
General Guidelines For Handling, Cutting & Installation



Handling & Storage

Manually Handling of a TechnoSLAB

Typical suction cups (Fig. 2) of different kinds are a prime aid, although a couple of workers will be needed to carry the tiles and these may still get deformed.

To allow the extraction of slabs in a safe and easy way, it is recommended to position the pallets in suitable area where the lift truck can be moved round all sides of the pallet.

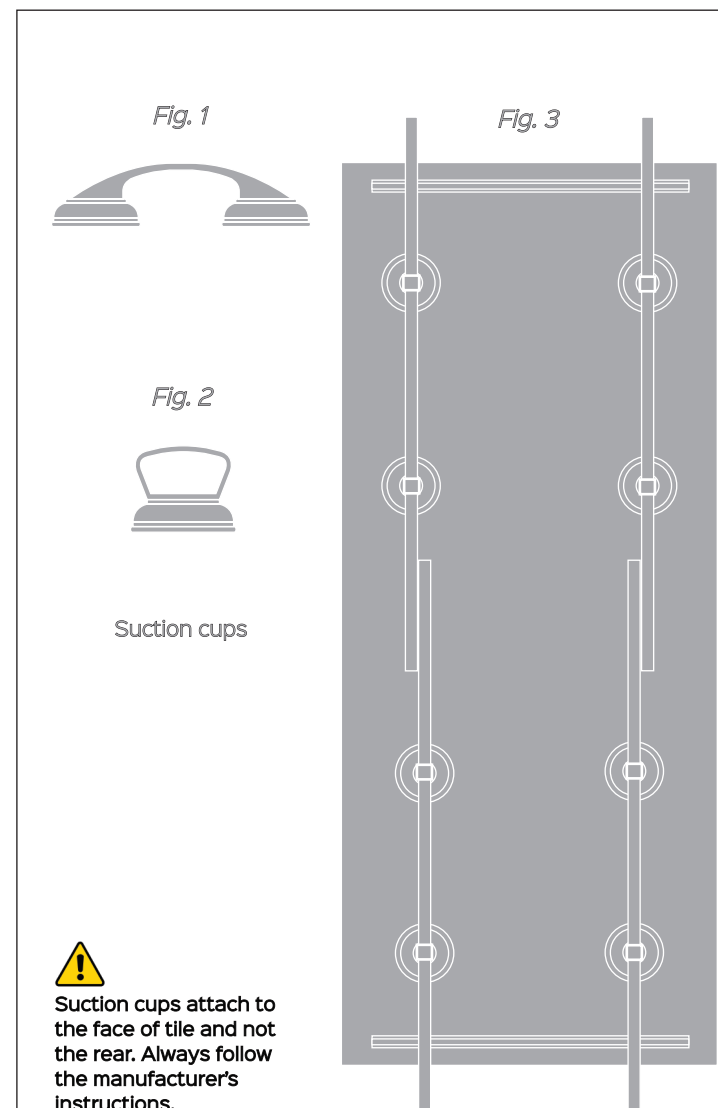
In the case if tiles with a textured surface, soft rubber suction pads (Fig. 1) should be used to ensure a strong grip. Suction pads fixed to lifting bar will make it easier to handle the products and prevent them from becoming deformed. By using two of these bars, all kind of operations can be performed by just two people.

However the best solution is to use rigid lifting frame (Fig. 3) with suction cups that grip the tile on all four sides.

The lifting frame can be designed to adopt to all tile formats sizes or cut sections, keeping the tiles undamaged and allowing them to be handled by fewer people.

