

**LAMINATED
PORCELAIN
STONEWARE**

SUPERIOR QUALITY
THIN CERAMIC
SLABS

TECHNICAL MANUAL
LAMINATED PORCELAIN STONEWARE

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TO LEARN ABOUT LAMINATED PORCELAIN STONEWARE, HOW IT IS PRODUCED AND TO APPRECIATE ITS STRENGTHS

TO UNDERSTAND WHICH MATERIAL IS MOST SUITABLE FOR YOUR PROJECT

TO MAKE THE BEST USE OF IT ON SITE

TO BE ABLE TO CHECK IF IT HAS BEEN INSTALLED CORRECTLY

TO ENSURE IT IS PROPERLY MAINTAINED OVER TIME

FOR USEFUL DETAILED INFORMATION

CONSOLIDATED KNOW-HOW

Laminated porcelain stoneware is an innovative product that has revolutionised ceramics and its possible applications: for over 15 years Panariagroup has been synonymous with expertise and reliability in the production and distribution of this material.

Panariagroup was in fact the first ceramics company to believe in and invest in this product, which it launched on the market in 2004. Today it boasts superior knowledge of both production technologies and the finished product, as well as solid experience in both sales and consulting to designers and all professional operators.

With three dedicated production lines that produce about 2 million square metres of product every year, Panariagroup is the ceramics group with the highest market share of ultra-thin materials in the world. The careful and complete control of the entire production process, together with know-how and excellent technical support both pre- and post- sales, are fundamental guarantees when acquiring a product with specific characteristics.

The information in this Technical Manual relating to the product is the official information provided by Panariagroup.

The indications given on certain aspects related to the installation of the product have been developed over the years thanks to the company's many years of experience in the production and sale of laminated porcelain stoneware.

In relation to ancillary materials (adhesives, mats, etc.), the indications provided are those provided by the relative manufacturers, that guarantee the technical characteristics of their products on the market.



WHAT IS LAMINATED PORCELAIN STONEWARE

Laminated porcelain stoneware is characterized by the extraordinary dimensions of the slabs, which reach the sizes 100x300 cm and 120x260 cm, and by the reduced thickness, from 3.5 mm to 6.5 mm.

The final product is light, resistant, versatile and easy to use.

Laminated porcelain stoneware is a truly universal ceramic surface which is the fruit of

Panariagroup's unrelenting research activity into beauty and technical excellence: ideal for numerous applications in the world of architecture and design, it is suitable for covering not only floors and walls, but also furniture, accessories, kitchens and worktops, ventilated façades and walls, tunnels and large public works.

Product range

Thin and resistant

6mm

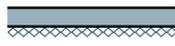
sizes up to
120x260 cm



Ultra-thin and ultra-resistant

**3plus
3.5mm**

sizes up to
100x300 cm *



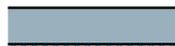
**5plus
5.5mm**

sizes up to
100x300 cm *

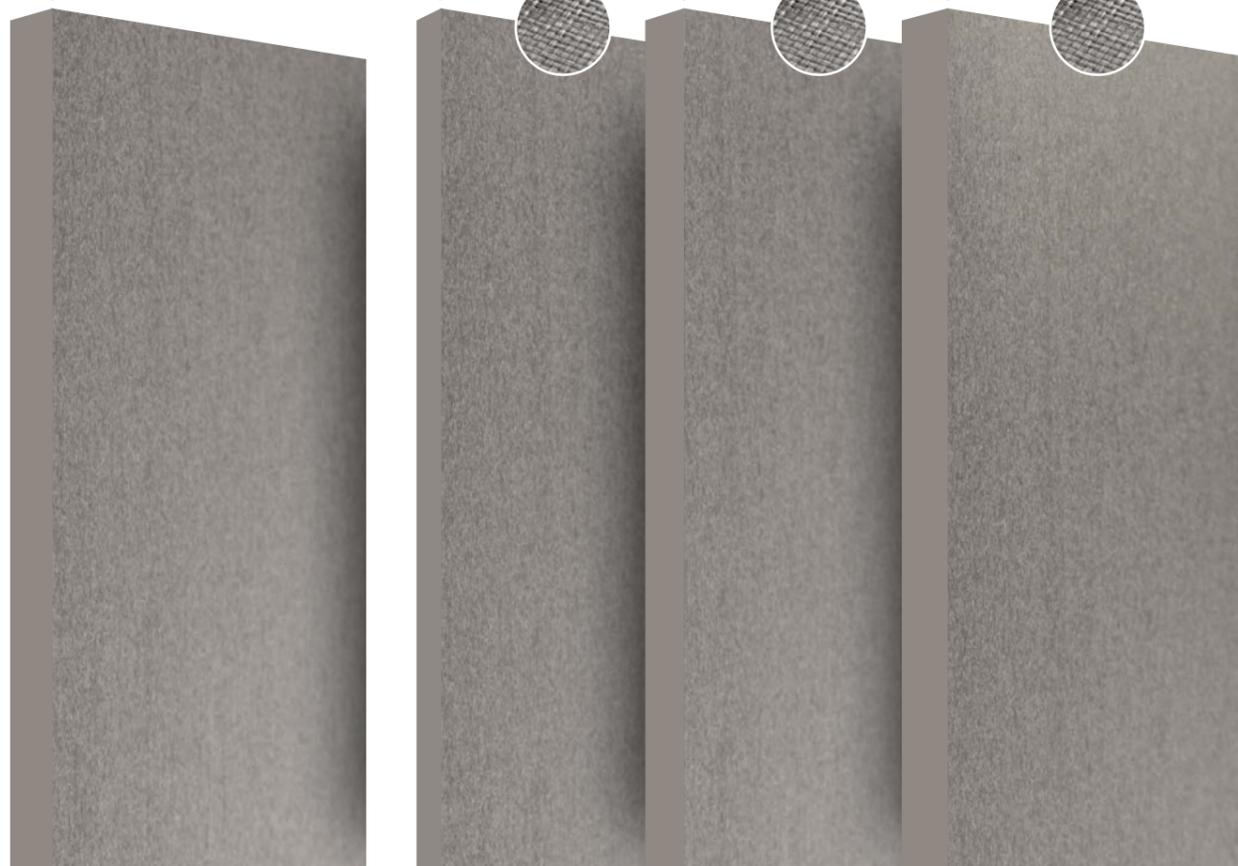


**6plus
6.5mm**

sizes up to
120x260 cm *



* reinforced with fibreglass mesh on the rear side



Production process

Laminated porcelain stoneware contains only raw materials of the highest quality and purity, such as light coloured clay, feldspar and ceramic pigments with high chromatic yield. The most innovative aspect of the production process consists in the pressing of the atomised raw materials, which takes place on a belt, without the use of moulds. The powder mixture undergoes, for over a minute, even pressure on a stationary slab with a force of

up to 27,000 tons, which causes its complete deaeration. The result is a slab which is more compact, more elastic and less strained, because it is pressed without a mould. After pressing, the slabs are decorated with high resolution digital machines, for incredibly realistic graphic effects with deep and intense colours.

The sintering of laminated porcelain stoneware - the extreme densification of

ceramic material by means of industrial firing - takes place at temperatures above 1,200° C, in special kilns powered by methane. Finally, the production line cuts and finishes off the slabs according to size and, for the versions that are supplied with it, the application of the special fibreglass mesh reinforcement, ideal for uses that require extra resistance. Surface polishing is also carried out internally at the Panariagroup plant.



AN EXCLUSIVE PRESSING SYSTEM FOR THINNER, MORE COMPACT AND AT THE SAME TIME MORE FLEXIBLE SLABS

1 Only the finest raw materials



powders **3 times superior** to traditional ones



only **high quality raw materials** are used, no recycled materials



Highest standards in quality and performance

2 Unique pressing process directly on conveyor belt



material is pressed for more than **1 minute** on the stationary slab



even pressure on the whole surface



pressing force up to **27,000 tons**



complete deaeration vacuum effect



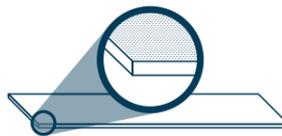
More compact slabs



More elastic slabs

minimum radius of curvature up to 5 metres

3 Exclusive surface processing technologies



high definition of structures



high standards in colour yield and whiteness



great depth of the graphic effects



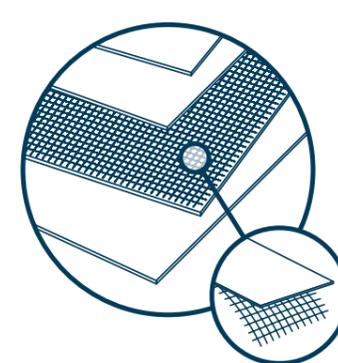
maximum surface shine and **easy to clean**



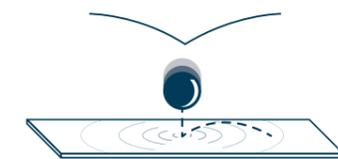
Excellent aesthetic yield of the products

4 Application of the fibreglass mesh

Available on a wide selection of products



fibreglass mesh on **the rear of the slab**



Extraordinary added resistance

5 Environmental sustainability



our production process reduces by



-65% the consumption of raw materials



-80% the consumption of water



-30% the consumption of energy



-30% CO₂ emissions in the atmosphere



-66% pollution caused by transport

The data refers to a 3.5 mm thick product when compared to a 10 mm thick porcelain stoneware tile.



HIGHEST STANDARDS IN QUALITY AND PERFORMANCE

Thanks to the use of the best raw materials.



PERFECTLY FLAT

Thanks to the innovative mould-free pressing system.



FLEXIBLE

Laminated porcelain stoneware in 3.5 mm, 5.5 mm and 6.5 mm thickness is characterised by a high degree of flexibility.

Thanks to the quality of the raw materials, innovative production process, and the use of fibreglass mesh reinforcement, these products are able to adapt to curved, both concave and convex surfaces.

For all the available sizes the minimum radius of curvature varies according to the thickness, and is equal to:

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

It is important to note that the minimum radius of curvature achievable is also related to the geometry of the slabs: a 100x300 cm slab allows greater flexibility if curved on the 300 cm side than on the 100 cm side.

Products with certain finishes may behave in different ways. Before installation on curved surfaces, please always contact the Panariagroup Technical Department.



ANTIMICROBIAL

Thanks to the exclusive PROTECT antimicrobial protection (available on the main collections).

PROTECT®

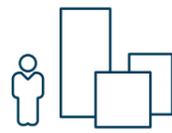
THE BEST ANTIMICROBIAL PROTECTION

The exclusive Panariagroup technology for antimicrobial floor and wall coverings with the highest performance. Developed in cooperation with the world leading producer of antimicrobial technologies, it guarantees superior performance and a healthy and safe environment.



HIGHLY COMPACT AND ELASTIC SLABS

Thanks to a unique production process.



A WIDE RANGE OF BIG SIZES

Up to 100x300 cm and 120x260 cm, which can be installed with minimal joint thanks to the perfect squareness and dimensional accuracy of the edges.



HIGHLY ECO-FRIENDLY

Thanks to the lower use of raw materials, lower consumption of water and energy, and lower emissions of CO₂.



EXCELLENT AESTHETIC LOOK

Thanks to exclusive surface processing technologies.



EXTRAORDINARY ADDED RESISTANCE

A more stable and resistant material, thanks to the compact, stress-free structure and, where present, the fibreglass mesh reinforcement.



EASY TO WORK WITH, HANDLE AND INSTALL

Thanks to its reduced thickness and weight (7.8 kg/m² for 3.5 mm thickness), it can result in savings of up to 40% on installation costs.



EASY TO CLEAN

Thanks to its non-absorbent surface, the laminated porcelain stoneware is stain-resistant and acid-proof.



PANARIAGROUP RELIABILITY

Great added value: 15 years of experience in the development, production and distribution of laminated porcelain stoneware, as well as consultancy for designers.



**THE THINNEST AND MOST
VERSATILE CERAMIC MATERIAL
ON THE MARKET, IDEAL
FOR RENOVATIONS**



POWERFUL ACTION

Eliminates microbes and prevents their reproduction



ETERNAL EFFECTIVENESS

Thanks to the technology permanently integrated into the product



CONTINUOUS PROTECTION

Always active, 24 hours a day, with and without sunlight



QUALITY GUARANTEED

By the partnership with MICROBAN®

WHICH SLAB TO CHOOSE

INTENDED USES

FOR NEW BUILDINGS AND RENOVATION PROJECTS THAT REQUIRE INSTALLATION ON PRE-EXISTING WALL AND FLOOR COVERINGS.

WALLS		6mm	3plus	5plus	6plus
INTERIORS	 RESIDENTIAL AND COMMERCIAL any environment	✓	✓	✓	✓
EXTERIORS	 RESIDENTIAL AND COMMERCIAL any environment	✓	✓	✓	✓

Products with special finishes can have limitations depending on their area of application. Refer to specific collection catalogues.

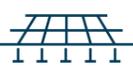
FLOORS		6mm	3plus	5plus	6plus
INTERIORS	RESIDENTIAL Kitchens, bathrooms, living rooms and other residential environments.	✓	✓	✓	✓
	LIGHT COMMERCIAL Offices, offices open to the general public, waiting rooms, shops, public bathrooms, common apartment block areas, restaurant dining rooms, car showrooms, bars, cinemas, surgeries/clinics, hotel rooms and bathrooms. In areas subjected to forced traffic, it is not advisable to use products with Glossy - Touch - Levigata (Lev) - Lux - P_polished finishes.	✓	✓	✓	✓
	INTENSIVE COMMERCIAL Common areas of shopping centres, hotel foyers, canteens, fast food restaurants, dance clubs, hospitals, schools, museums, places of worship, airports, stations with the exception of areas subject to heavy concentrated loads (e.g. trolleys with hard wheels).	✓		✓	✓
EXTERIORS NOT SUITABLE FOR VEHICULAR PASSAGE	On condition that surfaces are sheltered (e.g. loggias, covered balconies, etc.) and made totally impervious. We recommend the use of sizes that have sides not exceeding 120 cm.	✓	✓	✓	✓
	Provided that suitable decoupling mats are used certified by their manufacturer.	✓		✓	✓

The Glossy - Touch - Levigata (Lev) - Lux - P_polished finishes are recommended, as well as for wall cladding, also for flooring in residential or light commercial areas that are not subjected to heavy traffic, where anti-slip characteristics are not required. The occasional presence of small inconsistencies or little spots on the surface is to be considered a characteristic of the material and of its unique production process. If the product is laid in direct contact with external environments, it is recommended to use protective solutions to reduce the formation of scratches.

Products with special finishes can have limitations depending on their area of application. Refer to specific collection catalogues.

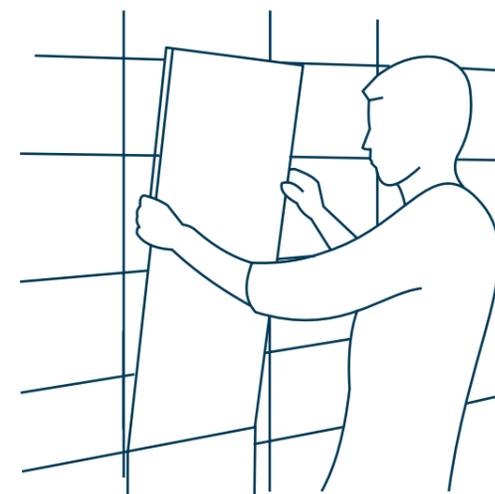
SPECIAL APPLICATIONS

FOR TECHNICAL APPLICATIONS, BOTH INDOORS AND OUTDOORS.
FOR USE IN AREA OF FURNISHINGS AND OTHER UNCONVENTIONAL APPLICATIONS.

		6mm	3plus	5plus	6plus
VENTILATED FAÇADES	 Only after the fibreglass mesh application. Depending on project specifications and in combination with the construction systems recommended by Panariagroup and approved by the Project Supervisor.	✓*	✓	✓	✓
EXTERNAL WALL THERMAL INSULATION SYSTEM	 Depending on project specifications and in combination with the construction systems recommended by Panariagroup and approved by the Project Supervisor.	✓	✓	✓	✓
BATHTUBS AND SWIMMING POOL CLADDING	 Depending on project specifications and in combination with the construction systems recommended by Panariagroup and approved by the Project Supervisor.	✓	✓	✓	✓
SURFACES TO BE COVERED FOR FURNISHINGS	 Depending on project specifications and in combination with the construction systems recommended by Panariagroup and approved by the Project Supervisor.	✓	✓	✓	✓
INTERNAL RAISED FLOORS	 Depending on project specifications and in combination with the construction systems recommended by Panariagroup and approved by the Project Supervisor.	✓	✓	✓	✓

* Only after the fibreglass mesh application.

Products with special finishes can have limitations depending on their area of application. Refer to specific collection catalogues.



