C2 TE S2	4 sqm	14 hours	7 days	
	LITOKOL	Up to 120x120	POWERGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
			WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water							
			POWERGEL S2+		GREY: 1 bag(20 kg) + 4.8/5.4 liters of water	C2 TE S2				
		WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water								
	All formats	POWERGEL PRO MAX		1 bucket (10 kg)	R2T	4 sqm				
PCI - BASF	All formats	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + from 5.4 to 6 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days		
SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FLEX	Not required depending on manufacturer	1 bag (20 kg) + 6.4/6.8 liters of water	C2 TE S2	6 sqm	8 hours	14 days		
ARDEX	Up to 100x100	ARDEX X 77 MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 9 liters of water	C2 T(T) E(E) S2	10 sqm	8 hours	1 day		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	ELASTORAPID	Not required depending on manufacturer	Component A: 1 bag (25 kg) Component B: can (6.5 kg)	C2 FTE S2	4 sqm	3 hours	2 days	
			ULTRALITE S2 FLEX QUICK		1 bag (15 kg) + 6 liters of water	C2 FE S2			1 day	
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2F TE	6 sqm	2 hours	1 day	
			H40 EXTREME		WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water					
					1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	
	LATICRETE	All formats	345 RAPID S	Not required depending on manufacturer	1 bag (20 kg) + 5.6 liters of water	C2 FTE S2	4 sqm	3 hours	3 days	
	LITOKOL	Up to 120x120	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours	
		All formats	FASTGEL PRO		WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water					
					1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	
	PCI - BASF	All formats	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day	
	SAINT GOBAIN WEBER	Up to 100x100	WEBER.COL ULTRAGRES FAST	Not required depending on manufacturer	1 bag (25 kg) + 6/6.2 liters of water	C2 FTE S1	6 sqm	3 hours	1 day	
		Over 100x100	WEBER.COL ULTRAGRES FAST + WEBER L50		1 bag (25 kg) + 6/6.2 liters of WEBER L50					
ARDEX	All formats	ARDEX X 77 S MICROTEC + ARDEX E 90	Not required depending on manufacturer	1 bag (25 kg) + 3.3 kg ARDEX E 90 + 7 liters of water	C2 FT(T) E S2	10 sqm	90 minutes	3 hours		
		ARDEX X90								

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.5a

INDOOR/OUTDOOR FLOOR INSTALLATION

Substrate: cement screeds, calcium sulphate and heated screeds, self-levelling compounds, concrete, existing ceramic, marble chips, natural stone. → [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (****)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	Up to 120x120	KERAFLEX MAXI S1	MANDATORY for gypsum- or anhydrite-based or absorbent surfaces: PRIMER G	1 bag (25 kg) + 7.2/7.7 liters of water	C2 TE S1	3 sqm	8 hours	14 days	Installation with double spreading
			ULTRALITE S1 FLEX ZERO		1 bag (15 kg) + 8.4/8.7 liters of water					
		120x278 - 100x300	ULTRAFLEX S1 2K		Component A (powder): 25 kg Component B (latex): 7.5 kg	C2 TR S1	3 sqm	24 hours	14 days	
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC					
	KERAKOLL	All formats	ULTRALITE S2 FLEX		1 bag (15 kg) + 5.9/6.2 liters of water	C2 E S2	2.5 sqm	12 hours	7 days	
			H40 GEL	For gypsum-based surfaces: ACTIVE PRIME FIX	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water	C2 TE S1	6 sqm	24 hours	3 days	
	LATICRETE	Up to 120x120 All formats	H40 TECH		GREY: 1 bag (20 kg) from 5.2 to 5.8 liters of water	C2 TE S2	4 sqm			
			335 MAXI S	For gypsum-based surfaces: PRIMER PLUS For overlays: PRIMER SUPERIOR	1 bag (25 kg) + 8/9.5 liters of water	C2 TE S1	5 sqm	14 hours	7 days	
	LITOKOL	All formats	POWERGEL S1+	For gypsum-based surfaces: X-PRIME	1 bag (20 kg) + 6.8/7.6 liters of water	C2 TE S2	4 sqm			
			POWERGEL S2+		GREY: 1 bag (20 kg) + 5.6/6.2 liters of water WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water	C2 TE S1	6.5 sqm	12 hours	5 days	
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	Up to 50x100	POWERGEL PRO MAX	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm			Installation with single spreading (12 mm notched trowel or ARDEX MICROTEC trowel)
			PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + from 5.4 to 6 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days	
		Over 50x100	WEBER.COL PROGRES TOP S1	For gypsum-based surfaces: WEBER PRIM PF15. For existing ceramic, marble chips and natural stone: WEBER FLOOR 4716 PRIMER	1 bag (25 kg) + 6.7/8 liters of water	C2 TE S1	6 sqm	8 hours	14 days	
			WEBER.COL ULTRAGRES 400							
	KERAKOLL	All formats	ARDEX X78	For gypsum- or anhydrite-based absorbent or smoothed surfaces: ARDEX P 51	1 bag (25 kg) + 1 can ARDEX E 90 (3.5 kg) + 7 liters of water	C2 TE S2	5.6 sqm	12 hours	3 days	
			KERAQUICK MAXI S1							
	LATICRETE	Up to 120x120 All formats	ULTRALITE S1 FLEX QUICK	MANDATORY for gypsum- or anhydrite-based or absorbent surfaces: PRIMER G	GREY: 1 bag (25 kg) + 5.5/6 liters of water	C2 FT S1	4 sqm			
			ULTRALITE S2 FLEX QUICK		1 bag (15 kg) + 5.1/5.7 liters of water	C2 FTE S1	3.5 sqm	3 hours	3 days	
	LITOKOL	All formats	ELASTORAPID		Component A: 1 bag (25 kg) Component B: can (6.5 kg)	C2 FTE S2	4 sqm			
			H40 REVOLUTION	For gypsum- or anhydrite-based surfaces: ACTIVE PRIME FIX	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water	C2F TE	6 sqm	3 hours	1 day	
 For situations where the use of rapid-setting adhesive is recommended	KERAKOLL	All formats	H40 EXTREME	For gypsum- or anhydrite-based surfaces: EP 21	1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	Installation with double spreading
			335 RAPID	For gypsum-based surfaces: PRIMER PLUS For overlays: PRIMER SUPERIOR	1 bag (20 kg) + 5.4/5.6 liters of water	C2 FT S1	4 sqm	3 hours	3 days	
	LATICRETE	Up to 120x120 All formats	345 RAPID S	For gypsum-based surfaces: X-PRIME	1 bag (20 kg) + 5.6 liters of water	C2F FTE S2				
			FASTGEL S1+		GREY: 1 bag (20 kg) + 4.8/5.4 liters of water WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours	
	LITOKOL	All formats	FASTGEL PRO	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	
			PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day	
	SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FAST	For gypsum-based surfaces: WEBER PRIM PF15. For existing ceramic, marble chips and natural stone: WEBER FLOOR 4716 PRIMER	1 bag (20 kg) + 3.8 liters of water	C2 FT S2	5 sqm	5 hours	1 day	
			ARDEX X 78 S MICROTEC + ARDEX E 90	For gypsum- or anhydrite-based absorbent or smoothed surfaces: ARDEX P 51	1 bag (25 kg) + 3.3 kg ARDEX E 90 + 7 liters of water	C2 FE S2	6 sqm	90 minutes	6 hours	
	ARDEX	All formats	ARDEX X90							