Possible operations

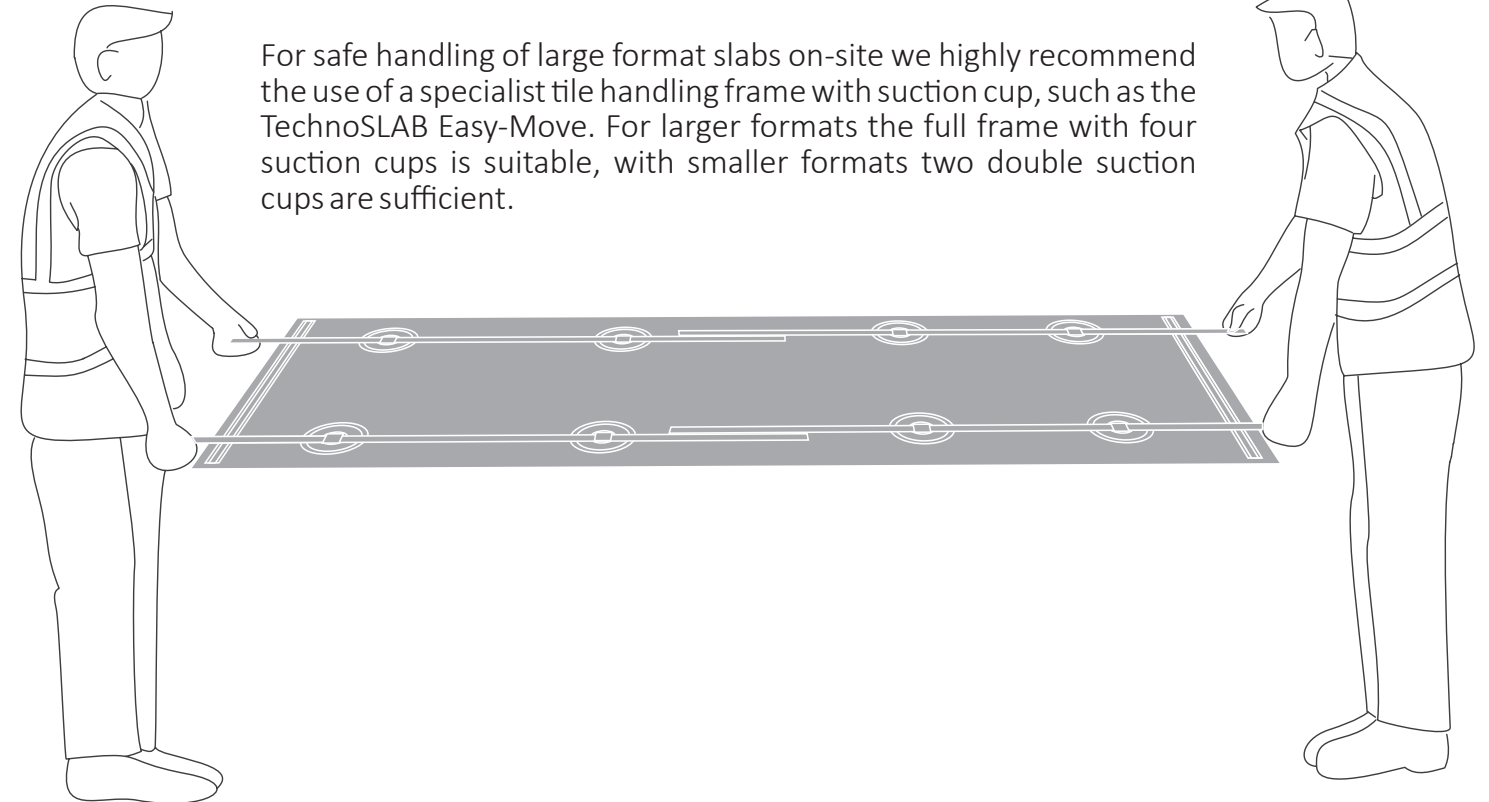
1. To remove the tiles from the box
2. To place them on the work table
3. To carry them anywhere on the work site
4. To Spread cement-based adhesive on the underside
5. To help lay them



Manually Handling of a TechnoSLAB

TechnoSlab is extremely heavy and may have sharp edges. It is therefore necessary to wear protective gloves at all times. We recommended the use of single or double suction cups which help to ensure the integrity of the tile is maintained and the operators safety is not compromised. Carefully wipe the surface of the tile to remove any dust or moisture. Position the suction cups on the face of the tile and make sure that they adhere to the surface properly.