**PRACTICAL AND VERSATILE
FOR A VARIETY OF
APPLICATIONS, ALSO FOR
INSTALLATION ON
PRE-EXISTING SURFACES**

HOW TO USE LAMINATED PORCELAIN STONWARE EFFECTIVELY

The installation of laminated porcelain stoneware includes all the activities, starting from the project design that lead to the final result. These activities are essentially the following:



1 PROJECT AND SUBSTRATE ANALYSIS AND PLANNING

Starting from the project design, the layer prepares and agrees with the client/project supervisor a schedule for the various installation phases. This schedule must take into account the time requirements of the various phases, as well as the timing for the curing required by certain materials (e.g. adhesives and levelling products). It is the layer's responsibility to formally point out to the client any inconsistencies between the design and the actual installation.



2 MONITORING OF ENVIRONMENTAL CONDITIONS

The environmental conditions must not compromise the application or affect the curing times of the products used, such as adhesives and grouting materials.

Consider that the installation cannot be carried out when the temperature is below 5 °C or above 35 °C, nor can it be carried out outdoors in adverse weather conditions.



3 HANDLING, STORAGE AND CONTROL OF MATERIALS

On arrival at the construction site, the materials must be checked and stored. The layer must promptly and formally highlight any obvious defects. Defective materials must not be installed unless a formal written order has been received from the customer.

For the handling and storage of laminated porcelain stoneware, follow the instructions in the chapter "Handling, storage and control of materials" on page 12.



4 PROCESSING LAMINATED PORCELAIN STONWARE, CHECKING THE SUBSTRATE, ADHESIVE PREPARATION, INSTALLATION

For the processing of laminated porcelain stoneware (substrate, adhesives, etc.), refer to the chapter "Processing, checking the substrate, adhesive preparation, installation" on page 16.



5 PREPARATION AND APPLICATION OF GROUTING JOINTS AND EXPANSION JOINTS

For the execution of the joints and for the expansion joints, refer to the chapter "Preparation and application of grouting joints and expansion joints" on page 32.



6 POST-INSTALLATION CLEANING AND PROTECTION

It is the layer's responsibility to deliver the tiling clean in its entirety. After cleaning, the layer must also take care of protecting the tiling (with suitable systems) until its delivery to the client. Refer to the chapter "Post-installation cleaning and protection" on page 34.



7 TESTING AND ACCEPTANCE

The testing of tiling consists of the process of verifying the quality of the tiling itself. Testing is the responsibility of the client, and must be carried out before it is ready for use, in the presence of the designer and the layer.

The client is entitled to draw up an acceptance report at the end of the acceptance period. Refer to the chapter "Testing and acceptance" on page 36.



8 MAINTENANCE

The maintenance of the tiling carried out on laminated porcelain stoneware only includes cleaning operations. For cleaning methods, see the chapter "Maintenance" on page 38.



Handling, storage and control of materials

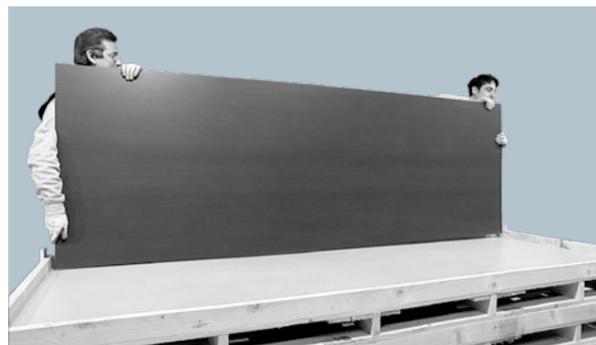
Due to its lightness and the way it is manufactured, laminated porcelain stoneware can always be handled by two people, with considerable financial savings for the building

site. The weight of a 3plus laminated porcelain stoneware slab measuring 100x100 cm is approximately 7.8 kg. For the same size, marble, granite or natural stone slabs have

Handling of whole slabs



1 | 100x300 cm and 120x260 cm slabs of laminated porcelain stoneware can be lifted by one person. Lift the slab with open hands. Slowly raise the longer side so as to eliminate the suction effect, due to contact with the underlying slab, and ensure a good grip. When handling the use of gloves is recommended.



2 | Guide the slab to its upright position, keeping it as straight as possible.



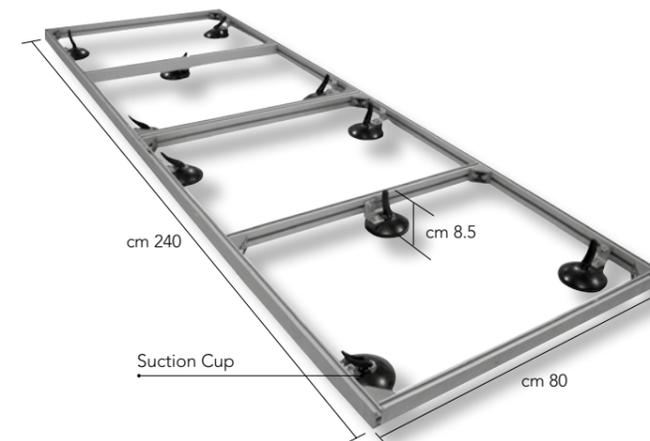
3 | When the slab is upright, hold it from its top edge and shift it keeping it straight and upright. This operation should be performed with the aid of a second person.

much greater thicknesses, with a consequent significant increase in weight. As a result, with an identical weight, the number of square metres transported is four times greater.

The frame



4/5 | 100x300 cm and 120x260 cm slabs of laminated porcelain stoneware can be handled by two people with the help of a special frame. Fix the frame to the slab when it is still on the pallet. Raise the frame and slab to eliminate the suction effect.



DUE TO ITS LIGHTNESS AND THE WAY IT IS MANUFACTURED, PANARIAGROUP LAMINATED PORCELAIN STONEWARE CAN ALWAYS BE HANDLED BY A MAXIMUM OF TWO PEOPLE, WITH CONSIDERABLE FINANCIAL SAVINGS FOR THE BUILDING SITE

To safely handle and install 100x300 cm and 120x260 cm laminated porcelain stoneware slabs, a special frame is available upon request. It is made of aluminium and features suction cups. It is ideal for installing on scaffolding at a height of over 2 metres.

Handling, storage and control of materials

Laminated porcelain stoneware slabs can be stored either in a vertical or horizontal position.

If placing one slab on top of the other, make sure that each slab is clean and that the surface the slabs are resting on is flat.

Handling packages containing entire slabs

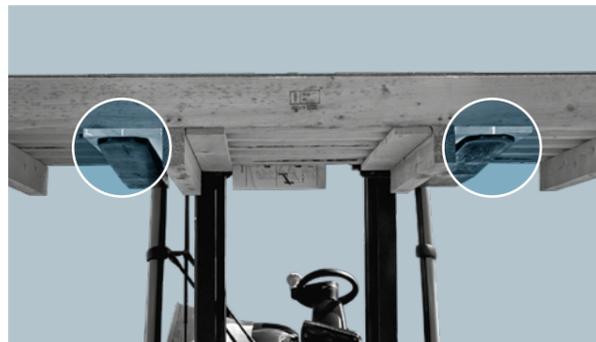


6/7

100x300 cm - 120x260 cm

To handle pallets from the long side using a fork lifter, position the forks in line with the wooden reinforcements located at the centre of the pallet (fig.7). The forks must be at least 1.3 m long and must be supporting the entire depth of the pallet.

During handling, take the appropriate care depending on the working conditions.



8

100x300 cm - 120x260 cm

To handle pallets from the short side (e.g. when unloading containers) using a fork lifter and to ensure the integrity of the contents, it is essential to use forks at least 2.6 m long, which ensure a perfect grip and safe lifting.

During handling, take the appropriate care depending on the working conditions.

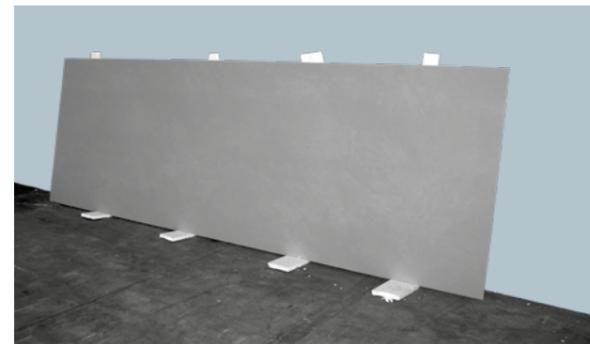
Handling smaller sizes



9

The pallets of all smaller sizes (120x120 cm, 100x100 cm, 50x100 cm, etc.) must be handled one at a time. The forks must be supporting the entire depth of the pallet and be as far apart as possible. Forks must be at least 1.3 m long. During handling, take the appropriate care depending on the working conditions.

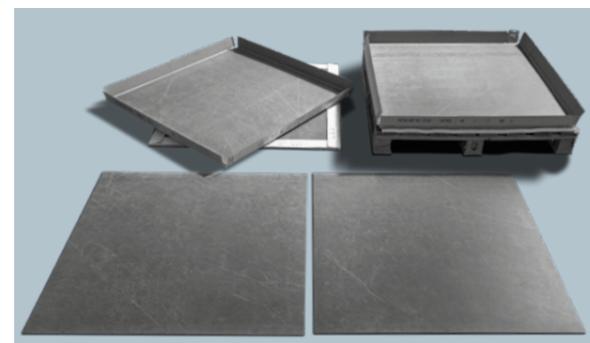
Storage of whole slabs



10

For upright storage, place the long side of the slab on wooden planks.

Control of material



11

The layer must check the material before starting to use it and must formally identify any obvious defects promptly. Defective materials must not be installed unless a formal written order has been received from the customer.

Processing, checking the substrate, adhesive preparation, installation

A striking feature of laminated porcelain stoneware is its extreme ease-of-installation: this material can be easily cut, shaped and drilled both by tile layers and by artisans

(stone cutters, glass-workers, etc.) using automatic machines and tools for porcelain stoneware, glass and marble. For manual operations and when using

mechanical tools (such as angle grinders, drills, cutters and electric screwdrivers), it is recommended to wear gloves, dust masks and protective eyewear.

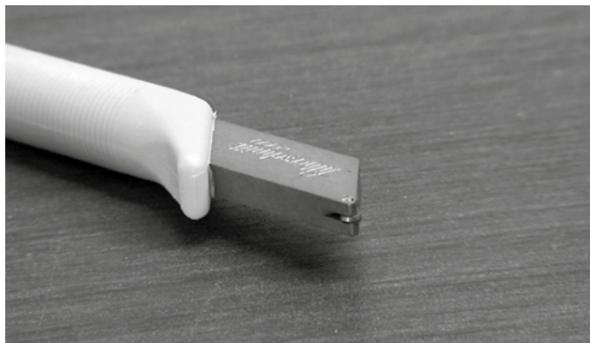
Follow the indications regarding the personal protective equipment that is provided by the manufacturers of the work tools.

Manual processing

PREPARATION

It is essential to work on a flat and clean surface.

CUTTING WITH A GLASS CUTTER OR TILE CUTTER



1

It is possible to obtain excellent results in terms of clean shapes and cuts by scoring all versions of laminated porcelain stoneware with products like Silberschnitt 2000 special glass cutters made by Bohle Italia or manual tile cutters made by Würth. For optimal results do not detach the glass cutter from the tile during the entire scoring operation. To cut polished surfaces or 6 mm or 6.5 mm thick slabs use a tile cutter ruler (for instance Keracut by Sigma or Raizor by Raimondi), exerting a strong pressure on the carriage mounted on the ruler, or a diamond disc for porcelain stoneware. To cut structured surfaces it is necessary to use a diamond disc for porcelain stoneware.



2

So as to score the tile in a straight line, one can use aluminium straight edges normally used by builders.



3

After scoring, it is sufficient to bend the slab to split the two pieces.



4

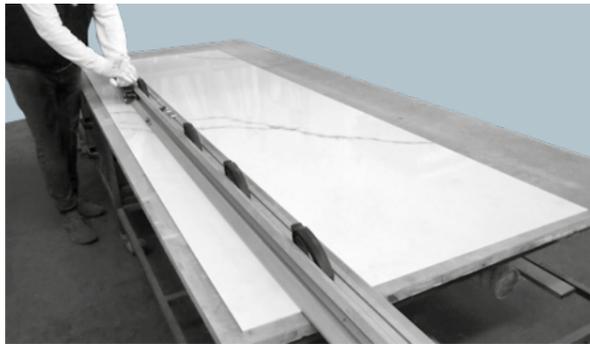
For 3plus, 5plus and 6plus laminated porcelain stoneware, after scoring the ceramic part and splitting the slab, complete the operation by cutting the fibreglass mesh with a standard cutter.


A STRIKING FEATURE OF THE LAMINATED PORCELAIN STONEWARE IS ITS EXTREME EASE-OF-INSTALLATION

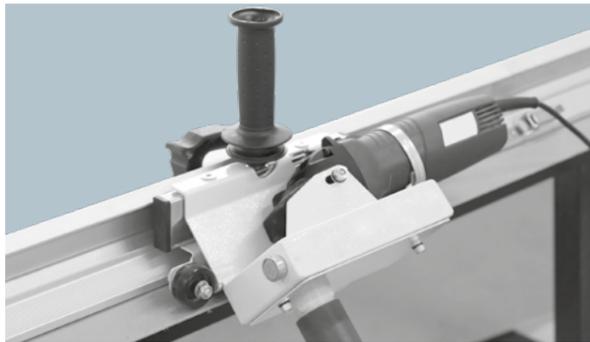
Processing, checking the substrate, adhesive preparation, installation

Manual processing

CUTTING WITH A GLASS CUTTER OR TILE CUTTER



5 | A practical tool for cutting is the tile cutter ruler (for instance Keracut by Sigma or Raizor by Raimondi). For 3plus, 5plus and 6plus laminated porcelain stoneware, after scoring the ceramic surface with this tool and splitting the slab, complete the operation by cutting the fibreglass mesh with a standard cutter. It is recommended to use this tool to cut polished surfaces, exerting strong pressure on the carriage mounted on the guide. To cut structured surfaces and/or those resistant to scoring it is necessary to use a diamond disc for porcelain stoneware.



6 | With the tile cutter rulers one can use hand-held angle grinders, fitted into a special frame (such as Power-Raizor by Raimondi) that guides it during the cut. In this way it is possible to produce 90° cuts and 45° cuts for bevels and jolly pieces.

CUTTING WITH DIAMOND DISCS



7 | All versions of laminated porcelain stoneware can be cut using diamond discs fitted onto hand-held electrical grinding machines. Disc rotation speed must be high (>10,000 RPM) and feed rate low (< 1 m/min). Depending on the type of disc and the length of the cut, it may be necessary to cool the disc with water. Recommended discs are the thin types generally used for cutting porcelain stoneware. The advantages of this type of cut include ease-of-execution and the possibility to cut during installation.

DRILLING



8 | As far as manual drilling is concerned, use tungsten bits with a diameter up to 10 mm, fitted to electric drills or battery-operated screwdrivers.



9/10 | As an alternative, one can use holesaws fitted to angle grinders, electrical drills or battery-operated screwdrivers.



Processing, checking the substrate, adhesive preparation, installation

Manual processing

INTERNAL CUT / L-SHAPED CUT



- 11 | To obtain internal and L-shaped corners, round off the vertices of the internal corner using drill bits with a diameter of at least 5 mm to reduce the risk of breakage. Then cut with diamond discs, taking care to stop moving the cutting tool forward when the previously drilled hole is reached. To drill and cut using diamond discs, follow the instructions provided above.

EDGE FINISHING



- 12 | Edges can be finished by hand using abrasive diamond sponges or emery paper. By slightly sanding the side of the slab, one can obtain a slightly rounded-off edge and with repeated sanding one can obtain a bevelled effect.



- 13 | The same results can be obtained with sanding discs fitted onto hand-held angle grinders.

CHAMFERS



- 14 | The use of the grinder together with particular trolleys allows the execution of flat chamfers with angles between 35° and 55° (with Jolly-angle type trolleys produced by Sigma) or round chamfers (with a Power-Raizor type trolley produced by Raimondi).

Processing, checking the substrate, adhesive preparation, installation

Machine processing

Regardless of the processing method adopted, the underlying surface must be perfectly flat to prevent vibration and movements of the slab that could lead to breakage or damage to the finish. It is recommended to use diamond tools for porcelain stoneware, in good working condition.

If it is necessary to drill holes for pipes or perform cuts for switch boxes or other items, the use of 3plus, 5plus or 6plus laminated porcelain stoneware is recommended. To obtain internal corners and L-shaped cuts, round off the edge of the corner using bits with a diameter of at least 5 mm that reduce the risk of breakage.

It is recommended to perform a few tests before cutting so as to set up the machine in the best manner possible. Operating parameters provided in this guide are to be considered as indications and must be tested and checked by the user depending on the material used and the operations to perform.