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)). Excluding 3plus for intensive commercial use.

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.5b

INDOOR/OUTDOOR FLOOR INSTALLATION

Substrate: wood, PVC, rubber, linoleum, metal, resin.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (***)	Commissioning (***)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	ULTRABOND ECO PU 2K	Not required depending on manufacturer	1 container (10 kg)	R2T	2.5 sqm	12 hours	7 days	Installation with double spreading
			ULTRABOND EP 2K			R2				
			KERALASTIK			R2T				
			KERALASTIC T							
	KERAKOLL	All formats	H40 GEL	ACTIVE PRIME FIX ACTIVE PRIME GRIP	GREY: 1 bag (25 kg) from 5.75 to 6.75 liters of water WHITE: 1 bag (25 kg) from 6.75 to 7.75 liters of water	C2 FT S1	6 sqm	24 hours	3 days	
			H40 EXTREME	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	
	LATICRETE	All formats	LATALASTIK	Not required depending on manufacturer	1 bucket part A (5 kg) 1 bucket part B (2 kg)	R2T	1 sqm	12 hours	7 days	
	LITOKOL	All formats	POWERGEL PRO MAX	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	12 hours	5 days	
PCI - BASF	All formats	PCI COLLASTIC	Not required depending on manufacturer	Bucket of 3 kg (A+B)	R2T	1.5 sqm	12 hours	1 day	Installation with single spreading (notched trowel with 10 mm inclined teeth)	
SAINT GOBAIN WEBER	All formats	WEBER.COL FIX CR	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 hours	2 days	Installation with double spreading	
ARDEX	All formats	ARDEX X 78 MICROTEC + ARDEX E 90	ARDEX P 82	1 bag (25 kg) + 1 can ARDEX E 90 (4.5 kg) + 7 liters of water	C2 FTE S1	6 sqm	4 hours	1 day	Installation with single spreading (12 mm notched trowel or ARDEX MICROTEC trowel)	
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	KERAQUICK MAXI S1 + LATEX PLUS	Not required depending on manufacturer	1 bag (25 kg) + 8.5 kg of LATEX PLUS	C2 FT S2	2.5 sqm	12 hours	7 days	Installation with double spreading
	KERAKOLL	All formats	H40 REVOLUTION	ACTIVE PRIME FIX ACTIVE PRIME GRIP	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water	C2 FTE	6 sqm	3 hours	1 day	
			H40 EXTREME	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	
	LATICRETE	All formats	LATALASTIK	Not required depending on manufacturer	1 bucket part A (5 kg) 1 bucket part B (2 kg)	R2T	1 sqm	12 hours	7 day	
	LITOKOL	All formats	FASTGEL PRO	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	
	PCI - BASF	All formats	PCI COLLASTIC	Not required depending on manufacturer	Bucket of 3 kg (A+B)	R2T	1.5 sqm	3 ore	12 ore	Installation with single spreading (notched trowel with 10 mm inclined teeth)
	SAINT GOBAIN WEBER	All formats	WEBER.COL FIX CR	Not required depending on manufacturer	1 bucket (10 kg)	R2T	3 sqm	12 ore	2 giorni	Installation with double spreading
ARDEX	All formats	ARDEX X 90	ARDEX P 82	1 bag (25 kg) + 3.3 kg ARDEX E 90 + 7 liters of water	C2 FE S2	6 sqm	90 minuti	6 ore	Installation with single spreading (12 mm notched trowel or ARDEX MICROTEC trowel)	