For safe handling of large format slabs on-site we highly recommend the use of a specialist tile handling frame with suction cup, such as the TechnoSLAB Easy-Move. For larger formats the full frame with four suction cups is suitable, with smaller formats two double suction cups are sufficient.

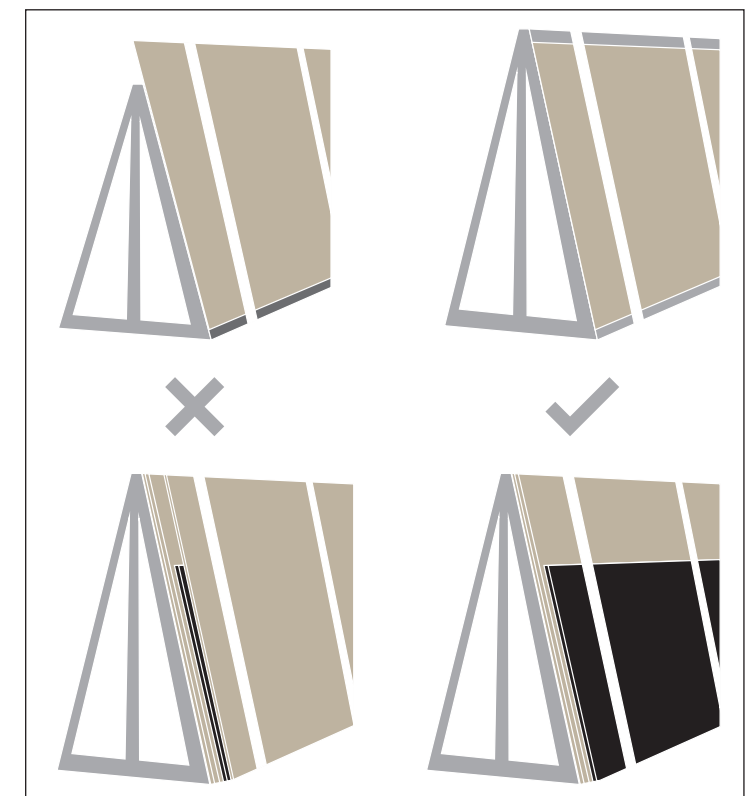


Storage

Place the slabs length-wise on wooden beams to prevent the slabs from splintering.

4mm & 6mm slabs needs at least three support points, distributed evenly along the back of the slab; a full support is recommended. For example- an unused granite or marble slab with sufficient width. The best way to maintain the integrity of the slabs is to keep them in their original Packaging or use a full support on the back of the TechnoSLAB such as an unused granite or marble slab which is wide enough.

The supports must be able to hold the entire surface of the part during transport. Too small supports may cause the part to break:



Avoid positioning large slabs against smaller slabs:

Floor & Wall Installation

Surface preparation

If the fixing surface is smooth (self-levelling mortar bed), it needs to be pre-roughened before cleaning by sandpapering with extra-large grit to enhance bonding.

The fixing surface shall be flat and cleaned of any dust or impurities by using an acid solvent (e.g. hydrochloric acid) as well as a base solvent (e.g. ammonia).

Choosing the right adhesive

The tiles shall be installed in both interiors and exteriors using class C2 cementitious adhesives with highly flexible S2 type enhanced deformability according to standard EN12004.

In exteriors subject to extreme heat or places exposed to harsh climate conditions, it is advisable to use adhesives with class E extended open time according to standard EN12004.

For outdoor tile installations in very cold climates, it is recommended to use type F fast-setting adhesives according to standard EN12004 to avoid freezing of the mixing water.

Adhesive application

The adhesive shall be applied by buttering and floating with a notched trowel between 5 and 8mm. Buttering and floating involves applying the bonding material both to the back of the ceramic tile and to the

fixing surface to assure full contact between the two adhered surfaces and the bonding material.

The grooves made with the notched trowel must cross each other without ever displaying a preferential direction.

The pieces need to be raised and placed with a positioning frame by suction pads to avoid any stress build-up in the piece during handling.

After positioning the piece, it is essential to tap its entire surface with a mallet or rubber trowel to keep any air pockets from forming in the adhesive.