SCORING



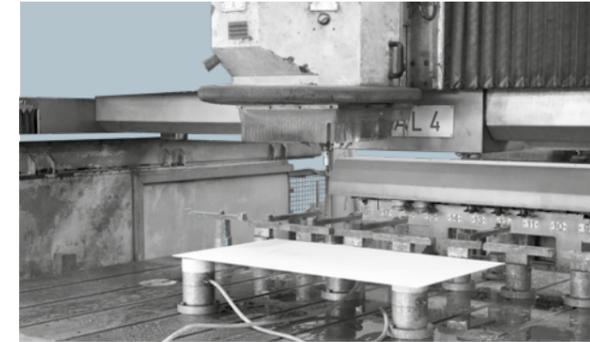
- 15 | Laminated porcelain stoneware can be cut by scoring. This operation must be performed on a cutting bench and on the front face of the slab. In the case of 3plus, 5plus or 6plus laminated porcelain stoneware, if this operation cannot be performed automatically on a cutting bench, the fibreglass mesh must be cut by hand with a cutter. Move the cutting tool forward at a speed of 10 m/min. and in any case at a speed suitable for the finish and colour of the slab with an average pressure of around 1.2 bar. For slabs with light colours, exert a pressure of about 1.5 bar.

CUTTING WITH A DISC



- 16 | Laminated porcelain stoneware can be cut with diamond discs. Use discs made especially for porcelain stoneware and in good working condition. Disc rotation speed must be high (>2,000 RPM) and feed rate low (from 0.5 to 1 m/min.) Depending on the type of disc and the length of the cut, it may be necessary to cool the disc with water. Reduce disc rotation speed at the start and at the end of the cut.

CUTTING WITH CNC MACHINES



- 17 | Laminated porcelain stoneware can be cut using CNC machines. Cutter rotation speed ranging between 12,000 and 18,000 RPM, with a feed rate between 0.5 and 1 m/min.

CUTTING WITH WATER JET MACHINES



- 18 | Laminated porcelain stoneware can be cut with water jet cutting machines. The feed rate of this operation should be between 2 and 3 m/min.

Processing, checking the substrate, adhesive preparation, installation

Machine processing

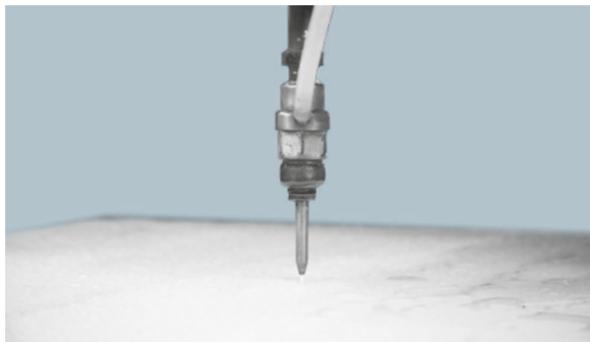
DRILLING WITH A CNC MACHINE



19

Laminated porcelain stoneware can be drilled using CNC machines. Drill a preliminary hole using a diamond drill bit and if necessary use a hole saw to enlarge the hole to the required dimensions. Use a drill bit with a diameter of between 4 and 8 mm. Operating speed is 40 mm/min. with spindle rotation of 900 RPM. When using these tools: cool the point drilled with water; start drilling at a low speed; never exert too much pressure and bear in mind the resistance of the type of laminated porcelain stoneware being worked on.

DRILLING WITH A WATER JET MACHINE



20

Laminated porcelain stoneware can be drilled with water jet cutting machines. With water jet machines, one can obtain holes with a smaller diameter compared to those possible with CNC machines. Operating speed must range from 2 to 3 m/min.

EDGE POLISHING



21

To shape the edge, first of all use abrasive diamond wheels which are suitable for obtaining the required shape and size. A polishing wheel must then be used for polishing. By using different grinding wheels it is possible to obtain numerous types of edge finish. Operating speed must be tested beforehand.

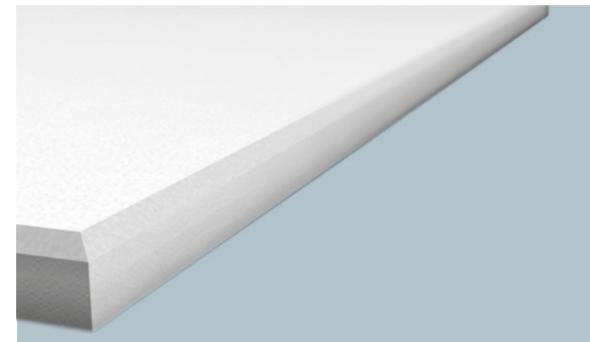
45° CUT



22

To obtain 45° cuts, use 45° diamond discs. In this way, it is possible to join two slabs of laminated porcelain stoneware to create a corner. The corner achieved must then be bevelled. Different discs are available for obtaining a variety of edge finishes. Operating speed must be tested beforehand.

BEVELLING



23

Laminated porcelain stoneware can be bevelled. To smooth curved edges use a CNC machine with a 5 axis grinding wheel. Different discs are available for obtaining a variety of edge finishes. Operating speed must be tested beforehand.

Processing, checking the substrate, adhesive preparation, installation

Substrate

Laminated porcelain stoneware can be installed on any type of substrate, whether on the floor or on the wall, provided that it has been designed and built taking into account the relevant project characteristics and in compliance with current standards.

In particular **it is essential to:**

- check that the substrate on which it is installed has the necessary characteristics (see "Substrate characteristics", below);
- select a suitable adhesive for the substrate

and the intended use (see "Adhesives and profiles attachments" page 40);

- install the laminated porcelain stoneware on the substrate in the correct manner (see "Adhesive preparation and installation" page 28).

If the requirements of these three points are fulfilled, the laminated porcelain stoneware will offer all the best of its unique characteristics.

Characteristics of the substrate

Regardless of whether one is installing on walls or on floors, the substrate must have the characteristics described in detail below.

Testing and checking these conditions is the responsibility of the project designer and of the persons performing installation work.



STABLE OVER TIME

The substrate must be cured and therefore dimensionally stable. Some practical indications, to be used as a guidelines under normal conditions, are the following: a concrete structure is considered dimensionally stable after 6 months from installation; a cement mortar screed or plaster can be considered dimensionally stable after 28 days, or after 7-10 days for every centimetre of thickness. The values indicated refer to conventional screeds and plasters prepared on site. In the case of pre-packaged products or other solutions, the instructions of the manufacturers must be followed.



INTACT

The substrate is evaluated by visual observation. It must be intact, i.e. it must be free of cracks at the time of installation and free of loose elements.

In the case of pre-existing floor or wall coverings, any finishing layer must be well adhered to the substrate (this can be checked by means of a tapping inspection). In the case of screeds, it is necessary to ascertain whether these may derive from phenomena of hydraulic shrinkage. If so, it is important to check that these phenomena are completed before proceeding with the installation.

Any cracks must be eliminated by closing them with appropriate materials, generally of an organic nature, for example epoxy resin-based products. Parts that do not adhere perfectly must be removed.



COMPACT

The compactness of the support must be checked both in terms of surface and thickness.

With regard to cement-based screeds, an empirical resistance test can be carried out by forcefully tapping the surface of the screed with a mallet: no evident traces must be formed, nor must the surface crumble.

The surface resistance can always be checked empirically by scratching the surface of the screed vigorously with the edge of a spatula or with a steel nail, so as to form a series of squares with dimensions of approximately 2x2 cm. Surface resistance is considered acceptable if no deep incisions are formed and no crumbling occurs.

If the surface resistance is unsatisfactory, the substrate must be reinforced. This means removing mechanically the inconsistent surface layer, carefully removing dust and, finally, treating with a suitable consolidating primer, chosen and used as indicated by the manufacturer in the relevant product data sheet.

In the case of substrates for external wall cladding, conditions of poor surface resistance may justify the use of mechanical fastening systems.



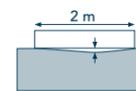
DRY

The support must be dry on the surface in order to prevent the risk of efflorescence. The residual moisture in its mass is determined by measurement with a carbide hygrometer. Throughout the thickness of the substrate and for all measurements made, at least one for each room, the maximum percentage allowed must be:

- 3% for CT class screeds (cement based and special binding agents);
- 0.5% (0.3% in the case of substrates with radiant heating and cooling) for class CA screeds (based on calcium sulphate / anhydrite).

The 3% limit also applies to (cement-based) substrates for outdoor installation. It should be noted that in such applications the substrate must be protected from precipitation before installation.

Failing these above limitations, a waiting period can be required in adequate environmental conditions, or the use of appropriate materials and systems (possibly with venting of vapour pressure), scrupulously following the indications and instructions of the respective manufacturers.



FLAT

Flatness of the support is checked by using a levelling rod with a length of at least 2 metres. Place the rod on the substrate in all directions. The permissible tolerance is 2 mm.

If the surface does not meet the specified requirements, a levelling layer is required.



CLEAN

The surface of the substrate must be clean and free of contaminants (e.g. cement residues, releasing oils, traces or residues of paints, adhesives, etc.). If these are present, they must be removed using appropriate solutions.

Processing, checking the substrate, adhesive preparation, installation

Adhesive preparation and installation

As a general rule that applies for all building materials to be bonded in place with adhesive, there is no universal adhesive for installing laminated porcelain stoneware on all kinds of substrate.

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

- target environment (and environmental conditions at the time of installation);
- type of support;
- type of laminated porcelain stoneware;
- size of the slabs used.

In order to help designers, we have collected in the "Adhesives" attachment, at the end of this manual, indications from the major adhesive manufacturers according to the data described above.

Please note that the information provided has been submitted by the respective manufacturers, who guarantee the indications given. For explanations or further information, contact the product manufacturers directly (references in the chapter "Useful contacts" page 62).

ADHESIVES: SINGLE-BUTTERING METHOD / DOUBLE-BUTTERING METHOD

The adhesive chosen must form a compact layer without cavities or discontinuities under the laminated porcelain stoneware; that is, it must form a "full bed".

This can only be achieved with the double-buttering method or with the single-buttering method when using high wettability adhesives that are specifically developed to create a "full bed", especially for flooring.

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

SINGLE-BUTTERING METHOD

This method refers only to adhesives that bear the indication "single-buttering" in the data sheet in the chapter "Adhesive and profiles attachments" page 40. Spread the adhesive full-bed over the whole surface to be covered, using a trowel with the features indicated in the aforementioned data sheet.

DOUBLE-BUTTERING METHOD



1/2

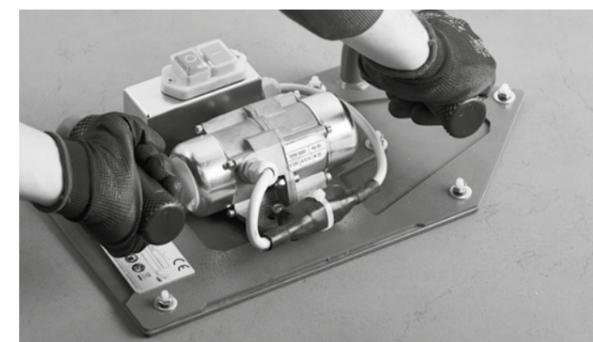
Apply adhesive on the substrate and on the back of the slab by spreading the adhesive full-bed over the entire surface to be covered, using a notched trowel with tilted teeth that are spaced 6 mm apart (e.g. Raimondi art.184HFV6). Then apply the adhesive also to the rear of the slab using a 3 mm square notched trowel. When installing on floors, remember to spread extra adhesive around the edge of the slab.

BOTH FOR THE "SINGLE-BUTTERING" AND "DOUBLE-BUTTERING" METHODS



3/4

After installing the slab, make sure it is firmly adhering to the underlying surface to prevent gaps and air bubbles forming. To do this, use rubber coated trowels (e.g. Raimondi "142G") for wall or for floor installation, or electrical tile tapping tools with plastic plates (e.g. Raimondi "Volpino") for floor installation.



Processing, checking the substrate, adhesive preparation, installation

Mechanical levelling systems and mechanical safety retaining hooks

MECHANICAL LEVELLING SYSTEMS



5

Thanks to its characteristics of lightness, flexibility and high precision, laminated porcelain stoneware allows simple and effective installation regardless of whether mechanical levelling systems are used.

With the exception of floor installation of 3plus laminated porcelain stoneware, they can still be used. It should be noted, however, that many models of mechanical levelling systems are available on the market, some of which, due to how they are used, may not be suitable for ceramic products with particular finishes (e.g. polished).

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

MECHANICAL SAFETY RETAINING HOOKS FOR WALL CLADDING



6/7

It is at the discretion of the designer to consider the use of a suitable mechanical safety fixture (e.g. steel hooks fixed in the substrate) when installing with adhesive on exterior walls.

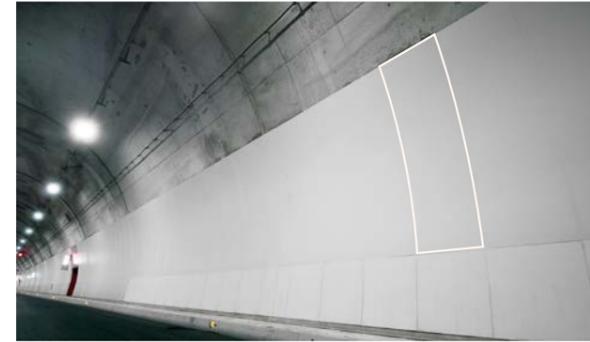
The assessment must take into account the specific exposure conditions, the quality of the support and the laying pattern (dimensions of the joints, grid of the expansion joints, etc.).

On the market there are solutions both with visible hook, such as the Fischer ATK100KL bracket, which can be used for all types of laminated porcelain stoneware, and with retractable hook, such as the Rai Fix system by Raimondi, which can be used with 5plus and 6plus.

For further information, please refer to the technical data sheets drawn up by the manufacturers.



INSTALLATION ON CURVED SURFACES



8

3plus, 5plus and 6plus laminated porcelain stoneware can be laid on curved surfaces, both concave and convex. Products with particular finishes can have certain limitations depending on the geometry of the slab, so please contact the Panariagroup Technical Department before proceeding with the installation.

The instructions for installation are those given in the section "Adhesive preparation and installation" (page 28) and "Grouting joints and expansion joints" (page 32).

We recommend installation using the double-buttering method, please refer to the adhesive manufacturer's instructions also with regard to any measures for securing the position of the slab during the curing times of the adhesive used (i.e. propping and/or mechanical retaining hooks).

Preparation and application of grouting joints and expansion joints

Grouting joints and expansion joints

GROUTING JOINTS

So-called "zero grout line" installation is not permitted. The filling of the joints (grouting) must be carried out after a specific time has elapsed since the installation of the slabs, depending on the type of installation, the environmental conditions and especially the type of adhesive. For this purpose, check in the technical data sheet of the selected adhesive the times required for grouting and before it is ready for use.

It is recommended to take into account the characteristics of the materials used and to follow the instructions of the manufacturer of the grout. The grouting and cleaning of the surface of laminated porcelain stoneware from residues of installation materials must be carried out in parallel and always following the instructions of the grout manufacturer, so that, at the end of grouting, the tiling is finished and clean.

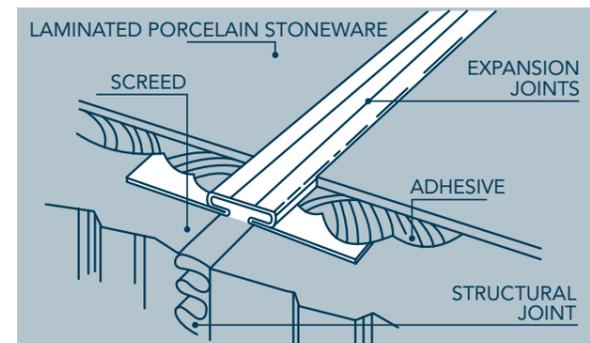
INSTALLATION		WALL CLADDING	FLOORING
INTERIORS		JOINT BETWEEN SLABS MANDATORY. Minimum size at least 1 mm.	JOINT BETWEEN SLABS MANDATORY. Minimum size at least 2 mm.
EXTERIORS		JOINT BETWEEN SLABS MANDATORY. Minimum size at least 5 mm.	JOINT BETWEEN SLABS MANDATORY. Minimum size at least 5 mm.

INTERMEDIATE, EXPANSION AND PERIMETER JOINTS

The joints must be installed according to the paths specified by the designer. The joints are classified into: structural joints, movement joints, expansion joints and perimeter joints. The structural joints are set in the supporting structure (fig.10). The movement joints are made in the screed by cutting to a depth of 1/3 of the thickness without affecting any electro-welded mesh. The expansion joints only divide the tiling. The perimeter joints must be placed at the perimeter of the tiling (fig.11).

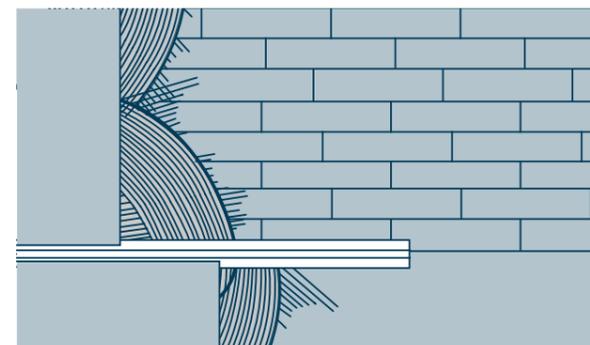
In the case of joints made on site, open joints are made in the specified positions affecting the slabs and, when required, the screed. These joints are left free of debris, clean and empty so that they can house the elastic filling. In the case of prefabricated joints, installation is carried out at the same time as installation of the slabs. For advice on this type of joint, please refer to the chapter "Adhesive and profiles attachments" in the section "Profiles" (page 58).