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)). Excluding 3plus for intensive commercial use.

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(***) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ANNEX A.6

OUTDOOR FLOOR INSTALLATION

Substrate: decoupling membrane certified as suitable for this intended use by its manufacturer.

→ [table legend](#)



At the discretion of the Works Director	Manufacturer	Slab size (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**) (****)	Class (*)	Theoretical yield (*)	Foot traffic and groutability (***)	Commissioning (****)	Installation (*)
 For situations where the use of normal-setting adhesive is recommended	MAPEI	All formats	KERAFLEX EXTRA S1 ZERO	Not required depending on manufacturer	1 bag (25 kg) + 7.2/7.7 liters of water	C2 TE S1	7 sqm	8 hours	14 days	Installation with double spreading
			KERAFLEX MAXI S1 ZERO		1 bag (15 kg) + 8.4/8.7 liters of water					
			ULTRALITE S1 FLEX ZERO							
	KERAKOLL	All formats	H40 NO LIMITS	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7 liters of water	C2 TE	6 sqm	24 hours	3 days	
			H40 EXTREME		WHITE: 1 bag (25 kg) from 6.5 to 8.5 liters of water					
	LATICRETE	All formats	345 SUPER FLEX	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	
	LITOKOL	All formats	POWERGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 5.6/6.2 liters of water	C2 TE S1	5.5 sqm	12 hours	5 days	
			POWERGEL S2+		WHITE: 1 bag (20 kg) + 5.8/6.4 liters of water					
			POWERGEL PRO MAX		GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 TE S2				
SAINT GOBAIN WEBER	All formats	WEBER.COL PROGRES TOP S1	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm				
		WEBER.COL ULTRAGRES 400								
ARDEX	All formats	ARDEX X 78 MICROTEC + ARDEX E 90	ARDEX P 82	1 bag (25 kg) + 1 can ARDEX E 90 (3.5 kg) + 7 liters of water	C2 FTE S1	6 sqm	8 hours	14 days		
 For situations where the use of rapid-setting adhesive is recommended	MAPEI	All formats	KERAQUICK MAXI S1	Not required depending on manufacturer	GREY: 1 bag (25 kg) + 5.5/6 liters of water	C2 FT S1	4 sqm	3 hours	3 days	Installation with double spreading
			ULTRALITE S1 FLEX QUICK		1 bag (15 kg) + 5.1/5.7 liters of water	C2 FTE S1	3.5 sqm			
	KERAKOLL	All formats	H40 REVOLUTION	Not required depending on manufacturer	GREY: 1 bag (25 kg) from 6.5 to 7.5 liters of water	C2 FTE	6 sqm	3 hours	1 day	
			H40 EXTREME		WHITE: 1 bag (25 kg) from 6 to 7.5 liters of water					
	LATICRETE	All formats	345 RAPID S	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	12 hours	
	LITOKOL	Up to 100x100	FASTGEL S1+	Not required depending on manufacturer	GREY: 1 bag (20 kg) + 4.8/5.4 liters of water	C2 FTE S1	5 sqm	3 hours	24 hours	
			FASTGEL PRO		WHITE: 1 bag (20 kg) + 4.8/5.4 liters of water					
	SAINT GOBAIN WEBER	All formats	WEBER.COL ULTRAGRES FAST	Not required depending on manufacturer	1 bucket (10 kg)	R2T	4 sqm	4 hours	6 hours	
ARDEX	All formats	ARDEX X 90	ARDEX P 82	1 bag (25 kg) + 3.3 kg ARDEX E 90 + 7 liters of water	C2 FE S2	6 sqm	90 minutes	6 hours	Installation with single spreading (12 mm notched trowel or ARDEX MICROTEC trowel)	

(*) Information provided directly by the manufacturers, who guarantee what is stated. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)). Excluding 3plus.

(**) Information provided directly by the manufacturers, who guarantee what is stated. Where both a "white" and a "grey" version of a product exist, the mixing ratio may vary. For any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(****) Values provided directly by the manufacturers, who guarantee what is stated, refer to laboratory tests carried out at 23°C and with a relative humidity of 50%. For applications in different conditions and for any clarification or further details, contact the technical support of the respective manufacturers directly (see "Useful addresses" → [page 49](#)).