Positioning

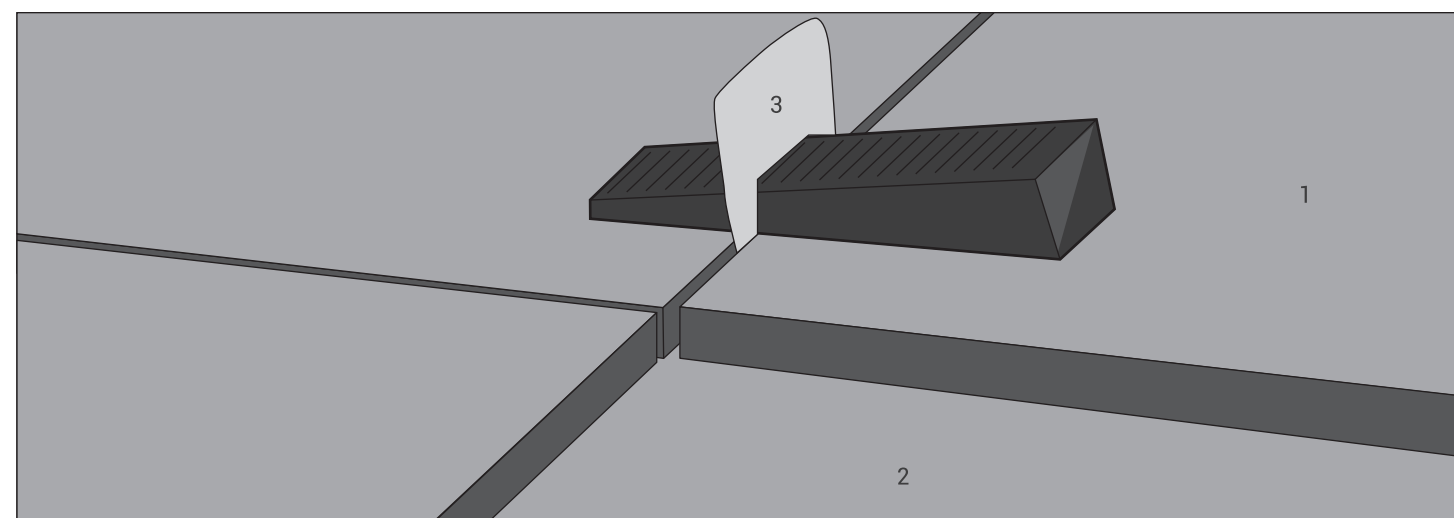
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Levelling (1)

- 1- Slab
- 2- Mortar bed
- 3- Levelling system

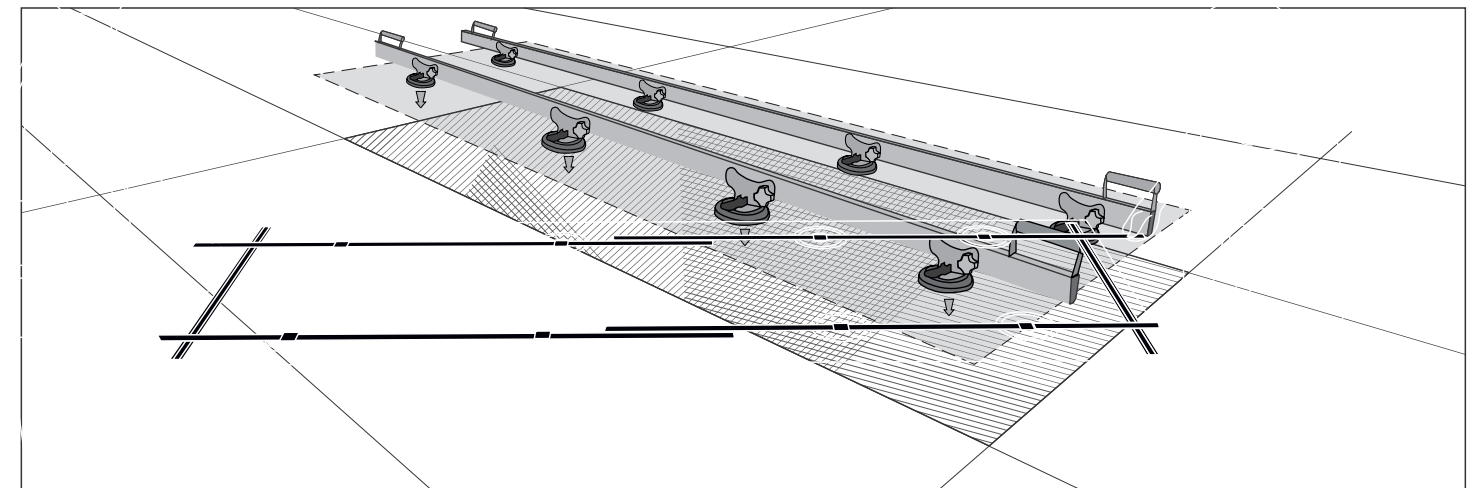
It is imperative for correct positioning of levelling systems for ensuring good adjustment between slabs. Use at least two wedges for every side for an optimum result.