INSTALLATION		WALL CLADDING	FLOORING
INTERIORS		EXPANSION JOINTS ARE MANDATORY. The size and position of the joints must be established by the project supervisor. As an indication, the joints must subdivide the surface into square or rectangular areas, but the ratio between the sides must not exceed 1.5.	
EXTERIORS		The following are sizes may be used as an guideline: - from 5 m x 5 m to 6 m x 4 m for indoor use; - from 3 m x 3 m to 4 m x 2.5 m for outdoor use.	



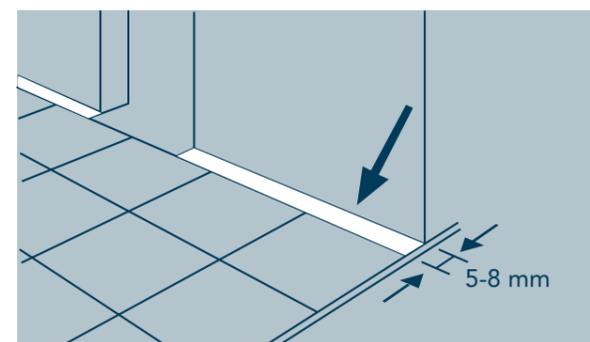
9

In line with a structural joint in the screed, it is mandatory to install an expansion joint with a width that is at least the size of the existing one.



10

If there are joints between surfaces of different types (e.g. reinforced concrete and bricks), it is mandatory to install an expansion joint.



11

Around fixed elements of the supporting surface, such as walls, steps, columns, etc., it is mandatory to install 5-8 mm perimeter joints.

Post-installation cleaning and protection

Post-installation cleaning

The layer must also provide clean tiling for any acceptance tests.

“Post installation” cleaning helps remove residues of joint grouts, cement and lime and it is absolutely mandatory at the end of the works. Never clean slabs that are too hot (e.g. exposed to sunlight during hot summer months) since the reaction of aggressive chemicals may become harsher.

In the summer, proceed with the operation during the coolest period of the day.

Non-slip surfaces: due to their particular, non-slip, rough or structured textures, are more difficult to clean.

Therefore pay particular attention to cleaning methods, in particular clean sooner and use single disc cleaning machines with white and beige discs.

GROUT USED	WHEN TO CLEAN	WHAT TO USE	INSTRUCTIONS
CEMENTITIOUS GROUT MIXED WITH WATER	After 4/5 days and within 10 days from grouting	Acid-based detergent (see "List of acid-based detergents")	Follow the instructions supplied by the manufacturer of the detergent. Test the product on the slabs before use. This applies in particular to honed or polished products. Before cleaning, the surfaces must be dampened with water. After cleaning, dry up any remaining liquid (if possible using a wet vacuum cleaner) and rinse thoroughly and several times with water. Soak up any remaining rinsing water with a wet vacuum cleaner or a cloth.
EPOXY GROUT, TWO-COMPONENT AND REACTIVE	Immediate	Follow the instructions of the grout manufacturer.	This type of product must be removed immediately and thoroughly since these grouts harden very rapidly, even in just a few minutes. Strictly follow the cleaning methods recommended by the grout manufacturer and check if it is effective by performing a cleaning test before grouting the entire floor/wall.

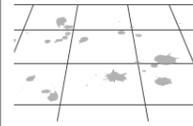
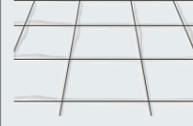
LIST OF ACID-BASED DETERGENTS

Follow the instructions given on the package. Test the product on the slabs before use. This applies in particular to honed or polished products.

Name of detergent	Supplier
Keranet	Mapei
Cement Remover	Faberchimica
Deterdek	Fila
Trek	Kiter
Zementschleierentferner	Lithofin
HMK R63	HMK
Solvacid	Geal
Litoclean Plus	Litokol
Bonaclean / Bclean	Bonasytems Italia
Bonadecon (*) / Bdecon (*)	Bonasytems Italia

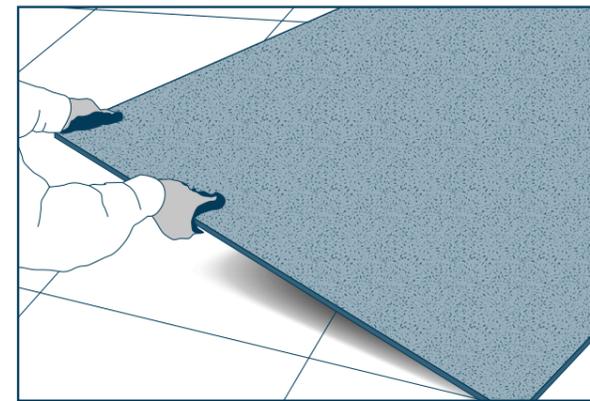
(*) specific for products that are NOT acid-resistant

IF POST-INSTALLATION CLEANING HAS NOT BEEN PERFORMED CORRECTLY

Grout used	What do you see?	What should you do?
CEMENTITIOUS GROUT MIXED WITH WATER	Residues, glossy stains. 	Repeat washing after installation as described above.
EPOXY GROUT, TWO-COMPONENT AND REACTIVE	Grout haze, around the joints. 	Once it has hardened, grout is very difficult or even impossible to remove. Contact the grout manufacturer.

Protection

It is the layer's responsibility to protect the finished, clean tiling. The protection of the ceramic covering for the period between the end of the installation and delivery to the client is all the more important when the environment in question will be subjected to significant foot traffic from other building operators (painters, electricians, bricklayers, etc..). The protection of the slabs is carried out by applying suitable protective materials.



12 | Laying of a chipboard panel on the installed floor

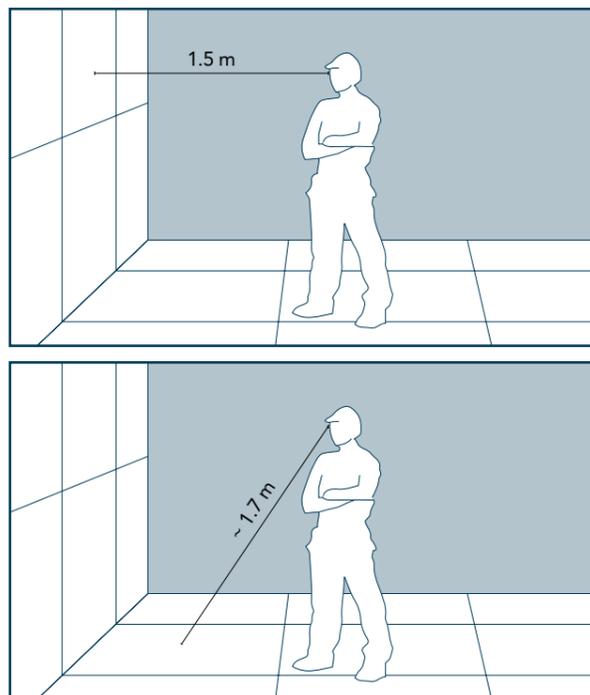


13 | Laying of a protective cardboard on the installed wall

The testing of tiling is the process of verifying the quality of the tiling itself. Testing is the responsibility of the client and must be carried out before it is ready for use, in the presence of the designer and the installer.

At the end of testing, an acceptance report may be drawn up by the client. If testing is successful, the laminated porcelain stoneware has been installed correctly. The test consists of the following checks:

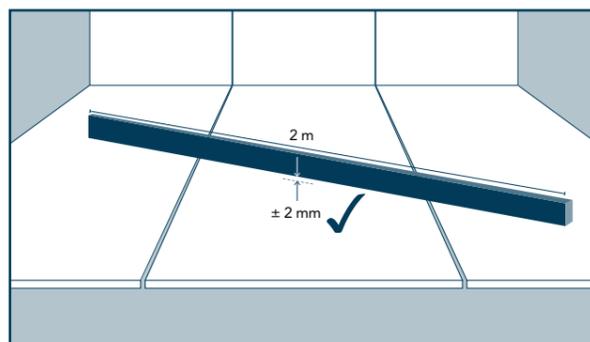
APPEARANCE CHECK



1/2

A visual inspection of the floor and wall tiling shall be carried out, with a naked eye view of the surface at a distance of at least 1.5 m and at eye level. Grazing light illumination is not permitted. Surface effects not detectable under these conditions are not to be considered as defects. Appearance defects also include the regularity of any cuts and holes made. The presence of installation material residues is also deemed an appearance defect. It should be remembered that the installer must provide the tiling in its entirety, i.e. including the surface of the laminated porcelain stoneware, the grouting joints, the expansion joints and any profiles. The cleaning process is considered to have been correctly carried out if all the installation material residues have been completely eliminated and there is no damage (for example, the result of chemical attack or mechanical abrasion) to the tiling in its entirety and to the individual elements mentioned above.

FLATNESS AND UNEVENNESS CHECK



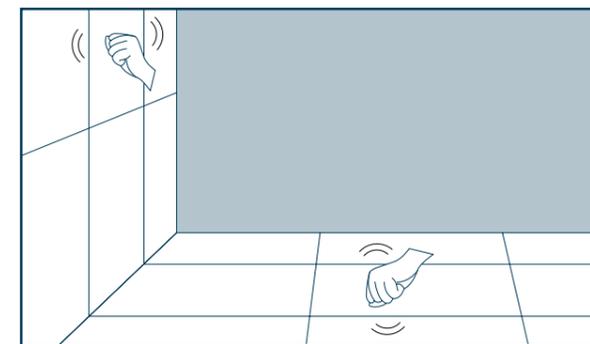
3

Flatness must be measured on the floor and wall tiling. It is checked by using a levelling rod with a length of at least 2 metres. Place the rod on the substrate in all directions. The permissible tolerance is 2 mm. To measure the difference in level, rest the rod on the slab at the highest level. The difference in level between the protruding rod and the surface of the underlying slab is measured with a calibrated ruler or other thickness gauge. The maximum permissible difference in height depends on the size of the grouting joint:

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

The test should be done on a random basis on several grouting joints.

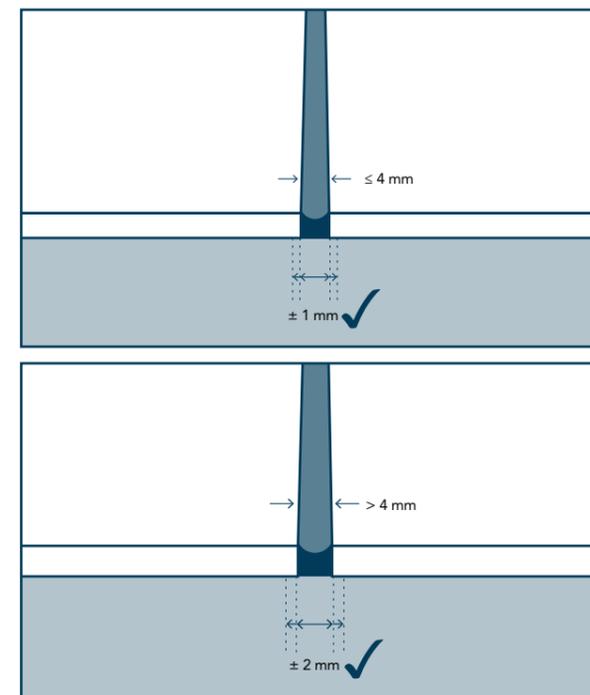
CHECKING ADHERENCE



4

This test consists in an inspection of the tiling also by means of tapping in order to make sure that nothing has become detached or showing signs that detachment is starting to occur.

CHECKING JOINTS AND GROUTING



5/6

A test is conducted on the floor and wall tiling. This test consists in an initial evaluation of the appearance of the slabs, in order to verify the presence of any disturbing effects due to visual differences in the width of the grout. In the absence of such effects, the tiling shall be considered as compliant. In the areas affected by these effects, the width may be checked at various points on a sample basis. The permissible tolerances are:

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

Slab maintenance consists of daily cleaning operations. Use warm water and a good quality microfibre cloth, such as Magic Clean by Bonasystems Italia. Every now and again, e.g. every 10-20 days depending on the state of the flooring, use neutral detergents diluted with a lot of hot water, that are wax-free, and do not deposit glossy stains and dry with a

good quality microfibre cloth. After washing, rinse thoroughly with water; dry using another good quality microfibre cloth, such as Magic Clean by Bonasystems Italia.

SLAB TO BE CLEANED	WHAT TO USE	INSTRUCTIONS
LAMINATED PORCELAIN STONEWARE 6mm	Wax-free neutral detergent (cf. "List of detergents"). DO NOT use alcohol, acids, solvents, abrasive detergents, steel wool or abrasive sponges.	As indicated above.
LAMINATED PORCELAIN STONEWARE 3plus 5plus 6plus		
DECORS		

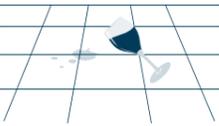
LIST OF ACID-BASED DETERGENTS

Follow the instructions given on the package. Test the product on the slabs before use. This applies in particular to honed or polished products.

Name of detergent	Supplier
Floor Cleaner	Faberchimica
Fila Cleaner	Fila
Pflegereiniger	Lithofin
HMK P15	HMK
Bonamain + (*) / Bmain + (*)	Bonasystems Italia
Bonatitania Clean / Btitania Clean	Bonasystems Italia
Belgres	Geal

(*) NEVER use to clean DECORS

IF DAILY CLEANING HAS BEEN DONE USING UNSUITABLE DETERGENTS

Slab to be cleaned	What do you see?	What should you do?
LAMINATED PORCELAIN STONEWARE 6mm	<p>Opaque stains visible. The floor is glossier than the spare pieces that have not been installed</p> 	<p>Use a detergent such as Tile Cleaner made by Faberchimica, undiluted and let it act for 5 to 10 minutes. Then rub with a white pad, rinse thoroughly with water, soak up any remaining rinsing liquid with a wet vacuum cleaner for liquid or a cloth and finally dry with a good quality microfibre cloth, such as Magic Clean by Bonasystems Italia.</p>
LAMINATED PORCELAIN STONEWARE 3plus 5plus 6plus	<p>Opaque stains visible when in contact with various types of liquid</p> 	
DECORS	<p>Footprint marks remain</p> 	

HEAVY DUTY CLEANING

SLAB TO BE CLEANED	TYPE OF STAIN	WHAT TO USE	INSTRUCTIONS	NAME OF DETERGENT	SUPPLIER
LAMINATED PORCELAIN STONEWARE 6mm	Coffee, Coca Cola®, fruit juices	Alkaline-based detergent	Follow the instructions supplied by the manufacturer of the detergent.	Coloured stain remover PS87 Super Deterjet Bleach	Faberchimica Fila Geal (various manufacturers)
	Grease, dust from foot traffic, thorough cleaning	Alkaline-based detergent	Follow the instructions supplied by the manufacturer of the detergent.	PS87 Litonet Intensivreiniger HMK R55 Taski R20-strip Bonadecon / Bdecon Deterflash	Fila Litokol Lithofin HMK Johnsondiversey Bonasystems Italia Geal
	Wine	Oxidising detergent	Follow the instructions supplied by the manufacturer of the detergent.	Oxidant Bleach	Faberchimica (various manufacturers)
	Lime residues	Acid-based detergents	Follow the instructions supplied by the manufacturer of the detergent. Test the product on the slabs before use. This applies in particular to honed or polished products.	Viakal	Procter & Gamble
	Rust	Acid-based detergents	Dilute the product and apply directly on the stain. Allow to act for 10/20 minutes then rinse thoroughly. If necessary repeat. Test the product on the slabs before use. This applies in particular to honed or polished products.	Diluted muriatic acid	(various manufacturers)
	Tyre marks, pencil marks and metal marks	Abrasive paste	Follow the instructions supplied by the manufacturer of the detergent. Test the product on the slabs before use. This applies in particular to honed or polished products.	Polishing cream Vim clorex Detergum (*) (*) DO NOT use on lapped or polished products.	Faberchimica Guaber Zep Italia
	Ink, felt-tip pen	Solvent-based detergent	Solvents should be applied undiluted directly on the stain. Let them act for about 15/30 seconds. If necessary repeat. As far as "Coloured stain remover" is concerned, follow the manufacturer's instructions.	Nitro thinner White spirit Coloured stain remover	(various manufacturers) (various manufacturers) Faberchimica
Dirt from grout	Detergent for grout	Follow the instructions supplied by the manufacturer of the detergent.	Fuganet Fugenreiniger	Fila Lithofin	
DECORS	Any kind of stain	Neutral, wax-free detergent	Use water and a neutral, wax-free detergent. DO NOT use alcohol, acids, solvents, abrasive detergents, steel wool or abrasive sponges.	Floor Cleaner Fila Cleaner Pflegereiniger HMK P15 Bonatitania Clean / Btitania Clean Belgres	Faberchimica Fila Lithofin HMK Bonasystems Italia Geal

ADHESIVES AND PROFILES ATTACHMENTS

ADHESIVES

As a general rule that applies for all building materials to be bonded in place with adhesive, there is no universal adhesive for installing laminated porcelain stoneware on all kinds of substrate.