(*****) The product names indicated may vary depending on the destination countries in relation to the manufacturer's commercial evaluations.





ACCESSORIES AND PROFILES ANNEX

PROFILES FOR JOINTS, FINISHES AND SPECIAL PIECES

(1/2)

In this annex we suggest some possible solutions through the use of profiles marketed by the main companies in the sector.

The listed solutions have performance characteristics and sections that vary depending on the manufacturer, not specified here for synthesis requirements.

The graphic representations and usage indications are therefore purely indicative and of a general nature.

For further information and to view the complete range of the various products, please refer to the individual manufacturers listed below in summary form and in full at [page 49](#) "Useful addresses".

PROFILITEC S.p.A.

→ www.profilitec.com

SCHLÜTER-SYSTEMS ITALIA S.r.l.

→ www.schlueter-systems.com

WEDI

→ www.wedi.it

RARE

→ <https://www.raresistemidoccia.com/it/>

PROGRESS PROFILES

→ www.progressprofiles.com

PROFILPAS

→ www.profilpas.com

DURAL

→ www.dural.com



Most manufacturers offer profiles that can be matched to the colour of the joints. Check the websites of individual manufacturers.



PROFILES FOR STEPS AND WORKTOPS		
	Manufacturer	Best-selling products
SOLID PROFILE		
	Schlüter®-Systems	Schiene-Step, Rondec-Step
	Profilpas	Protop
PROFILE WITH INSERT FOR TILE		
	Progress Profiles	Protect J, T, Q
	Schlüter®-Systems	Rondec-CT

SHOWER SYSTEMS		
	Manufacturer	Best-selling products
STAINLESS STEEL GRID		
	Profilitec	Showertec Linear STL
	Schlüter®-Systems	Kerdi-Line-H
	Dural	Vario Line + VLMD
	Progress Profiles	Proshower Design
	Wedi	Plano Linea
	Profilpas	Classic Cover, Varioguard
	Rare	Ad Hoc
GRID WITH INSERT FOR TILE		
	Profilitec	Showertec Linear STL
	Schlüter®-Systems	Kerdi-Line-D
	Dural	Vario Line + VLMD
	Progress Profiles	Proshower Tile
	Wedi	Riolito piastrellabile
	Profilpas	PP Drain Aqua
	Profilpas	Calssic Cover reversibile
	Profilpas	Invisible Cover
	Rare	Ad Hoc
SHOWER TRAY SYSTEM		
	Profilitec	Profilitec - STL Tray
	Schlüter®-Systems	Kerdi-Shower
	Wedi	Fundo Primo / Plano
	Progress Profiles	Proshower Kit
	Profilpas	Q Drain
	Rare	Ad Hoc

WALL / FLOOR AND INTERNAL CORNER		
	Manufacturer	Best-selling products
SKIRTING BOARD		
	Profilitec	Battiscopa BA
	Schlüter®-Systems	Designbase-SL
	Progress Profiles	Battiscopa 40
	Profilpas	Metal Line
	Dural	Construct
SKIRTING PROFILE		
	Profilitec	Battiscopa BT
	Schlüter®-Systems	Dilex-EK
	Progress Profiles	Printer KL ALL
	Profilpas	Proint
MINIMUM COVE		
	Profilitec	Mosaitec CRM
	Schlüter®-Systems	Dilex-AHK
	Progress Profiles	Proshell D ALL
	Profilpas	Proround/Proint
COVE		
	Profilitec	Coflex CR, Sanitec SB
	Schlüter®-Systems	Projolly Quart
	Progress Profiles	Proshell R ALL
	Profilpas	Proround/Proint
OBTUSE ANGLE PROFILE		
	Profilitec	Sanitec SB
	Schlüter®-Systems	ECK-KHK
	Progress Profiles	Proseal/Proround
	Profilpas	Saniboard
	Dural	Duracove
RIGHT ANGLE PROFILE		
	Schlüter®-Systems	ECK-KI
	Progress Profiles	Probat
	Profilpas	Saniboard
	Dural	Saniflex



ACCESSORIES AND PROFILES ANNEX

PROFILES FOR JOINTS, FINISHES AND SPECIAL PIECES

(2/2)



STEPS AND EXTERNAL CORNER		
	Manufacturer	Best-selling products
STEP PROFILE WITH OVERHANG		
	Profilitec	Stairtec FL
	Schlüter®-Systems	Rondec
	Progress profiles	Prostyle KL10
	Profipas	Prostep
REINFORCED STEP PROFILE		
	Schlüter®-Systems	TREP-E
	Profipas	Prostep SMA
	Dural	Durastep
	Progress Profiles	Prostair Acc
	Profilitec	Stairtec FS
ROUNDED PROFILE WITH KNURLING		
	Profilitec	Stairtec FO
	Schlüter®-Systems	TREP-GK
	Progress Profiles	Prostair KL 20
	Profipas	Prostep
ROUNDED PROFILE		
	Profilitec	Roundjolly RJ
	Schlüter®-Systems	Rondec
	Progress Profiles	Projolly Quart
	Dural	Teka Step TT
	Profipas	Protrim
SQUARE PROFILE		
	Profilitec	Squarejolly SJ
	Schlüter®-Systems	Quadec
	Progress Profiles	Projolly Square
	Profipas	Proangle Q
	Dural	Squareline
MINIMUM ANGLE PROFILE		
	Profilitec	Mosaitect RJF
	Schlüter®-Systems	FINEC
	Progress Profiles	Prokerlam LINE
	Profipas	Protrim IP
ANGULAR PROFILE		
	Profilitec	Stairtec SE
	Schlüter®-Systems	ECK-K
	Progress Profiles	Proedge
	Profipas	Protect, Procorner
	Dural	Duragard