Positioning system (2)

For an easy positioning, it is recommended to use positioning systems as the one described (2).

This kind of system offers good grip and security since it has vacuum cups to ensure slab stability and metal structure to avoid bending.



Maintaining the joint well, assures appropriate adhesive strength during vibrations, taps, and temperature changes by allowing a certain leeway in dimensional and planimetric variations during appropriate use of the material.

Movement joints (3)

Flexible movement joints shall be installed at each end of the installation, leaving a sufficient margin for movement between the structural elements and the tiles. These joints shall be at least 10mm wide and are to be observed both at the ends and at each 8–14 square metres of tile, depending on traffic and climate.

In addition, structural joints shall always be respected to avoid any complementary shift between the

Expansion joints (3)

During the positioning, joint spacers must be used to maintain a minimum joint of 2mm in interiors and of 5mm in exteriors.

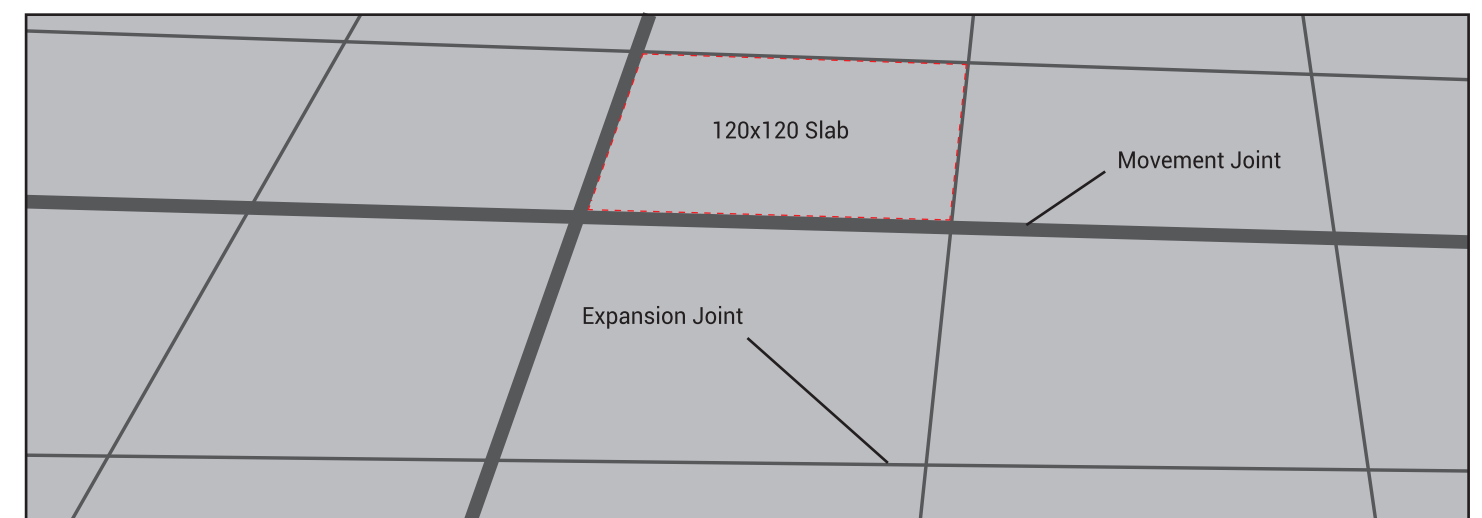
Never use a butt joint installation, as this entails cancellation of any applicable product guarantee.

material and the building's structural elements, as this adversely affects material bonding to the substrate.