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

- target environment (and environmental conditions at the time of installation);
- type of support;
- type of laminated porcelain stoneware;

- size of the slabs used.

In order to help designers, we have collected here below the indications from the major adhesive manufacturers according to the data described above. Please note that the information provided has been submitted by the manufacturers, who guarantee the indications given. For explanations or further information, contact the product manufacturers directly (references in the chapter "Useful contacts" page 62).

IT IS ESSENTIAL TO FOLLOW ALL THE INFORMATION, INSTRUCTIONS AND INDICATIONS GIVEN BY THE ADHESIVE MANUFACTURERS. THIS APPLIES IN PARTICULAR TO WAITING TIMES BEFORE A SURFACE IS "SET FOR LIGHT FOOT TRAFFIC", "READY FOR GROUTING" AND "READY TO USE" THAT ARE INDICATED IN THE FOLLOWING TABLES.

WALL INSTALLATION WITH ADHESIVE

For new buildings and renovation projects that require installation on pre-existing wall cladding

Environment	Substrate	Adhesive	Page
INTERIORS RESIDENTIAL AND COMMERCIAL any environment	6mm	Cement plaster, gypsum plaster, plasterboard, fibre cement panels	Page 42
	3plus	Concrete, old ceramic tiles, marble, stone	Page 44
	5plus	Particle board, metal	Page 45
	6plus	Cement plaster, gypsum plaster, plasterboard, fibre cement panels	Page 46
EXTERIORS RESIDENTIAL AND COMMERCIAL any environment	6mm	Concrete, old ceramic tiles, marble, stone	Page 48
	3plus	Particle board, metal	Page 49
	5plus	Plaster	Page 50
	6plus	Concrete	Page 51
	5plus	Plaster	Page 52
	6plus	Concrete	Page 53

FLOOR INSTALLATION WITH ADHESIVE

For new buildings and renovation projects that require installation on pre-existing floor coverings

Environment	Substrate	Adhesive	Page
INTERIORS RESIDENTIAL Kitchens, bathrooms, living rooms and any other residential environments.	6mm	Cement-based screeds, calcium sulphate-based or heated screeds, self-levelling products, concrete, old ceramic tiles, marble slabs, stone	Page 54
	3plus	Hardwood, PVC, rubber, linoleum, metal, resin	Page 56
	5plus		
	6plus		
INTERIORS LIGHT COMMERCIAL Offices, offices open to the general public, waiting rooms, shops, public bathrooms, common apartment block areas, restaurant dining rooms, car showrooms, bars, cinemas, surgeries/clinics, hotel rooms and bathrooms. In areas subjected to forced traffic, it is not advisable to use products with Glossy - Touch - Levigata (Lev) - Lux - P_polished finishes.	6mm	Cement-based screeds, calcium sulphate-based or heated screeds, self-levelling products, concrete, old ceramic tiles, marble slabs, stone	Page 54
	5plus	Hardwood, PVC, rubber, linoleum, metal, resin	Page 56
	6plus		
INTERIORS INTENSIVE COMMERCIAL Common areas of shopping centres, hotel foyers, canteens, fast food restaurants, dance clubs, hospitals, schools, museums, places of worship, airports, stations with the exception of areas subject to heavy concentrated loads (e.g. trolleys with hard wheels).	6mm	Cement-based screeds, calcium sulphate-based or heated screeds, self-levelling products, concrete, old ceramic tiles, marble slabs, stone	Page 54
	3plus	Hardwood, PVC, rubber, linoleum, metal, resin	Page 56
5plus			
EXTERIORS NOT SUITABLE FOR VEHICULAR PASSAGE	6mm	Cement-based screeds, calcium sulphate-based or heated screeds, self-levelling products, concrete, old ceramic tiles, marble slabs, stone	Page 54
	3plus	Hardwood, PVC, rubber, linoleum, metal, resin	Page 56
	5plus		
	6plus	Decoupling mats certified as suitable for this purpose by the manufacturer	Page 57

The Glossy - Touch - Levigata (Lev) - Lux - P_polished finishes are recommended, as well as for wall cladding, also for flooring in residential or light commercial areas that are not subjected to heavy traffic, where anti-slip characteristics are not required. The occasional presence of small inconsistencies or little spots on the surface is to be considered a characteristic of the material and of its unique production process.

If the product is laid in direct contact with external environments, it is recommended to use protective solutions to reduce the formation of scratches. Products with special finishes can have limitations depending on their area of application. Refer to specific collection catalogues.

HOW TO READ THE ATTACHMENT

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*) (****)	Primer, if necessary (*) (****)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
01	02	03	04	05	06	07	08	09	10	11

- 01_ The project supervisor must examine the conditions of the work site to choose between a normal setting or a quick setting adhesive.
- 02_ List of adhesive manufacturers.
- 03_ The size in cm of the slab is indicated according to the adhesive recommended by the manufacturer.
- 04_ List of adhesives recommended by manufacturers based on the intended use and size of slabs.
- 05_ List of primers to use before adhesive application, as indicated by manufacturers for each intended use.
- 06_ The mixing ratio refers to a single product unit (a bag, a can, etc.), in order to obtain the characteristics declared by manufacturers.
- 07_ The adhesive's class under the UNI EN 12004 standard is indicated (see Table below "About ADHESIVES").
- 08_ Indication of how many square metres one can install with a single product unit prepared with the indicated mixing ratio.
- 09_ Waiting times before treading on the surface to fill joints with grout.
- 10_ Waiting times before using the floor, i.e. before it can be subjected to static and/or dynamic loads.
- 11_ Installation method and features of the trowel to use for each adhesive.

ABOUT ADHESIVES

Adhesives are divided into THREE CLASSES, depending on their chemical composition, as established by the UNI EN 12004 standard:

CEMENTITIOUS (C): mixture of hydraulic binding agents, aggregates and organic additives (N.B.: to be mixed with water or liquid additive immediately before use)

REACTION RESIN (R): mixture of synthetic resin, mineral fillers and organic additives, which harden due to a chemical reaction (N.B.: these adhesives may have one or more components)

DISPERSION (D): mixture of binding and organic agents, namely polymers in aqueous dispersion, organic additives and mineral fillers (N.B.: ready-to-use mixtures)

Depending on their features, adhesives are thus classified:

Class 1: normal setting adhesives

Class 2: improved setting adhesives

There are three optional classes:

Class F: quick setting adhesives

Class T: slip resistant adhesives

Class E: adhesives with extended open time

There is a fourth additional class for cementitious adhesives only: adhesives can be classified as DEFORMABLE (S) and divided on the basis of test results under the UNI EN 12002 standard:

Class S1: deformable adhesives

Class S2: highly deformable adhesives

WALL INSTALLATION IN INTERIORS

6mm

Substrate: cement plaster, gypsum plaster, plasterboard, fibre cement panels.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	All sizes	KERAFLEX MAXI S1	COMPULSORY for gypsum-based, anhydride or absorbent surfaces: Primer G or ECOPRIM T	1 bag (25 kg) + 7/7.7 litres of water	C2 TE S1	7 m ²	8 hours	14 days	Installation with double-buttering
			ULTRALITE S1		1 bag (15 kg) + 8.4/8.7 litres of water	C2 TE S1				
			ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	6.3 m ²			
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	6.5 m ²			
	KERAKOLL	All sizes	H40 NO LIMITS	For gypsum-based surfaces: Primer A Eco	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water White 1 bag (25 kg) from 7.2 to 9.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
	LATICRETE	All sizes	254 BAR	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	14 days	
	LITOKOL	Up to 50x100	SUPERFLEX K77	For gypsum-based surfaces: Primer C or Primer X94	1 bag (20 kg) + 6.4 litres of water	C2 TE S1	5.5 m ²	1 day	7 days	
			POWERFLEX K50		1 bag (20 kg) + 5.8 litres of water		5 m ²			
		All sizes	HyperFLEX K100		1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²			
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 litres of water	C2 TE S1	7.1 m ²	12 hours	3 days	
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Evo	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6.7/8 litres of water	C2 TE S1	6 m ²	8 hours	14 days		
		WEBER.COL ProGres Top S1								
		WEBER.COL UltraGres 400								
		WEBER.COL UltraGres Light							1 bag (15 kg) + 7.8 litres of water	
ARDEX	All sizes	ARDEX X 77 Microtec	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 11 litres of water	C2 T(T) E(E) S1	10 m ²	8 hours	1 day	Installation with single-buttering (6 mm trowel)	

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN INTERIORS

6mm

Substrate: cement plaster, gypsum plaster, plasterboard, fibre cement panels.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	All sizes	KERAQUICK MAXI S1	COMPULSORY for gypsum-based, anhydride or absorbent surfaces: Primer G or ECOPRIM T	Grey 1 bag (25 kg) + 5.5/6 litres of water	C2 FTE S1	6.3 m ²	3 hours	3 days	Installation with double-buttering
			ULTRALITE S1 QUICK		1 bag (45 kg) + 5.1/5.7 litres of water		6 m ²			
			ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 FE S2	6 m ²			
			ELASTORAPID		Component A: 1 bag (25 kg) Component B: tub (5.5 kg)					
	KERAKOLL	All sizes	H40 REVOLUTION	For gypsum-based surfaces: Primer A Eco	Grey 1 bag (25 kg) from 6 to 7 litres of water White 1 bag (25 kg) from 6 to 7.3 litres of water	C2F TE	6 m ²	2 hours	1 day	
	LATICRETE	All sizes	325 RAPID FL	For gypsum-based surfaces: Primer Plus	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
	LITOKOL	Up to 50x100	LITOSTONE K99 + LATEXKOL + water	For gypsum-based surfaces: Primer C or Primer X94	1 bag (20 kg) + 3 litres of LATEXKOL + 3 litres of water	C2 FE S1	5 m ²	6 hours	1 day	
			LITOSTONE K99 + LATEXKOL		1 bag (20 kg) + 6 litres of LATEXKOL					
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 litres of water	C2 FT S1	6.5 m ²	3 hours	1 day	
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL PRO UltraGres Fast	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6/6.2 litres of WEBER LS0	C2 FTE S1	6 m ²	3 hours	1 day	
ARDEX	All sizes	ARDEX X 77 S microtec	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 8.5 litres of water	C2 FT(T) E S1	10 m ²	90 min.	6 hours	Installation with single-buttering (6 mm trowel)	

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

Attachment A.1b

WALL INSTALLATION IN INTERIORS

6mm

Substrate: concrete, old ceramic tiles, marble, stone.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (***)	Installation (*)		
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	All sizes	ULTRALITE S1	Not necessary, according to manufacturer	1 bag (15 kg) + 8.4/8.7 litres of water	C2TES1	7 m ²	8 hours	14 days	Installation with double-buttering		
			KERAFLEX MAXI S1		1 bag (25 kg) + 7.2/7.7 litres of water	C2TES1						
	KERAKOLL	All sizes	H40 NO LIMITS	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days			
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water							
	LATICRETE	All sizes	254 BAR	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days			
	LITOKOL	Up to 50x100	SUPERFLEX K77	For old ceramic tiles, marble slabs and stone: Prepare EVO Base	1 bag (20 kg) + 6.4 litres of water	C2 TE S1	5.5 m ²	1 day	7 days			
			POWERFLEX K50		1 bag (20 kg) + 5.8 litres of water							
	LITOKOL	All sizes	HyperFLEX K100	For old ceramic tiles, marble slabs and stone, or alternatively: - ARDEX P 4 - ARDEX X 77 (rough levelled)	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²	1 day	7 days			
			ARDEX		All sizes	ARDEX X 77 Microtec	1 bag (25 kg) + 11 litres of water				C2 T(T) E(E) S1	10 m ²
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 litres of water	C2 TE S1	7.1 m ²	12 hours	3 days			
SAINT-GOBAIN / WEBER					All sizes	WEBER.COL UltraGres Top S1	For old ceramic tiles, marble slabs and stone: WEBER. FLOOR 4716 Primer	1 bag (25 kg) + 6.7/8 litres of water	C2 TE S1	6 m ²	8 hours	14 days
						WEBER.COL UltraGres Evo						
						WEBER.COL UltraGres 400						
WEBER.COL UltraGres Light	1 bag (15 kg) + 7.8 litres of water											
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	All sizes	KERAQUICK MAXI S1	Not necessary, according to manufacturer	Grey 1 bag (25 kg) + 5.5/6 litres of water	C2 FTE S1	6.3 m ²	3 hours	3 days	Installation with double-buttering		
			ULTRALITE S1 QUICK		1 bag (45 kg) + 5.1/5.7 litres of water		6 m ²					
	KERAKOLL	All sizes	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day			
					White 1 bag (25 kg) from 6 to 7.3 litres of water							
	LATICRETE	All sizes	325 RAPID FL	Not necessary, according to manufacturer	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days			
	LITOKOL	Up to 50x100	LITOSTONE K99 + LATEXKOL + water	For old ceramic tiles, marble slabs and stone: Prepare EVO Base	1 bag (20 kg) + 3 litres of water	C2 FE S1	5 m ²	6 hours	1 day			
			LITOSTONE K99 + LATEXKOL		1 bag (20 kg) + 6 litres of LATEXKOL						C2 FE S2	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 litres of water	C2 FT S1	6.5 m ²	3 hours	1 day			
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	For old ceramic tiles, marble slabs and stone: WEBER. FLOOR 4716 Primer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day			
	ARDEX	All sizes	ARDEX X 77 S microtec	For old ceramic tiles, marble slabs and stone, or alternatively: - ARDEX P 4 - ARDEX X 77 (rough levelled)	1 bag (25 kg) + 8.5 litres of water	C2 FT(T) E S1	10 m ²	90 min.	6 hours		Installation with single-buttering (6 mm trowel)	

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

Attachment A.1c

WALL INSTALLATION IN INTERIORS

6mm

Substrate: particle board, metal.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (***)	Installation (*)	
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	All sizes	ULTRABOND ECO PU 2K	Not necessary, according to manufacturer	1 can (10 kg)	R2T	3 m ²	12 hours	7 days	Installation with double-buttering	
			KERALASTIK		1 can (10 kg)	R2					
			KERALASTIC T		1 can (10 kg)	R2T					
	KERAKOLL	All sizes	H40 NO LIMITS	KERAGRIP ECO	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days		
			White 1 bag (25 kg) from 7.2 to 9.5 litres of water								
	LATICRETE	All sizes	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours		
			LATALASTIK		Not necessary, according to manufacturer						1 bucket of component A (5 kg) 1 bucket of component B (2 kg)
	LITOKOL	All sizes	LITOELASTIC EVO	Not necessary, according to manufacturer		1 bucket (10 kg)	R2T	4.5 m ²	1 day		5 days
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 litres of water	C2 TE S1	7.1 m ²	12 hours	3 days		
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL FIX CR	Not necessary, according to manufacturer	1 bucket (10 kg)	R2T	3 m ²	12 hours	2 days		
ARDEX	All sizes	ARDEX X 77 microtec	ARDEX P 82	1 bag (25 kg) + 11 litres of water	C2 T(T) E(E) S1	10 m ²	8 hours	1 day	Installation with single-buttering (6 mm trowel)		
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	All sizes	KERAQUICK + LATEX PLUS	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 kg of LATEX PLUS	C2 FT S2	7 m ²	12 hours	7 days	Installation with double-buttering	
			KERAKOLL		All sizes	H40 REVOLUTION	KERAGRIP ECO	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE		6 m ²
	White 1 bag (25 kg) from 6 to 7.3 litres of water										
	LATICRETE	All sizes	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours		
			LATALASTIK		Not necessary, according to manufacturer						1 bucket of component A (5 kg) 1 bucket of component B (2 kg)
	LITOKOL	All sizes	LITOELASTIC	Not necessary, according to manufacturer		1 bucket (10 kg)	R2T	3 m ²	12 hours		5 days
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 litres of water	C2 FT S1	6.5 m ²	3 hours	1 day		
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL FIX CR	Not necessary, according to manufacturer	1 bucket (10 kg)	R2T	3 m ²	12 hours	2 days		
	ARDEX	All sizes	ARDEX X 77 S microtec	ARDEX P 82	1 bag (25 kg) + 8.5 litres of water	C2 FT(T) E S1	10 m ²	90 min.	6 hours		Installation with single-buttering (6 mm trowel)