OVERLAP AND CLOSING ELEMENTS		
	Manufacturer	Best-selling products
JOINT		
	Profilitec	Zetotec ZR
	Schlüter®-Systems	Reno-U
	Progress profiles	Proslider, KL ALL
	Profipas	Pronivel
	Dural	Duratrans
OVERLAP		
	Profilitec	Linotec, Variotec DK
	Schlüter®-Systems	Reno-T
	Progress profiles	Profloor 24
	Profipas	Prolevel
	Dural	LPTE
SQUARE CLOSING ELEMENT		
	Profilitec	Squarejolly SJ
	Schlüter®-Systems	Quadec
	Progress profiles	Projolly Square
	Profipas	Proangle Q
	Dural	Squareline
ROUNDED CLOSING ELEMENT		
	Profilitec	Roundjolly RJ
	Schlüter®-Systems	Rondec
	Progress profiles	Projolly Quart
	Profipas	Protrim
	Profipas	Proangle Mapei Color
	Dural	Durondell

EXPANSION JOINTS		
	Manufacturer	Best-selling products
FLOOR JOINT		
	Profilitec	Coflex CAJ, Coflex CA
	Schlüter®-Systems	Dilex-BWS
	Progress profiles	Proflex
	Profipas	Projoint DIL
	Dural	Duraflex
PERIMETER JOINT		
	Profilitec	Coflex CAJP
	Schlüter®-Systems	Dilex-BWA
	Progress profiles	Proflex 5 PR
	Profipas	Projoint DIL NIL
	Dural	Duraflex SF

CURVED PROFILES		
	Manufacturer	Best-selling products
METAL PROFILE FOR CURVES		
	Profilitec	Curveline
	Schlüter®-Systems	Schiene
	Progress profiles	Curve
	Profipas	Proangle Flex
	Dural	Z-Flex





RESPIRABLE FREE CRYSTALLINE SILICA

(1/2)



General considerations

The presence of respirable free crystalline silica in the working environment has been recognized as potentially hazardous to humans. This chapter provides a brief overview aimed at clarifying some concepts and providing further information in order to minimize potential risks arising from processing operations. **It should be noted that the ceramic product is not hazardous in the form in which it is marketed; the potential health risk occurs only during processing of the product under certain conditions, when dust containing respirable free crystalline silica is generated.**

CRYSTALLINE SILICA

Silica, or silicon dioxide, is a solid composed of silicon and oxygen atoms (fig. 01) and can occur in two different forms, crystalline (fig. 02) and amorphous (fig. 03); the former has an ordered lattice structure, while the latter does not have a precise three-dimensional structure. The most common form in nature is crystalline and is mainly represented by quartz. It is one of the most abundant minerals in the Earth's crust and is found in numerous natural materials (such as sand and granite) and artificial ones (such as concrete, glass, abrasive products and many other materials).

Crystalline silica represents a fundamental and indispensable component of ceramic products, necessary for the formation of the body, dimensional stability and mechanical resistance. Ceramic products contain on average a percentage of crystalline silica between 10% and 30% (values consistent with data collected by Confindustria Ceramica relating to Italian ceramic products), and an amorphous percentage between 60–70%. These percentages are only slightly influenced by the format and thickness of the ceramic product.

Crystalline silica is not in itself a hazardous material; the health risk occurs only in the case of inhalation of dust containing very small particles, with a granulometric class below 4 microns (0.004 mm), defined as “respirable” (fig.

04). The respirable fraction of crystalline silica is classified by IARC (International Agency for Research on Cancer) as a Group 1 carcinogen. It should be noted that current regulations and exposure limits apply specifically to crystalline silica dust, i.e. particles composed entirely of quartz. Amorphous silica dust has not been classified as a carcinogenic substance.

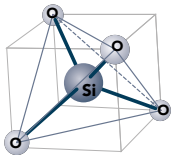
It should also be considered that during mechanical processing, such as dry cutting, mixed dust is generated, consisting of a variety of different phases. The health risk

associated with the inhalation of respirable crystalline silica particles is therefore necessarily reduced. Furthermore, biological damage occurs only if exposure is intense and continuous over time, without the use of suitable protective devices.

For further information, we recommend reading the “Focus on crystalline silica in ceramic products” prepared and published by Confindustria Ceramica and available at the following [link](#).