Grouting and cleaning

It is recommended to use class CG2 cementitious grouting material according to EN13888 with water resistant and anti-mould properties. The grouting material should be applied after proper setting of the adhesive and cleaning any overflowing adhesive material.

Grouting shall be followed by thorough surface cleaning with a non-oil-based neutral pH detergent and subsequent absorption of the excess surplus water.



Warning! Performing internal cuts in a slab drastically reduces the slab's resistance to failure by bending.

Cutting Specifications

Cutting with disk

In order to do a correct cutting into one slab 12mm (1/2") it is recommended the use of segmented cutting disks and specifications as described below.

Disk diameter	RPM	Cutting speed (m/min) - (feet/min)
300 mm - 12"	2600 rpm	1/2 m/min - 4 feet/min
350 mm - 14"	2300 rpm	1/2 m/min - 4 feet/min
400 mm - 16"	1900 rpm	1/2 m/min - 4 feet/min

To ensure correct finishes, it is recommended lowering the speed at both ends to 25% 0.3m/min - 1 feet/min. If the cutting also requires bevelling it is also recommend to slow the speed in the cutting path to 0.6 m/min - 2feet/min.

In order to avoid stress into the slab, it is imperative the use of cutting surfaces that are perfectly levelled and good disk refrigeration. The disk must have a direct application to the cutting edge with refrigeration liquid or water during all the operation.

For inner cutting, as it has been said before, is mandatory the prior drilling at the corners to ensure a 5mm - 3/16" radius. Therefore, the drill must have 10 mm - 6/16" diameter or more.

Water jet cutting

Before starting the waterjet cutting it is advisable to secure the surface and check the flatness of the slab on the support structure for cutting.

Unless necessary (Ex. to create a cavity), the cut must begin and finish outside the slab, always respecting 50 mm - 2" of perimeter during the cutting to avoid accumulation of stresses. The pressure should not exceed 4000 bar and the linear cutting speed should be around 0.6 m / min - 2 feet / min

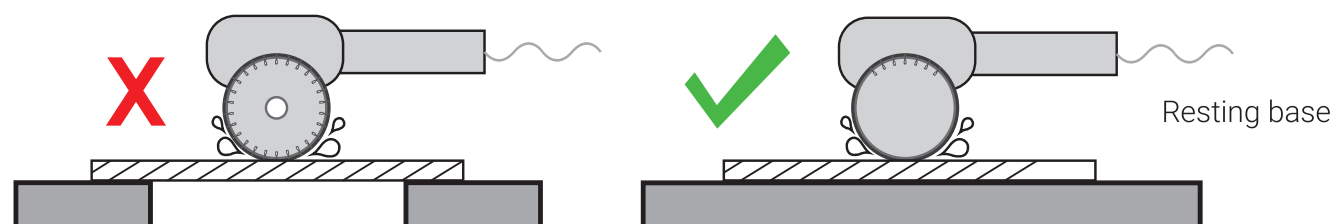
As long as the technical capacity of the cutting machine allows it, it is advisable to finish all the cuts towards the edge of the slab and avoid all the endings at the central area of the slab.