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN INTERIORS

3plus 5plus 6plus

Substrate: cement plaster, gypsum plaster, plasterboard, fibre cement panels.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	Up to 120x120	KERAFLEX MAXI S1	COMPULSORY for gypsum-based, anhydride or absorbent surfaces: Primer G	1 bag (25 kg) + 7.2/7.7 litres of water	C2 TE S1	7 m ²	8 hours	14 days	Installation with double-buttering
			ULTRALITE S1		1 bag (15 kg) + 8.4/8.7 litres of water	C2 TE S1				
		100x300; 120x260	ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	6.3 m ²			
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	6.5 m ²			
	KERAKOLL	All sizes	H40 NO LIMITS	For gypsum-based surfaces: Primer A Eco	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water					
			H40 EXTREME	For gypsum-based surfaces: SLC ECO EP 21	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours	
	LATICRETE	All sizes	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
	LITOKOL	Up to 50x100	SUPERFLEX K77	For gypsum-based, anhydride or absorbent surfaces: Primer C or Primer X94	1 bag (20 kg) + 6.4 litres of water	C2 TE S1	5.5 m ²	1 day	7 days	
			POWERFLEX K50		1 bag (20 kg) + 5.8 litres of water		5 m ²			
		All sizes	HyperFLEX K100		1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²			
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.4 to 6 litres of water	C2 TE S2	5.6 m ²	12 hours	3 days	
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Evo	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6.7/8 litres of water	C2 TE S1	6 m ²	8 hours	14 days		
		WEBER.COL UltraGres 400								
		WEBER.COL ProGres Top S1								
		WEBER.COL UltraGres Light		1 bag (15 kg) + 7.8 litres of water						
ARDEX	All sizes	ARDEX X 77 microtec + ARDEX E 90	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 1 can of ARDEX E 90 (4.5 kg) + 9 litres of water	C2 T(T) E(E) S2	10 m ²	8 hours	1 day	Installation with single-buttering (6 mm trowel)	

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN INTERIORS

3plus 5plus 6plus

Substrate: cement plaster, gypsum plaster, plasterboard, fibre cement panels.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	Up to 120x120	KERAQUICK MAXI S1	COMPULSORY for gypsum-based, anhydride or absorbent surfaces: Primer G	Grey 1 bag (25 kg) + 5.5/6 litres of water	C2 F S1	6 m ²	3 hours	3 days	Installation with double-buttering
			ULTRALITE S1 QUICK		1 bag (15 kg) + 5.1/5.7 litres of water	C2 FTE S1				
		100x300; 120x260	ULTRALITE S2 QUICK		Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2 FE S2	7 m ²			
			ELASTORAPID			C2 FTE S2	6 m ²			
	KERAKOLL	All sizes	H40 REVOLUTION	For gypsum-based surfaces: Primer A ECO	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
					White 1 bag (25 kg) from 6 to 7.3 litres of water					
			H40 EXTREME	For gypsum-based surfaces: SLC ECO EP 21	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours	
	LATICRETE	All sizes	325 RAPID FL	For gypsum-based surfaces: Primer Plus	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
	LITOKOL	Up to 50x100	LITOSTONE K99 + LATEXKOL + water	For gypsum-based, anhydride or absorbent surfaces: Primer C or Primer X94	1 bag (20 kg) + 3 litres of LATEXKOL + 3 litres of water	C2 FE S1	5 m ²	6 hours	1 day	
			All sizes		LITOSTONE K99 + LATEXKOL					
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 litres of water	C2 FT S2	5 m ²	5 hours	1 day	
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	For gypsum-based surfaces: WEBER.PRIM PF15	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day	
ARDEX	All sizes	ARDEX X 77 S microtec + ARDEX E 90	For gypsum-based surfaces: ARDEX P 51	1 bag (25 kg) + 3 kg of ARDEX E 90 + 7.5 litres of water	C2 FT(T) E S2	10 m ²	90 min.	6 hours	Installation with single-buttering (6 mm trowel)	

(*) Instructions provided directly by manufacturers, who guarantee the information given.
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 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

Attachment A.2b

WALL INSTALLATION IN INTERIORS

3plus 5plus 6plus

Substrate: concrete, old ceramic tiles, marble, stone.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (**)	Mixing ratio (***)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (****)	Ready for use (****)	Installation (*)
 For situations in which a normal setting adhesive is recommended	MAPEI	Up to 120x120	KERAFLEX MAXI S1	If levelling is necessary, on the mentioned supports, apply ECOPRIM GRIP beforehand	1 bag (25 kg) + 7.2/7.7 litres of water	C2 TE S1	7 m ²	8 hours	14 days	Installation with double-buttering
			ULTRALITE S1		1 bag (15 kg) + 8.4/8.7 litres of water	C2 TE S1				
		100x300; 120x260	ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	6.3 m ²			
	KERAKOLL	All sizes	H40 NO LIMITS	KERAGRIP ECO	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
			H40 EXTREME		Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	
	LATICRETE	All sizes	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
	LITOKOL	All sizes	HYPERFLEX K100	For old ceramic tiles, marble slabs and stone: Prepare EVO Base	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²	1 day	7 days	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.4 to 6 litres of water	C2 TE S2	5.6 m ²	12 hours	3 days	
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Top	For old ceramic tiles, marble slabs and stone: WEBER.FLOOR 4716 Primer	1 bag (15 kg) + 6.7/8 litres of water	C2 TE S1	6 m ²	8 hours	14 days	
			WEBER.COL UltraGres Evo		1 bag (15 kg) + 7.8 litres of water					
ARDEX	All sizes	ARDEX X 77 microtec + ARDEX E 90	For old ceramic tiles, marble slabs and stone, or alternatively: - ARDEX P 4 - ARDEX X 77 (rough levelled)	1 bag (25 kg) + 1 can of ARDEX E 90 (4.5 kg) + 9 litres of water	C2 T(T) E(E) S2	10 m ²	8 hours	1 day	Installation with single-buttering (6 mm trowel)	
 For situations in which a quick setting adhesive is recommended	MAPEI	Up to 120x120	KERAQUICK MAXI S1	If levelling is necessary, on the mentioned supports, apply ECOPRIM GRIP beforehand	Grey 1 bag (25 kg) + 5.5/6 litres of water	C2 FT S1	6 m ²	3 hours	1 day	Installation with double-buttering
			ULTRALITE S1 QUICK		1 bag (15 kg) + 5.1/5.7 litres of water	C2 FE S2				
		100x300; 120x260	ULTRALITE S2 QUICK		Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2 FTE S2	6 m ²			
	KERAKOLL	All sizes	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
			H40 EXTREME		White 1 bag (25 kg) from 6 to 7.3 litres of water	R2	4 m ²	4 hours	12 hours	
	LATICRETE	All sizes	325 RAPID FL	Not necessary, according to manufacturer	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
	LITOKOL	All sizes	LITOSTONE K99 + LATEXKOL	For old ceramic tiles, marble slabs and stone: Prepare EVO Base	1 bag (25 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 litres of water	C2 FT S2	5 m ²	5 hours	1 day	
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	For old ceramic tiles, marble slabs and stone: WEBER.FLOOR 4716 Primer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day	
	ARDEX	All sizes	ARDEX X 77 S microtec + ARDEX E 90	For old ceramic tiles, marble slabs and stone, or alternatively: - ARDEX P 4 - ARDEX X 77 (rough levelled)	1 bag (25 kg) + 3 kg of ARDEX E 90 + 7.5 litres of water	C2 FT(T) E S2	10 m ²	90 min.	6 hours	

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 (**) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%.
 In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

Attachment A.2c

WALL INSTALLATION IN INTERIORS

3plus 5plus 6plus

Substrate: particle board, metal.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (**)	Mixing ratio (***)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (****)	Ready for use (****)	Installation (*)
 For situations in which a normal setting adhesive is recommended	MAPEI	All sizes	ULTRABOND ECO PU 2K	Not necessary, according to manufacturer	1 can (10 kg)	R2T	3 m ²	12 hours	7 days	Installation with single-buttering (6 mm trowel)
			KERALASTIK			R2				
			KERALASTIC T			R2T				
	KERAKOLL	All sizes	H40 NO LIMITS	KERAGRIP ECO	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water					
	KERAKOLL	All sizes	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours	
					LATICRETE	All sizes	LATALASTIK	Not necessary, according to manufacturer	1 bucket of component A (5 kg) 1 bucket of component B (2 kg)	
	LITOKOL	All sizes	LITOELASTIC EVO	Not necessary, according to manufacturer	1 bucket (10 kg)	R2T	4.5 m ²	1 day	5 days	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.4 to 6 litres of water	C2 TE S2	5.6 m ²	12 hours	3 days	
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL.FIX CR	Not necessary, according to manufacturer	1 bucket (10 kg)	R2 T	3 m ²	12 hours	2 days	
ARDEX	All sizes	ARDEX X 77 microtec + ARDEX E 90	Not necessary, according to manufacturer	1 bag (25 kg) + 1 can of ARDEX E 90 (4.5 kg) + 9 litres of water	C2 T(T) E(E) S2	10 m ²	8 hours	1 day	Installation with single-buttering (6 mm trowel)	
 For situations in which a quick setting adhesive is recommended	MAPEI	All sizes	KERAQUICK MAXI S1 + LATEX PLUS	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 kg of LATEX PLUS	C2 FT S2	7 m ²	12 hours	7 days	Installation with single-buttering (6 mm trowel)
	KERAKOLL	All sizes	H40 REVOLUTION	KERAGRIP ECO	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
					White 1 bag (25 kg) from 6 to 7.3 litres of water					
	KERAKOLL	All sizes	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours	
					LATICRETE	All sizes	LATALASTIK	Not necessary, according to manufacturer	1 bucket of component A (5 kg) 1 bucket of component B (2 kg)	R2T
	LITOKOL	All sizes	LITOELASTIC	Not necessary, according to manufacturer	1 bucket (10 kg)	R2T	3 m ²	12 hours	5 days	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 litres of water	C2 FT S2	5 m ²	5 hours	1 day	
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL.FIX CR	Not necessary, according to manufacturer	1 bucket (10 kg)	R2 T	3 m ²	12 hours	2 days	
	ARDEX	All sizes	ARDEX X 77 S microtec + ARDEX E 90	Not necessary, according to manufacturer	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 litres of water	C2 F(F)T E S2	10 m ²	90 min.	6 hours	Installation with single-buttering (6 mm trowel)

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 (**) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%.
 In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN EXTERIORS

6mm

Substrate: plaster.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (**)	Mixing ratio (***)	Class (iv)	Nominal yield (v)	Set for light foot traffic and ready for grouting times (vi)	Ready for use (vii)	Installation (viii)
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	All sizes	ULTRALITE S2	Not necessary, according to manufacturer	1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	6.3 m ²	8 hours	14 days	Installation with double-buttering
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	6.5 m ²			
	KERAKOLL	Up to 100x100	H40 NO LIMITS	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
			White 1 bag (25 kg) from 7.2 to 9.5 litres of water							
	LATICRETE	Up to 100x100	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
	LITOKOL	All sizes	HYPERFLEX K100	Not necessary, according to manufacturer	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²	1 day	7 days	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 litres of water	C2 TE S1	7.1 m ²	12 hours	3 days	
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (20 kg) + 6.4/6.8 litres of water	C2 TE S2	6 m ²	8 hours	14 days		
ARDEX	Up to 100x100	ARDEX X 77 microtec	Not necessary, according to manufacturer	1 bag (25 kg) + 11 litres of water	C2 T(T) E(E) S1	10 m ²	8 hours	1 day		
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	All sizes	ELASTORAPID	Not necessary, according to manufacturer	Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2 FTE S2	6 m ²	3 hours	1 day	Installation with double-buttering
			ULTRALITE S2 QUICK		1 bag (15 kg) + 5.1/5.7 litres of water	C2 FE S2	7 m ²			
	KERAKOLL	Up to 100x100	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
			White 1 bag (25 kg) from 6 to 7.3 litres of water							
	LATICRETE	Up to 100x100	325 RAPID FL	Not necessary, according to manufacturer	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
	LITOKOL	All sizes	LITOSTONE K99 + LATEXKOL	Not necessary, according to manufacturer	1 bag (20 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 litres of water	C2 FT S1	6.5 m ²	3 hours	1 day	
	SAINT-GOBAIN / WEBER	Up to 100x100	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day	
Above 100x100		WEBER.COL UltraGres Fast + WEBER L50	1 bag (25 kg) + 6/6.2 litres of WEBER L50							
ARDEX	Up to 100x100	ARDEX X 77 S microtec	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 litres of water	C2 FT(T) E S1	10 m ²	90 min.	6 hours		

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 (**) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
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 (****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN EXTERIORS

6mm

Substrate: concrete.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (**)	Mixing ratio (***)	Class (iv)	Nominal yield (v)	Set for light foot traffic and ready for grouting times (vi)	Ready for use (vii)	Installation (viii)
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	All sizes	ULTRALITE S2	Not necessary, according to manufacturer	1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	6.3 m ²	8 hours	14 days	Installation with double-buttering
			KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	6.5 m ²			
	KERAKOLL	Up to 100x100	H40 NO LIMITS	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
			White 1 bag (25 kg) from 7.2 to 9.5 litres of water							
	LATICRETE	All sizes	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
	LITOKOL	All sizes	HYPERFLEX K100	Not necessary, according to manufacturer	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²	1 day	7 days	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 7.4 litres of water	C2 TE S1	7.1 m ²	12 hours	3 days	
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (25 kg) + 6.4/6.8 litres of water	C2 TE S2	6 m ²	8 hours	14 days		
ARDEX	Up to 100x100	ARDEX X 77 microtec	Not necessary, according to manufacturer	1 bag (25 kg) + 11 litres of water	C2 T(T) E(E) S1	10 m ²	8 hours	1 day		
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	All sizes	ELASTORAPID	Not necessary, according to manufacturer	Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2 FTE S2	6 m ²	3 hours	1 day	Installation with double-buttering
			ULTRALITE S2 QUICK		1 bag (15 kg) + 5.1/5.7 litres of water	C2 FE S2	7 m ²			
	KERAKOLL	Up to 100x100	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
			White 1 bag (25 kg) from 6 to 7.3 litres of water							
	LATICRETE	All sizes	325 RAPID FL	Not necessary, according to manufacturer	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
	LITOKOL	All sizes	LITOSTONE K99 + LATEXKOL	Not necessary, according to manufacturer	1 bag (20 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S1 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.2 litres of water	C2 FT S1	6.5 m ²	3 hours	1 day	
	SAINT-GOBAIN / WEBER	Up to 100x100	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day	
Above 100x100		WEBER.COL UltraGres Fast + WEBER L50	1 bag (25 kg) + 6/6.2 litres of WEBER L50							
ARDEX	Up to 100x100	ARDEX X 77 S microtec	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 litres of water	C2 FT(T) E S1	10 m ²	90 min.	6 hours		

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 (**) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
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 (****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN EXTERIORS

3plus 5plus 6plus

Substrate: plaster.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
 For situations in which a normal setting adhesive is recommended	MAPEI	Up to 120x120	KERABOND + ISOLASTIC	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	5 m ²	8 hours	14 days	Installation with double-buttering
			ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	3 m ²			
		120x260; 100x300	ULTRABOND ECO PU 2K		1 can (10 kg)	R2T	2.5 m ²	12 hours	7 days	
			KERALASTIK KERALASTIC T			R2				
	KERAKOLL	All sizes	H40 NO LIMITS	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water					
	LATICRETE	All sizes	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
					H40 EXTREME					
	LITOKOL	Up to 50x100	HYPERFLEX K100	Not necessary, according to manufacturer	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²	1 day	7 days	
			All sizes		LITOELASTIC EVO					
PCI - BASF	All sizes	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.4 to 6 litres of water	C2 TE S2	5.6 m ²	12 hours	3 days		
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (20 kg) + 6.4/6.8 litres of water	C2 TE S2	6 m ²	8 hours	14 days		
ARDEX	All sizes	ARDEX X 77 microtec + ARDEX E 90	Not necessary, according to manufacturer	1 bag (25 kg) + 1 can of ARDEX E 90 (4.5 kg) + 9 litres of water	C2 T(T) E(E) S2	10 m ²	8 hours	1 day		
 For situations in which a quick setting adhesive is recommended	MAPEI	Up to 120x120	ULTRALITE S2 QUICK	Not necessary, according to manufacturer	1 bag (15 kg) + 6 litres of water	C2 FE S2	4 m ²	3 hours	2 days	
			ELASTORAPID		Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2FTE S2				1 day
	KERAKOLL	All sizes	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
					White 1 bag (25 kg) from 6 to 7.3 litres of water					
	LATICRETE	All sizes	325 RAPID FL	Not necessary, according to manufacturer	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
					H40 EXTREME					R2
	LITOKOL	Up to 50x100	LITOSTONE K99 + LATEXKOL	Not necessary, according to manufacturer	1 bag (20 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day	
			All sizes		LITOELASTIC EVO					1 bucket (10 kg)
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 litres of water	C2 FT S2	5 m ²	5 hours	1 day	
	SAINT-GOBAIN / WEBER	Up to 100x100	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day	
Above 100x100			WEBER.COL UltraGres Fast + WEBER L50		1 bag (25 kg) + 6/6.2 litres of WEBER L50					
ARDEX	All sizes	ARDEX X 77 S microtec + ARDEX E 90	Not necessary, according to manufacturer	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 litres of water	C2 FT(T) E S2	10 m ²	90 min.	6 hours		

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%.
 In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***** Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