01

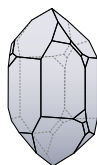
SILICA
Solid chemical compound



Name given to silicon dioxide.
Chemical formula:
SiO₂

02

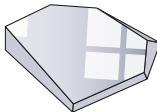
CRYSTALLINE SILICA
Mineral family



Among the crystalline forms of silica, the most common is quartz, the most abundant mineral in the Earth's crust and present in many natural and artificial materials.

03

AMORPHOUS SILICA
Glass



Amorphous silica is a glassy form of silica without crystalline structure. For this reason, it does not present the typical risks of crystalline silica related to prolonged inhalation.

04

RESPIRABLE CRYSTALLINE SILICA
Micrometric dust of crystalline silica (< 0.01 mm)



Respirable crystalline silica can be generated by mechanical operations such as cutting, drilling and grinding.





RESPIRABLE FREE CRYSTALLINE SILICA

(2/2)



Precautions during processing

Apply the laws, regulations and directives in force locally, adequately informing employees about the potential health risks resulting from exposure to dust generated by the processing (cutting, grinding, etc.) of ceramic tiles.

For the handling and processing of tiles, the adoption of certain precautions is required, such as:

- 1** Wear personal protective equipment (PPE): cut-resistant gloves, FFP3 dust mask to protect the respiratory tract, safety goggles and safety footwear. For large-format laminated porcelain slabs, it is also advisable to use cut-resistant sleeves to protect the forearms.
- 2** Preferably use tools for cutting and grinding with water; in the case of dry processing, use tools connected to efficient extraction systems to reduce airborne dust.
- 3** Assess the weight of the material and the format in order to equip yourself with suitable and certified handling equipment.

For laminated porcelain slabs reinforced with fiberglass mesh, avoid direct skin contact with the fiberglass and wear protective goggles and mask during handling in addition to the aforementioned personal protective equipment.

We recommend reviewing the safety information and precautions to be adopted contained in the safety data sheets available online for the various brands at the following links:

→ [Cotto d'Este](#)

→ [Lea Ceramiche](#)

→ [Panaria Ceramiche](#)





Panariagroup, with a circular economy approach, pays great attention to reducing the environmental impacts related to the packaging system, both by purchasing recycled packaging materials and by improving resource efficiency in the packaging process, as well as in the production process, reducing the use of raw materials through internal recycling of production waste.

CONSTRUCTION AND DEMOLITION WASTE

Construction and demolition (C&D) waste represents the largest waste stream in the European Union, accounting for approximately one third of all waste generated. Proper management of C&D waste and recycled materials can bring significant benefits in terms of sustainability and quality of life. To improve end-of-life building management, from a circular perspective, it is necessary to adopt approaches that include circularity principles both in the design phase (such as “disassembly” and “durability”) and in the end-of-life phase (such as selective demolition).

Product disassembly at the end of its life allows for its potential reuse, meaning the material does not undergo a transformation process as it does in recycling. The potential for reuse is linked to the concept of “durability”, i.e. the ability to maintain its performance over time. From this perspective, end-of-life should be understood as end-of-service-life, as a reusable material can have multiple service life cycles.

Selective demolition allows for better separation of waste into homogeneous fractions, promoting reuse and recycling of materials and reducing the amount of waste sent to landfill. Traditional demolition results in mixed waste, which is more difficult to separate and recycle.

Given the above, one of the most important aspects contributing to the sustainability of ceramic materials is their

long lifespan. **Porcelain stoneware has a service life that can exceed 50 years, reducing the need for replacement and limiting the consumption of new resources.** The durability of ceramic materials also reduces waste production and the costs associated with maintenance and replacement. **Ceramic materials can be fully recycled at the end of their life cycle.** Once disposed of, they can be crushed and reused as secondary raw material in construction, for environmental recovery or for the creation of embankments and sub-bases (road, railway and airport), thus reducing the need to extract new natural resources.

The Easy dry installation system, combined with the excellent characteristics of ceramic products, perfectly aligns with circular economy principles. It reduces on-site waste and allows easy disassembly, while the high durability of ceramic products ensures material reuse.

PORCELAIN STONEWARE OFFCUTS

In general, ceramic material offcuts resulting from installation operations (such as cutting and drilling) and debris from the demolition of ceramic floors and wall coverings are completely inert and non-hazardous (non-reactive, chemically and physically stable, and resistant to prolonged exposure even under extreme thermal, hygrometric and chemical conditions). Proper disposal, through authorised companies, allows materials to be recycled as secondary raw materials. Waste must be identified according to the European Waste List (EWL),

commonly known as the CER code (European Waste Catalogue). Classification depends on the nature of the material and the production context. The main CER codes for ceramic tiles are as follows:

- CER 170103 - Non-hazardous waste of tiles and ceramics
- CER 170107 - Mixtures of concrete, bricks, tiles and ceramics
- CER 170904 - Mixed construction and demolition waste

Please note that the waste producer is responsible for the proper classification of waste; therefore, you are advised to check the regulations of your municipality and country and to deliver waste to duly authorised operators for recovery activities.

It should be noted that laminated porcelain stoneware reinforced with fiberglass mesh, based on waste characterisation analyses carried out, shows characteristics similar to traditional stoneware. Therefore, it can be considered a non-hazardous inert waste and managed in the same way as products without fiberglass.