Cutting stresses

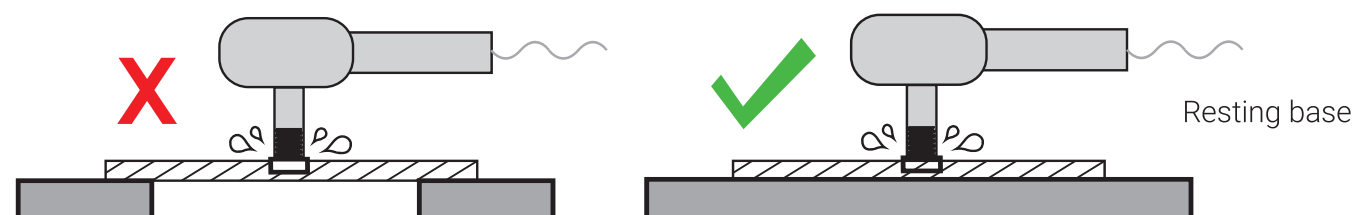
In order to minimize the residual stresses in a slab it is advisable, regardless of the cutting method employed, to remove 25 mm - 1" from the total perimeter of the slab.

This not only mitigates the future stresses but also eliminates all possible stress that the material has accumulated during its manufacture, handling or transport until is finally done any operation into the slab.

Cutting



Drilling



Cleaning & Maintenance

The first cleaning "after installation"

The most important cleaning operation is performed immediately after laying the tiles. This involves the complete removal of residues and dirt from the tile placement. An inadequate or late removal of this waste can create a cementitious layer on the tile capable of absorbing all forms of dirt. This may give the impression that the tile gets dirty when the actual problem resides in the surface film of dirt which was not removed immediately after laying.

Once the grouting of the tiles is finished, it is important, while the grout is still wet, to carefully remove any excess material immediately. This can be done using a sponge and plenty of clean water, repeating this as many times as necessary.

Do not perform the cleaning with metal tools, scrapers or abrasive pads. For stubborn stains, clean with alcohol and lukewarm water and rub with a clean cloth. If they do not disappear, check with the relevant technical department.

Once the above mentioned washing is done, another washing should be carried out using basic or alkaline degreasing agents, as acid washing can leave stickiness on the pavement which could help retain dirt. In areas where water is calcareous, it is convenient to dry the surface, in order to prevent the deposition of carbonates which will reduce the surfaces' gleam.

Regular maintenance

Many available cleaning products for general use can be used with our products. For daily cleaning, one can use detergents or degreasing products diluted in warm water, following each product's instructions.

It is important that the cleaner does not have oil, animal fat or soap base. These components may leave an invisible residue whilst absorbing dirt (lime stratifications detergent or residues). It is also important that the tile receives a thorough rinsing with clean water after the cleaning process is complete.

The low water absorption and high standards met by all porcelain tiles ensure a product which is easy to maintain. Our products do not require the use of

sealants or waxes. These superficial coatings can really affect the performance of the tile in a negative manner.

It is important to note that hydrofluoric acid (HF) and derivatives can irreparably damage the tile.

The general steps for regular cleaning of our ceramic products can be summarized as follows:

- Remove any solid or liquid waste from the tile, sweeping with a soft bristle broom or vacuuming.
- Clean up liquid spills as soon as possible with lukewarm water.
- Apply the recommended amount and dilution of the cleaner for the tile (follow the cleaner manufacturer's instructions). The wiper must remain in the tile a minimum period of 5 minutes.
- For unpolished tiles, scrub with a nylon sponge or soft bristle brush. A floor machine equipped with a nylon pad or bristle brush can be used for heavily soiled surfaces. For polished tiles, clean with a nonabrasive cloth.
- Remove the dirty cleaning solution and water with a vacuum cleaner or cloth. Rinse the porcelain tile with clean water and remove again with a vacuum cleaner, mop or towel. It is absolutely essential that all detergent residues are removed completely from the tile. Any remaining detergent that dries on the tiles surface can form a coating that can trap dirt and be very difficult to remove. The tile should be rinsed several times to remove all detergent residues.

During use, the cleaning of the tiles should be similar to window cleaning. Ammonia and even bleach type products can be employed but both must be diluted in water.

In case of special stains and/or particularly resistant, it is advisable to use specific detergents according to the cleaners' manufacturer. Do not forget that removing any type of stain is easier when it is still fresh.

It is important to always do a pre-test the detergent products result on a small sample of the porcelain.