WALL INSTALLATION IN EXTERIORS

3plus 5plus 6plus

Substrate: concrete.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (****)	Installation (*)
 For situations in which a normal setting adhesive is recommended	MAPEI	Up to 120x120	KERABOND + ISOLASTIC	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	5 m ²	8 hours	14 days	Installation with double-buttering
			ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2	3 m ²			
		120x260; 100x300	ULTRABOND ECO PU 2K		1 can (10 kg)	R2T	2.5 m ²	12 hours	7 days	
			KERALASTIK KERALASTIC T			R2				
	KERAKOLL	All sizes	H40 NO LIMITS	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water					
	LATICRETE	All sizes	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
					H40 EXTREME					
	LITOKOL	Up to 50x100	HYPERFLEX K100	Not necessary, according to manufacturer	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S2	5.5 m ²	1 day	7 days	
			All sizes		LITOELASTIC EVO					
PCI - BASF	All sizes	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.4 to 6 litres of water	C2 TE S2	5.6 m ²	12 hours	3 days		
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (20 kg) + 6.4/6.8 litres of water	C2 TE S2	6 m ²	8 hours	14 days		
ARDEX	All sizes	ARDEX X 77 microtec + ARDEX E 90	Not necessary, according to manufacturer	1 bag (25 kg) + 1 can of ARDEX E 90 (4.5 kg) + 9 litres of water	C2 T(T) E(E) S2	10 m ²	8 hours	1 day		
 For situations in which a quick setting adhesive is recommended	MAPEI	Up to 120x120	ULTRALITE S2 QUICK	Not necessary, according to manufacturer	1 bag (15 kg) + 6 litres of water	C2 FE S2	4 m ²	3 hours	2 days	
			ELASTORAPID		Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2 FTE S2				1 day
	KERAKOLL	All sizes	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2 FTE	6 m ²	2 hours	1 day	
					White 1 bag (25 kg) from 6 to 7.3 litres of water					
	LATICRETE	All sizes	325 RAPID FL	Not necessary, according to manufacturer	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
					H40 EXTREME					R2
	LITOKOL	Up to 50x100	LITOSTONE K99 + LATEXKOL	Not necessary, according to manufacturer	1 bag (20 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day	
			All sizes		LITOELASTIC EVO					1 bucket (10 kg)
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 litres of water	C2 FT S2	5 m ²	5 hours	1 day	
	SAINT-GOBAIN / WEBER	Up to 100x100	WEBER.COL UltraGres Fast	Not necessary, according to manufacturer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day	
Above 100x100			WEBER.COL UltraGres Fast + WEBER L50		1 bag (25 kg) + 6/6.2 litres of WEBER L50					
ARDEX	All sizes	ARDEX X 77 S microtec + ARDEX E 90	Not necessary, according to manufacturer	1 bag (25 kg) + 3 kg ARDEX E 90 + 7.5 litres of water	C2 FT(T) E S2	10 m ²	90 min.	6 hours		

(*) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and a "grey" versions, the mixing ratio may vary.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%.
 In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***** Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

FLOOR INSTALLATION IN INTERIORS/EXTERIORS(*)

6mm 3plus 5plus 6plus

Substrate: cement-based screeds, calcium sulphate-based or heated screeds, self-levelling products, concrete, old ceramic tiles, marble slabs, stone.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (***)	Installation (*)
 For situations in which a normal setting adhesive is recommended	MAPEI	Up to 120x120	KERAFLEX MAXI S1	COMPULSORY for gypsum-based, anhydride or absorbent surfaces: Primer G	1 bag (25 kg) + 7.2/7.7 litres of water	C2 TE S1	3.5 m ²	8 hours	14 days	Installation with double-buttering
			ULTRALITE S1		1 bag (15 kg) + 8.4/8.7 litres of water	C2 TE S1				
		120x260; 100x300	KERABOND + ISOLASTIC		1 bag (25 kg) + 8.5 kg of ISOLASTIC	C2 E S2	3.5 m ²			
			ULTRALITE S2		1 bag (15 kg) + 5.9/6.2 litres of water	C2 E S2				
	KERAKOLL	All sizes	H40 NO LIMITS	For gypsum-based surfaces: Primer A ECO	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water					
			H40 EXTREME	For gypsum-based surfaces: SLC ECO EP 21	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours	
	LATICRETE	All sizes	254 PLATINUM	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of water	C2 TE S1	5 m ²	1 day	7 days	
	LITOKOL	All sizes	HYPERFLEX K100	For gypsum-based or self-levelling surfaces: Prepare EVO Base	1 bag (20 kg) + 6/6.4 litres of water	C2 TE S1	5 m ²	1 day	7 days	
						C2 TE S2	5.5 m ²			
PCI - BASF	All sizes	PCI FLEXMOERTEL S2	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 5.4 to 6 litres of water	C2 TE S2	5.6 m ²	12 hours	3 days		
SAINT-GOBAIN / WEBER	All sizes		For gypsum-based surfaces: WEBER PRIM PF15. For old ceramic tiles, marble slabs and stone: WEBER.FLOOR 4716 Primer	1 bag (25 kg) + 6.7/8 litres of water	C2TES1	6 m ²	8 hours	14 days		
									WEBER.COL ProGres Top S1	
									WEBER.COL UltraGres Evo	
									WEBER.COL UltraGres 400	
		WEBER.COL UltraGres Light	1 bag (25 kg) + 6.7/7 litres of water	WEBER L50						
ARDEX	All sizes	ARDEX X S 28 New Microtec	For gypsum- and anhydride-based, absorbent or polished surfaces: ARDEX P 51	1 bag (25 kg) + 7.5 to 9 litres of water	C2 FTE S1	6 m ²	4 hours	1 day	Installation with single-buttering (trowel with 12 mm tilted teeth or ARDEX Microtec trowel)	

(*) Upon condition that surfaces are sheltered (e.g. loggias, covered balconies, etc.) and made totally impervious. The use of sizes that are not larger than 120x120 cm is recommended.
 (**) Instructions provided directly by manufacturers, who guarantee the information given.
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

FLOOR INSTALLATION IN INTERIORS/EXTERIORS(*)

6mm 3plus 5plus 6plus

Substrate: cement-based screeds, calcium sulphate-based or heated screeds, self-levelling products, concrete, old ceramic tiles, marble slabs, stone.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (***)	Ready for use (***)	Installation (*)
 For situations in which a quick setting adhesive is recommended	MAPEI	Up to 50x100	KERAQUICK MAXI S1	COMPULSORY for gypsum-based, anhydride or absorbent surfaces: Primer G	Grey 1 bag (25 kg) + 5.5/6 litres of water	C2 FT S1	4 m ²	3 hours	3 days	Installation with double-buttering
			ULTRALITE S1 QUICK		1 bag (15 kg) + 5.1/5.7 litres of water	C2 FTE S1	3.5 m ²			
		Above 50x100	ULTRALITE S2 QUICK		1 bag (15 kg) + 5.1/5.7 litres of water	C2 FE S2	4 m ²			
			ELASTORAPID		Component A: 1 bag (25 kg) Component B: tub (6.5 kg)	C2 FTE S2				
	KERAKOLL	All sizes	H40 REVOLUTION	For gypsum-based or anhydride surfaces: Primer A Eco	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	
					White 1 bag (25 kg) from 6 to 7.3 litres of water					
			H40 EXTREME	For gypsum-based or anhydride surfaces: SLC ECO EP 21	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours	
	LATICRETE	All sizes	325 RAPID FL	For gypsum-based surfaces: Primer Plus	1 bag (25 kg) + 6/7 litres of latex	C2 TE F	5 m ²	6 hours	2 days	
	LITOKOL	All sizes	LITOSTONE K99 + LATEXKOL	For gypsum-based or self-levelling surfaces: Prepare EVO Base	1 bag (20 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day	
	PCI - BASF	All sizes	PCI FLEXMOERTEL S2 RAPID	For gypsum-based surfaces: PCI GISOGRUND	1 bag (20 kg) + 3.8 litres of water	C2 FT S2	5 m ²	5 hours	1 day	
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL UltraGres Fast	For gypsum-based surfaces: WEBER PRIM PF15. For old ceramic tiles, marble slabs and stone: WEBER.FLOOR 4716 Primer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day		
ARDEX	All sizes	ARDEX X 78 S microtec + ARDEX E 90	For gypsum and anhydride-based, absorbent or polished surfaces: ARDEX P 51	1 bag (25 kg) + 3 kg ARDEX E 90 + 7 litres of water	C2 FE S2	6 m ²	90 min.	6 hours	Installation with single-buttering (trowel with 10 mm tilted teeth or ARDEX Microtec trowel)	

(*) Upon condition that surfaces are sheltered (e.g. loggias, covered balconies, etc.) and made totally impervious. The use of sizes that are not larger than 120x120 cm is recommended.
 (**) Instructions provided directly by manufacturers, who guarantee the information given.
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

Attachment A.5b

FLOOR INSTALLATION IN INTERIORS/EXTERIORS(*)

6mm 3plus 5plus 6plus

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

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (**)	Ready for use (**)	Installation (*)	
 <p>For situations in which a normal setting adhesive is recommended</p>	MAPEI	All sizes	ULTRABOND ECO PU 2K KERALASTIK KERALASTIC T	Not necessary, according to manufacturer	1 can (10 kg)	R2T R2 R2T	2.5 m ²	12 hours	7 days	Installation with double-buttering	
	KERAKOLL	All sizes in interiors	H40 NO LIMITS	KERAGRIP ECO	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water White 1 bag (25 kg) from 7.2 to 9.5 litres of water	C2 TE	6 m ²	20 hours	3 days		
		All sizes	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours		
	LATICRETE	All sizes	LATALASTIK	Not necessary, according to manufacturer	1 bucket of component A (5 kg) 1 bucket of component B (2 kg)	R2T	3 m ²	1 day	5 days		
	LITOKOL	All sizes	LITOELASTIC EVO	Not necessary, according to manufacturer	1 bucket (10 kg)	R2T	4.5 m ²	1 day	5 days		
	PCI - BASF	All sizes	PCI COLLASTIC	Not necessary, according to manufacturer	3 kg bucket (A+B)	R2T	1.5 m ²	12 hours	1 day		Installation with single-buttering (trowel with 10 mm tilted teeth)
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL. FIX CR	Not necessary, according to manufacturer	1 bucket (10 kg)	R2 T	3 m ²	12 hours	2 days		Installation with double-buttering
ARDEX	All sizes	ARDEX X S 28 New Microtec	ARDEX P 82	1 bag (25 kg) + 7.5 to 9 litres of water	C2 FTE S1	6 m ²	4 hours	1 day	Installation with single-buttering (trowel with 12 mm tilted teeth or ARDEX Microtec trowel)		
 <p>For situations in which a quick setting adhesive is recommended</p>	MAPEI	All sizes	KERAQUICK MAXI S1 + LATEX PLUS	Not necessary, according to manufacturer	1 bag (25 kg) + 8.5 kg of LATEX PLUS	C2 FT S2	2.5 m ²	12 hours	7 days	Installation with double-buttering	
	KERAKOLL	All sizes in interiors	H40 REVOLUTION	KERAGRIP ECO	Grey 1 bag (25 kg) from 6 to 7 litres of water White 1 bag (25 kg) from 6 to 7.3 litres of water	C2F TE	6 m ²	2 hours	1 day		
		All sizes	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours		
	LATICRETE	All sizes	LATALASTIK	Not necessary, according to manufacturer	1 bucket of component A (5 kg) 1 bucket of component B (2 kg)	R2T	3 m ²	1 day	5 days		
	LITOKOL	All sizes	LITOELASTIC	Not necessary, according to manufacturer	1 bucket (10 kg)	R2T	3 m ²	12 hours	7 days		
	PCI - BASF	All sizes	PCI COLLASTIC	Not necessary, according to manufacturer	3 kg bucket (A+B)	R2T	1.5 m ²	3 hours	12 hours		Installation with single-buttering (trowel with 10 mm tilted teeth)
	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL. FIX CR	Not necessary, according to manufacturer	1 bucket (10 kg)	R2 T	3 m ²	12 hours	2 days		Installation with double-buttering
ARDEX	All sizes	ARDEX X 78 S microtec + ARDEX E 90	ARDEX P 82	1 bag (25 kg) + 3 kg ARDEX E 90 + 7 litres of water	C2 FE S2	6 m ²	90 min.	6 hours	Installation with single-buttering (trowel with 10 mm tilted teeth or ARDEX Microtec trowel)		

(*) Upon condition that surfaces are sheltered (e.g. loggias, covered balconies, etc.) and made totally impervious. The use of sizes that are not larger than 120x120 cm is recommended.
 (**) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

Attachment A.6

OUTDOOR FLOOR INSTALLATION NOT SUITABLE FOR VEHICULAR PASSAGE(*)

6mm 5plus 6plus

Substrate: decoupling mats certified as suitable for this purpose by the manufacturer.

At the discretion of P.S.	Supplier	Size of slabs (cm)	Product (*)	Primer, if necessary (*)	Mixing ratio (**)	Class (*)	Nominal yield (*)	Set for light foot traffic and ready for grouting times (**)	Ready for use (**)	Installation (*)
 <p>For situations in which a normal setting adhesive is recommended</p>	KERAKOLL	All sizes	H40 NO LIMITS	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 7.1 to 8.5 litres of water	C2 TE	6 m ²	20 hours	3 days	Installation with double-buttering
					White 1 bag (25 kg) from 7.2 to 9.5 litres of water					
	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours			
	LITOKOL	Up to 100x100	HYPERFLEX K100	Not necessary, according to manufacturer	1 bag (20 kg) + 7 litres of water	C2 TE S2	5.5 m ²	24 hours	7 days	
 <p>For situations in which a quick setting adhesive is recommended</p>	SAINT-GOBAIN / WEBER	All sizes	WEBER.COL. ProGres Top S1	Not necessary, according to manufacturer	1 bag (25 kg) + 6.7/8 litres of water	C2TES1	6 m ²	8 hours	14 days	
			WEBER.COL. UltraGres Evo							
	WEBER.COL. UltraGres 400	1 bag (25 kg) + 6.7/7 litres of WEBER L50								
	WEBER.COL. UltraGres Light									
 <p>For situations in which a quick setting adhesive is recommended</p>	KERAKOLL	All sizes	H40 REVOLUTION	Not necessary, according to manufacturer	Grey 1 bag (25 kg) from 6 to 7 litres of water	C2F TE	6 m ²	2 hours	1 day	Installation with double-buttering
			White 1 bag (25 kg) from 6 to 7.3 litres of water							
	H40 EXTREME	Not necessary, according to manufacturer	1 bucket (10 kg)	R2	4 m ²	4 hours	12 hours			
LITOKOL	Up to 100x100	LITOSTONE K99 + LATEXKOL	Not necessary, according to manufacturer	1 bag (25 kg) + 6 litres of LATEXKOL	C2 FE S2	5 m ²	6 hours	1 day		
SAINT-GOBAIN / WEBER	All sizes	WEBER.COL. UltraGres Fast	Not necessary, according to manufacturer	1 bag (25 kg) + 6/6.2 litres of water	C2 FTE S1	6 m ²	3 hours	1 day		

(*) Upon condition that surfaces are sheltered (e.g. loggias, covered balconies, etc.) and made totally impervious. The use of sizes that are not larger than 120x120 cm is recommended.
 (**) Instructions provided directly by manufacturers, who guarantee the information given.
 For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (***) Instructions provided directly by manufacturers, who guarantee the information given. If a product is offered in both "white" and "grey" versions, the mixing ratio may vary. For explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (****) Ratings provided directly by manufacturers, who guarantee the information given, are based on laboratory tests performed at 23° C and with a relative humidity of 50%. In the event of use in different situations or for explanations or more details, contact the technical support offices of the product manufacturers (see page 62 "Useful contacts").
 (*****) Product names shown may vary by country in relation to the commercial assessment of the manufacturer.

ADHESIVES AND PROFILES ATTACHMENTS

CONNECTING PROFILES, FINISHING AND TRIM PIECES

Hereunder we have listed some possible solutions using the profiles sold by the main manufacturers on the market. The solutions listed have different technical and design characteristics, depending on the manufacturer, not specified here for reasons of simplicity. The drawings and instructions

are therefore indicative and generic. For more information and to acquire an exhaustive idea of the complete ranges offered, refer to the manufacturer. A list of manufacturers is available on page 62 "Useful contacts".