EASY MAT OFFCUTS

Please note that the product is durable and stable over time and does not require maintenance or replacement. At end of life, if intact, it can be reused; otherwise, it can be recycled and disposed of according to CER no. 170604 non-hazardous plastic insulating materials.





WASTE MANAGEMENT

(2/2)



PACKAGING WASTE

Proper management of packaging represents for Panariagroup a key element of its environmental sustainability strategy. Through reuse, recycling and waste reduction, the company confirms its commitment to a concrete circular economy, combining production efficiency, environmental protection and social responsibility.

CARDBOARD

Cardboard is the main primary packaging of our product, as it contains the product and comes into direct contact with it. Packaging is carefully designed to minimize the use of cardboard and reduce waste to zero thanks to the use of automatic packaging machines. The cardboard used contains high percentages of recycled material, over 70%, and is fully recyclable. At end of life, cardboard must be disposed of through separate collection as waste paper and is used by paper mills to produce recycled paper.

WOODEN CRATES AND RACKS

Crates or wooden racks contain large slabs; if kept in good condition, the company encourages their return with a financial reimbursement. When no longer reusable, they must be sent for recovery as raw material for the wood industry.

PALLETS AND OTHER WOODEN PACKAGING

Pallets and other wooden packaging can be reused for handling goods. At end of life, they must be sent for recovery as raw material for the wood industry.

PLASTIC COVERS

Plastic covers, also called “caps”, contain high percentages of recycled material and are 100% recyclable. At end of life, they must be disposed of through separate collection for plastic recycling.

EXPANDED POLYSTYRENE

The company has started purchasing regenerated expanded polystyrene packaging, made from processing scraps, ensuring lower use of raw materials and reducing environmental impact. All material is fully recyclable and must be disposed of through separate collection for plastic recycling.

STRAPPING

Straps are plastic bands used to stabilize packaging. They are made of two different plastics: polyethylene (PET) and polypropylene (PP). PET straps are made of 100% recycled plastic. At end of life, they can be fully recovered as plastic material in separate collection.





USEFUL ADDRESSES

The companies mentioned in this manual are to be considered the result of internal choices and therefore should be regarded as recommendations and not obligations.

ADHESIVES

MAPEI S.p.A.
Via Cafiero 22
20158 Milano (MI) - Italia
Tel. +39 02 37673
www.mapei.it

KERAKOLL S.p.A.
Via dell'Artigianato, 9
41049 Sassuolo (MO) - Italia
Tel. +39 0536 811516
www.kerakoll.com

LATICRETE S.r.l.
Piazza Martiri, 7
19020 Brugnato (SP) - Italia
Tel. +39 0187 897470
www.eu.laticrete.com

LITOKOL S.p.A.
Via G. Falcone, 13/1
42048 Rubiera (RE) - Italia
Tel. +39 0522 622811
www.litokol.com

WEBER SAINT-GOBAIN
Via Sacco e Vanzetti, 54
41042 Fiorano Modenese (MO) - Italia
Tel. +39 0536 837111
www.saint-gobain.com/en/weber

PCI-BASF Construction Chemical Italia S.p.A.
Via Vicinale delle corti, 21
31100 Treviso (TV) - Italia
Tel. +39 0422 304251
www.basf.com/it/it

ARDEX S.r.l.
Via Alessandro Volta, 73 (Loc. Pigna)
25015 Desenzano del Garda (BS) - Italia
Tel. +39 0309 119952
www.ardex.it

TILE CUTTING GUIDES

SIGMA S.n.c.
Via A. Gagliani, 4
47813 Igea Marina Bellaria (RN) - Italia
Tel. +39 0541 330103
www.sigmailta.com

RAIMONDI S.r.l.
Via Dalla Casta, 300/A
41100 Modena (MO) - Italia
Tel. +39 059 280888
www.raimondispa.com

DECOUPLING MATS, SOUNDPROOFING MATERIALS, ETC

SCHLÜTER-SYSTEMS Italia S.r.l.
Via Bucciardi 31/33
41042 Fiorano Modenese (MO) - Italia
Tel. +39 0536 914511
eu.schluter.com/it-IT/

GUTJAHN Systemtechnik GmbH
Philipp-Reis-Str. 5-7
D-64404 Bickenbach/Bergstraße
Tel. +49 0 62 57 - 93 06-0
www.gutjahr.com

MAPEI S.p.A.
Via Cafiero 22
20158 Milano (MI) - Italia
Tel. +39 02 37673
www.mapei.it

PROFILES AND SPECIAL PIECES

PROFILITEC S.p.A.
Via Scotte, 3
36033 Isola Vicentina (VI) - Italia
Tel. +39 0444 268311
www.profilitec.com

SCHLÜTER-SYSTEMS Italia S.r.l.
Via Bucciardi 31/33
41042 Fiorano Modenese (MO) - Italia
Tel. +39 0536 914511
eu.schluter.com/it-IT/