PROFILITEC S.p.A.	www.profilitec.com
SCHLÜTER-SYSTEMS ITALIA S.r.l.	www.schlueter-systems.com
WEDI	www.wedi.it
RARE	www.rareboxdoccia.com

PROGRESS PROFILES	www.progressprofiles.com
PROFILPAS	www.profilpas.com
DURAL	www.dural.de/en

Profiles for doors and work tops	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Planotec BP	-	•	-	-
	Schlüter®-Systems	SCHIENE-STEP, RONDEC-STEP	•	-	•	•
	Progress Profiles	Protop	-	•	-	-
	Progress Profiles	Protect J, T, Q	-	•	-	-
	Schlüter®-Systems	RONDEC-CT	•	-	•	•

Shower systems	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Drain grid	•	•	•	•
	Schlüter®-Systems	Kerdi-Line-H	•	•	•	•
	Dural	Vario Line plus VLP-D	•	-	•	•
	Progress Profiles	Proshower Design	•	•	•	•
	Wedi	Plano Linea	•	•	•	-
	Rare	Ad Hoc	•	•	•	-

Grid with slab compartment	Supplier	Best-selling products	6	3.5	5.5	6.5
	Schlüter®-Systems	Kerdi-Line-D	•	•	•	•
	Dural	Wall Line WLL100	•	•	•	•
	Progress Profiles	Proshower Tile	•	•	•	•
	Wedi	Riolito piastrellabile	•	•	•	-
Rare	Ad Hoc	•	•	•	-	

Shower base system	Supplier	Best-selling products	6	3.5	5.5	6.5
	Schlüter®-Systems	Kerdi-Shower	•	-	•	•
	Dural	TILUX	•	•	•	•
	Wedi	Fundo Primo / Plano	•	•	•	-
	Progress Profiles	Proshower Kit	•	•	•	•
Rare	Ad Hoc	•	•	•	-	

Wall/floor and inner corner	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	BA Bullnose	•	•	•	•
	Schlüter®-Systems	DESIGNBASE-SL	•	•	•	•
	Progress Profiles	Bullnose 40	•	•	•	•
	Profilpas	Metal Line	-	•	-	-
	Dural	Construct	•	•	•	-

Bullnose profile	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	BT bullnose	-	•	-	-
	Schlüter®-Systems	DILEX-EK	•	-	•	•
	Progress Profiles	Printer KL ALL	•	•	•	•
	Profilpas	Print	-	•	-	-

Minimum quarter round cove	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Mosaitec CRM Coflex CR	•	•	•	•
	Schlüter®-Systems	DILEX-AHK	•	-	•	•
	Progress Profiles	Proshell D ALL	-	•	-	-
	Profilpas	Proround/Print	-	•	-	-

Quarter round cove	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Mosaitec CRM Coflex CR	•	•	•	•
	Schlüter®-Systems	DILEX-EHK	•	-	•	•
	Progress Profiles	Proshell R ALL	-	•	-	-
	Profilpas	Proround/Print	-	•	-	-

Obtuse angle profiles	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Sanitec SB	•	•	•	•
	Schlüter®-Systems	ECK-KHK	•	•	•	•
	Progress Profiles	Proseal/Proround	•	•	•	•
	Profilpas	Saniboard	-	•	-	-
Dural	Duracove	•	•	•	-	

Right angle profiles	Supplier	Best-selling products	6	3.5	5.5	6.5
	Schlüter®-Systems	ECK-KI	•	•	•	•
	Progress Profiles	Probat	•	•	•	•
	Profilpas	Saniboard	-	•	-	-

Expansion joints	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Coflex CAJ Coflex CA	•	•	•	•
	Schlüter®-Systems	Dilex-BWS	•	•	•	•
	Progress Profiles	Proflex	•	•	•	•
	Profilpas	Projoint DIL	-	•	-	-
	Dural	Duraflex	•	•	•	•
	Profilitec	Coflex CAJP	•	•	•	•
	Schlüter®-Systems	Dilex-BWA	•	•	•	•
	Progress Profiles	Proflex 5 PR	•	•	•	•
	Profilpas	Projoint DIL	-	•	-	-
	Dural	Duraflex SF	•	•	•	•

Surmounted elements and covering profiles	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Roundjolly RJ	•	•	•	•
	Schlüter®-Systems	Reno-U	•	•	•	•
	Progress Profiles	Proslider KL ALL	-	•	-	-
	Profilpas	Pronivel	-	•	-	-
	Profilitec	Linotec Variotec DK	•	•	•	•

Surmounted element	Supplier	Best-selling products	6	3.5	5.5	6.5
	Schlüter®-Systems	Reno-T	•	•	•	•
	Progress Profiles	Profloor 24	•	•	•	•
	Profilpas	Prolevel	-	•	-	-
	Dural	LPTE	•	•	•	-

Straight edge covering profile	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Squarejolly SJ	•	•	•	•
	Schlüter®-Systems	Quadec	•	•	•	•
	Progress Profiles	Projolly Square	•	•	•	•
	Profilpas	Proangle Q	•	•	•	-
	Dural	Squareline	•	•	•	-

Rounded edge covering profile	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Roundjolly RJ	•	•	•	•
	Schlüter®-Systems	Rondec	•	•	•	•
	Progress Profiles	Projolly Quart	•	•	•	•
	Profilpas	Protrim	-	•	-	-

Curved profiles	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Curveline	•	•	•	•
	Schlüter®-Systems	Schiene	•	•	•	•
	Progress Profiles	Curve	•	•	•	•
	Profilpas	Proflex Line	-	•	-	-
	Dural	Z-FLEX	•	•	•	-



PANARIAGROUP LAMINATED PORCELAIN STONEWARE FLOORS AND WALLS CAN BE FINISHED WITH PROFILES THAT ARE READILY AVAILABLE ON THE MARKET

Steps and outer corners	Supplier	Best-selling products	6	3.5	5.5	6.5
	Schlüter®-Systems	Rondec	•	•	•	•
	Progress profiles	Prostyle KL10	-	•	-	-
	Profilpas	Prostep	-	•	-	-

Reinforced profiles for steps	Supplier	Best-selling products	6	3.5	5.5	6.5
	Schlüter®-Systems	TREP-E	•	•	•	•
	Profilpas	Prostep SMA	-	•	-	-
	Dural	Durastep	•	•	•	•
	Progress Profiles	Prostair Acc	•	•	•	•

Rounded profiles with non-slip tread	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Stairtec FS	-	•	-	-
	Profilitec	Stairtec FO	-	•	-	-
	Schlüter®-Systems	TREP-GK	•	•	•	•

Rounded profile	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Roundjolly RJ	•	•	•	•
	Schlüter®-Systems	Rondec	•	•	•	•
	Progress Profiles	Projolly Quart	•	•	•	•
	Dural	Teka Step TT	•	•	•	•

Straight edge profile	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Protrim	-	•	-	-
	Profilitec	Squarejolly SJ	•	•	•	•
	Schlüter®-Systems	Quadec	•	•	•	•
	Progress Profiles	Projolly Square	•	•	•	•

Thin corner profile	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Mosaitec RJF	•	•	•	•
	Schlüter®-Systems	FINEC	•	•	•	•
	Progress Profiles	Prokerlam LINE	-	•	-	-

Corner profiles	Supplier	Best-selling products	6	3.5	5.5	6.5
	Profilitec	Probord IPA	-	•	-	-
	Profilitec	Stairtec SE	•	•	•	•
	Schlüter®-Systems	ECK-K	•	•	•	•
	Progress Profiles	Proedge	•	•	•	•
	Profilpas	Procorner	-	•	-	-

TENDER SPECIFICATIONS

Supply of ceramic slabs made of Panariagroup laminated porcelain stoneware for floors and walls.

PRODUCT CHARACTERISTICS

Large sized Panariagroup laminated porcelain stoneware slabs, up to 100x300 cm or 120x260 cm, and 6 mm thick or, if reinforced with fibreglass mesh, 3.5 mm, 5.5 mm or 6.5 mm thick. Obtained from raw materials of the highest quality and purity (light clay, feldspar and ceramic pigments with high chromatic yield), and manufactured by dry pressing on a belt of atomized powder, subsequently sintered by means of industrial firing at temperatures exceeding 1200 °C. The innovative laminated porcelain stoneware manufacturing process produces a final product which is light, flat and flexible, but at the same time compact, non-absorbent, frost-resistant, resistant to stains, chemical attack and thermal shock; the application of the fibreglass mesh gives the product high resistance and extreme versatility and ease of use for a wide range of applications in the architectural world.

COMPLIANCE WITH EN 14411-G / ISO 13006-G

All the collections are in compliance with the regulations required for first quality products in Italy and Europe UNI EN 14411-G and internationally through ISO 13006-G.

QUALITY AND ENVIRONMENTAL CERTIFICATIONS

The conservation of the product characteristics is guaranteed by the Quality Management System put into practice by Panariagroup in its plants and certified in accordance with UNI EN ISO 9001.

The collections are manufactured in plants with UNI EN ISO 14001 certified Environmental Management Systems (internationally recognised standard) and EMAS (Regulation 1221/09 - eco-management and audit community system).

The collections help meet the criteria for obtaining LEED credits. The products do not contain any VOC (volatile organic compounds) and are all GREENGUARD GOLD certified. The type III specific Environmental Product Declaration (EPD), certified by an independent third party according to ISO EN 14025 and EN 15804 standards, is available. This tool communicates clearly the environmental performances of the specific collections based on their Life Cycle Assessment (LCA).

ANTIMICROBIAL PROPERTIES

Thanks to Protect antimicrobial technology, the slabs from the majority of the Panariagroup collections have continuous, effective and durable protection against the proliferation of microbes, tested and certified in accordance with ISO 22196 and ASTM E3031. Refer to the specific collection catalogues.

COMMERCIAL DESCRIPTION OF THE PRODUCT

Collection	Refer to the specific collection catalogues.					
Colours	Refer to the specific collection catalogues.					
Sizes *	120x260 cm	120x120 cm	100x300 cm	100x250 cm	100x150 cm	100x100 cm
	60x120 cm	60x60 cm	50x150 cm	50x100 cm	50x50 cm	33x300 cm
	30x240 cm	20x200 cm	20x180 cm	20x150 cm	20x120 cm	20x100 cm
	4,9x100 cm					
Surfaces	Refer to the specific collection catalogues.					
Edges	Rectified					
Thickness	6mm laminated porcelain stoneware: 6 mm					
	3plus laminated porcelain stoneware: 3.5 mm					
	5plus laminated porcelain stoneware: 5.5 mm					
	6plus laminated porcelain stoneware: 6.5 mm					

^(*) For size updates please refer to the specific collection catalogues.

TECHNICAL FEATURES

TECHNICAL FEATURES	TEST METHOD	REQUIREMENTS UNDER ISO 13006-G - EN 14411-G GROUP BIA UGL	AVERAGE VALUES 3plus - 5plus - 6plus	AVERAGE VALUES 6mm
 Water absorption	ISO 10545-3	≤ 0.5%	0.1% (*)	0.1%
 Bending strength	ISO 10545-4	≥ 35 N/mm ²	50 N/mm ²	50 N/mm ²
 Deep abrasion resistance	ISO 10545-6	≤ 175 mm ³	Compliant	Compliant
 Linear thermal expansion	ISO 10545-8	Not required	α ≤ 7 x 10 ⁻⁶ °C ⁻¹	α ≤ 7 x 10 ⁻⁶ °C ⁻¹
 Thermal shock resistance	ISO 10545-9	No alterations	Resistant	Resistant
 Chemical resistance (**)	ISO 10545-13	As indicated by the manufacturer	LA - HA Resistant LB - HB Lux - Levigata (Lev) Glossy - Touch P_polished	LA - HA Resistant LB - HB Lux - Levigata (Lev) Touch
 Stain resistance	ISO 10545-14	Class 3 min.	5 Resistant ≥ 3 Lux - Levigata (Lev) Glossy - Touch P_polished	5 Resistant ≥ 3 Lux - Levigata (Lev) Touch
 Frost-resistance	ISO 10545-12	No alterations	Resistant	Resistant
 Fire reaction	EN 13823 EN 9239-1	CPR (UE) 305/2011, 2000/147/EC, UNI EN 13501-1	Class A2-s1,d0 (walls) Class A2 _{s1} -s1 (floors)	Class A1 (walls) Class A1 _f (floors)
 Size characteristics	Length and width	ISO 10545-2	Rect.: ± 0.3% max ± 1 mm	Compliant
	Straightness of sides	ISO 10545-2	Rect.: ± 0.3% max ± 0.8 mm	Compliant
	Rectangularity	ISO 10545-2	Rect.: ± 0.3% max ± 1.5 mm	Compliant
	Warpage	ISO 10545-2	Rect.: ± 0.4% max ± 1.8 mm	Compliant
	Thickness	ISO 10545-2	± 5% max ± 0.5 mm	Compliant

(*) Value referred to ceramic material only

(**) Excluding hydrofluoric acid and its derivatives

The companies mentioned in this manual are our own choices and are therefore recommended but not mandatory.

ADHESIVES

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Via Cafiero 22
20158 Milano (MI) - Italy
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KERAKOLL S.p.A.
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www.kerakoll.com

LATICRETE S.r.l.
Piazza Martiri, 7
19020 Brugnato (SP) - Italy
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www.laticrete.it

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42048 Rubiera (RE) - Italy
Tel. +39 0522 622811
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www.litokol.it

WEBER SAINT-GOBAIN
Via Sacco e Vanzetti, 54
41042 Fiorano Modenese (MO) - Italy
Tel. +39 0536 837111
e-mail info@e-weber.it
www.e-weber.it

PCI - BASF Construction
Chemicals Italia S.p.A.
Via Vicinale delle corti, 21
31100 Treviso (TV) - Italy
Tel. +39 0422 304251
e-mail info@vittoriorossi.it
www.basf-cc.it

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

TILE CUTTER RULERS

SIGMA S.n.c.
Via A. Gagliani, 4
47813 Igea Marina Bellaria (RN) - Italy
Tel. +39 0541 330103
Fax +39 0541 330422
www.sigmailta.com

RAIMONDI S.r.l.
Via Dalla Casta, 300/A
41100 Modena (MO) - Italy
Tel. +39 059 280888
Fax +39 059 282808
www.raimondiutensili.it

PROFILES AND TRIM PIECES

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

SCHLÜTER-SYSTEMS Italia S.r.l.
Via Bucciardi 31/33
41042 Fiorano Modenese (MO) - Italy
Tel. +39 0536 914511
Fax +39 0536 911156
www.schluter-systems.com

PROGRESS PROFILES S.p.A.
Via Le Marze, 7
31011 Asolo (TV) - Italy
Tel. +39 0423 950398
Fax +39 0423 950979
www.progressprofiles.com

PROFILPAS S.p.A.
Via Einstein, 38
35010 Cadoneghe (PD) - Italy
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Fax +39 049 706692
www.profilpas.com

DURAL GmbH & Co.
Via Castiglione, 44
40124 Bologna (BO) - Italy
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www.dural.com

WEDI ITALIA S.r.l.
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20035 Lissone (MI) - Italy
Tel. +39 0392 459420
www.wedi.it

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

PLASTER

FASSA BORTOLO S.p.A.
via Lazzaris, 3
31027 Spresiano (TV) - Italy
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Fax +39 0422 887509
www.fassabortolo.com

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

HOLESAWS / DIAMOND AND ABRASIVE DISCS / DRILL BITS

DIAMANT CENTER - TYROLIT S.r.l.
Via Valle d'Aosta, 12
41049 Sassuolo (MO) - Italy
Tel. +39 0536 808166
Fax +39 0536 808211
www.diamantcenter.it

MONTOLIT S.p.A.
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20019 Settimo Milanese (MI) - Italy
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RUBI ITALIA S.r.l.
Via Radici in Piano, 596/A
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www.rubi.com

WÜRTH S.r.l.
Via Stazione, 51
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FABERCHIMICA S.r.l.
via G. Ceresani, 10 - Località Campo d'Olmo 60044
Fabriano (AN) - Italy
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www.faberchimica.com

FILA Industria Chimica S.p.A.
via Garibaldi, 32
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www.filachim.it

ZEP Italia S.r.l.
via Nettunese, Km 25,000
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JOHNSONDIVERSEY S.p.A.
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www.johnsondiversey.com

KITER S.r.l.
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www.kiter.it

GEAL S.r.l.
via Settola, 121
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www.geal-chim.it

FEDERCHEMICALS S.r.l.
via G. Borsi, 2
25128 - Brescia (BS) - Italy
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HMK - MÖLLER-CHEMIE
Benelux GmbH - Linge 4
NL-2105 WB Heemstede (NL)
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www.moellerchemie.de

BONASYSTEMS ITALIA S.r.l.
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NOTCHED AND RUBBER COATED TROWELS

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TILE CUTTER / GLASS CUTTER DIAMOND FINISHED SPONGE

BOHLE ITALIA S.r.l.
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20081 Abbiategrasso (MI) - Italy
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DECOUPLING MATS, SOUNDPROOFING MATS ETC.

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PRODUCT LINES

Panariagroup distributes its laminated porcelain stoneware through its commercial brands Cotto d'Este, Lea Ceramiche, Panaria Ceramica and Margres. The exclusive lines in Kerlite, Slimtech, Zero.3 and Linea are available on the market. The products interpret the most refined and contemporary

surfaces, with the quality and excellence of Panariagroup materials. Surfaces with marble, stone, wood or cement effect, in a wide range of sizes, colours, finishes and accessories. With an exclusive mix that also allows combinations on the same surfaces with the different thicknesses proposed in the brand catalogues.

IMPORTANT

The information and directions provided in this manual are to be considered valid until an update is published. The updated document replaces all previous publications. It is possible to check for updates on the company web site or contact the company's technical support office. The company reserves the right to modify the contents and appearance of this manual, should this be deemed necessary.

CERTIFICATIONS



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