PROGRESS PROFILES S.p.A.
Via Le Marze, 7
31011 Asolo (TV) - Italia
Tel. +39 0423 950398
www.progressprofiles.com

PROFILPAS S.p.A.
Via Einstein, 38
35010 Cadoneghe (PD) - Italia
Tel. +39 049 8878411
www.mapei.com/profilpas/it/

DURAL ITALIA
Via Giuseppe Verdi, 15/4
40065 Pianoro (BO) - Italia
Tel. +39 380 5884442
www.dural.com

WEDI ITALIA S.r.l.
Via Redipuglia, 32
20035 Lissone (MI) - Italia
Tel. +39 0392 459420
www.wedi.net

RARE S.r.l.
Via delle Brughiere, 12
21050 Cairate (VA) - Italia
Tel. +39 0331 360360
www.raresistemidoccia.com

DETERGENTS

MAPEI S.p.A.
Via Cafiero 22
20158 Milano (MI) - Italia
Tel. +39 02 37673
www.mapei.it

FABERCHIMICA S.r.l.
Via G. Ceresani, 10 (Loc. Campo d'Olmo)
60044 Fabriano (AN) - Italia
Tel. +39 0732 627178
www.fabersurfacecare.com

FILA Industria Chimica S.p.A.
Via Garibaldi, 32
35018 S. Martino dei Lupari (PD) - Italia
Tel. +39 049 9467300
www.filasolutions.com

ZEP Italia S.r.l.
Via Nettunese, Km 25,000
04011 Aprilia (LT) - Italia
Tel. +39 06 926691
www.zep.it

KITER S.r.l.
Via Assiano, 7/B
20019 Settimo Milanese (MI) - Italia
Tel. +39 02 3285220
www.kiterdetergenti.it

GEAL S.r.l.
Via Settola, 121
51031 Agliana (PT) - Italia
Tel. +39 0574 750365
www.geal-chim.it

FEDERCHEMICALS S.r.l.
Via G. Borsi, 2
25128 - Brescia (BS) - Italia
Tel. +39 030 3390880
www.federchemicals.it

LITHOFIN-Produkte GmbH
Postfach 1134,
D-73236 Wendlingen (D)
Tel. 0049 07024/940320
www.lithofin.com

HMK - MÖLLER-CHEMIE
Benelux GmbH - Linge 4
NL-2105 WB Heemstede (NL)
Tel. +31 0252 220222
www.moellerchemie.com

BONASYSTEMS ITALIA S.r.l.
Via Borgo S. Chiara, 29
30020 Torre di Mosto (VE) - Italia
Tel. +39 0421 325691
www.bsyste.msitalia.it

LITOKOL S.p.A.
Via G. Falcone, 13/1
42048 Rubiera (RE) - Italia
Tel. +39 0522 622811
www.litokol.com

NOTCHED TROWELS AND RUBBER FLOATS

RAIMONDI S.r.l.
Via Dalla Casta, 300/A
41100 Modena (MO) - Italia
Tel. +39 059 280888
www.raimondispa.com

PLASTERS

FASSA BORTOLO S.p.A.
via Lazzaris, 3
31027 Spresiano (TV) - Italia
Tel. +39 0422 7222
www.fassabortolo.it

FORNACI CALCE GRIGOLIN S.p.A.
via Foscarini, 2
31040 Nervesa della Battaglia (TV) - Italia
Tel. 800350907
www.fornacigrigolin.it

TILE CUTTERS, GLASS CUTTERS, DIAMOND SPONGES

BOHLE ITALIA S.r.l.
Via Cavallotti, 28
20081 Abbiategrasso (MI) - Italia
Tel. +39 02 94967790
www.bohle.com

WÜRTH S.r.l.
Via Stazione, 51
39044 Egna (BZ) - Italia
Tel. +39 06 90779001
eshop.wuerth.it





PANARIAGROUP AND ITS BRAND

Excelling in the world of high-quality ceramics means being able to consistently create products with high technological content and refined aesthetics, with attention to every detail. To best meet the tastes of the most demanding high-end market segment, Panariagroup has always adopted a formula of excellence, combining traditional craftsmanship with cutting-edge technology. With a fundamental commitment to act and operate responsibly.

With 50 years of experience, Panariagroup is now an international company with a strong Italian core, distributing its porcelain stoneware through its **9 brand present in over 130 countries worldwide thanks to a widespread and extensive commercial network.**

Panaria
ceramica

LEA
CERAMICHE

COTTOD'ESTE
EXCLUSIVE SURFACES

MAXA
CERAMIC SLABS

MARGRES
CERAMIC TILES

LOVE
CERAMIC TILES

GRESART.
CERAMIC TILES

floridatile

Bellissimo
STILE ITALIANO

COMPANY CERTIFICATIONS



PRODUCT CERTIFICATIONS AND DECLARATIONS FOR BUILDINGS



IMPORTANT: The information and indications contained in this manual are to be considered valid until a newer update is published. The new update replaces all previous versions. It is possible to check for updates on the company website or by contacting the technical service. The company reserves the right to make technical and formal changes to what is described in this document whenever deemed appropriate.



Edition June 2026

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