

TECHNICAL MANUAL UPDATE - CERSAIE 2010

Floor installation of Kerlite Plus (thickness 3.5 mm)

1. INSTALLATION ON A NEW SLAB

Kerlite in the PLUS version (reinforced by means of fibreglass mesh) can be installed on new slabs, even in areas with heavy pedestrian traffic but not subject to heavy concentrated loads (e.g. it is not suitable for areas subject to the passage of trolleys with hard wheels).

In order to correctly prepare the floor, the slab must be made according to the instructions provided below, which are a result of the great experience of Panariagroup in floor installation of Kerlite Plus. Respect of these instructions must be guaranteed and controlled by the designer and by the builder making the slab.

Characteristics of the slab for correct installation of Kerlite Plus

- **Cured and stable in terms of shrinkage:** the curing/seasoning time is of essential importance for a cement-based slab. Curing time of a conventional sand and cement slab is about 7-10 days per cm of thickness.
- **Dry:** for cement-based slabs, a moisture content of less than 2% is acceptable.
- **Clean:** the surface of the slab must be clean. Dust, dirt and debris must be removed as they may compromise adhesion of the adhesive to the slab.
- **Flat:** Flatness checking should be performed using a screed with a length of at least 2 metres. Place the screed on the slab in all directions; the permissible tolerance is 2 mm.
- **Compact:** the slab must be compact and even all over and all the way through. The presence of layers or areas with a more brittle consistence means that the mechanical characteristics are poor and may cause breakage or dislodging of tiles from the floor.
- **Mechanically resistant:** mechanical resistance, such as the thickness, must be suitable for the intended use and for the type of floor tile to install. As a general rule, resistance to compression of a slab for civil environments, suitable for any kind of covering, must not be less than 20 N/mm².
- **No cracks:** the presence of cracks due to hygrometric shrinkage is caused by one or more of the following factors: too much water in the mixture, too fine a grain size of the aggregates, too much cement. Before installation of Kerlite Plus, seal all and any cracks.

All these features can be guaranteed by using "premixed" products that are available on the market, such as TOPCEM PRONTO made by Mapei or KERACEM ECO PRONTO made by Kerakoll.

General rules for correct construction of a slab

- **Aggregates:** these must be clean and not contain impure particles. The grain size must be suitable for the thickness of the slab to make.
- **Levelling strips:** these must be made using the same binding agent used for the slab.
- **Sealing between hardened surfaces and moist mixture:** joints between hardened slabs and moist mixture must be made by applying to the end of the hardened slab (clearly cut, perpendicular to the support) adhesion grout, water and binding agent.
- **Presence of pipelines in the slab:** above any pipes, there must be a minimum thickness of mortar of about 2.5 cm; it is necessary to place metal mesh with a wire thickness of 2 mm above the pipelines so as to provide the necessary reinforcement beneath the thin layer of slab above and prevent the formation of cracks.
- **Finish:** finishing can be performed with a hand-held trowel, a steel disc or smoothing tool, paying attention neither to moisten the surface too much nor to work for too long on the same area.
- **Checking residual moisture:** this must be performed after the slab has reached the end of its curing period.

Checking the quality of the slab

- **Compactness:** tap the slab with a 750 g mallet. No marks should form and the sound heard should not be hollow. When the surface is tapped no dust should form. The surface must not crumble.
- **Thickness:** this is checked by drilling a hole in the slab and measuring the thickness.
- **Stiffness:** the slab must be sufficiently stiff to withstand the intended static and dynamic loads without any deformation. The more the layers under the slab (for instance heat/acoustic insulation materials) are compressible, the stiffer the slab must be. A greater stiffness is obtained with more compactness and a greater thickness.

- **Surface hardness:** when the surface is scratched with a steel nail, no deep scratches or crumbling should appear and no visible dust should form.
- **Moisture:** this is measured with a carbide hygrometer capable of determining directly, by means of a chemical reaction, the moisture content of the slab, irrespective of its composition.

Apart from the indications given, to install 3000x1000 mm Kerlite Plus on a new slab, scrupulously follow the instructions given in paragraph 3 "INSTALLATION OF SIZE 3000X1000 mm".

2. INSTALLATION ON EXISTING FLOORS

Kerlite in the PLUS version (reinforced by means of fibreglass mesh) can be installed on old floors of areas with heavy pedestrian traffic but not subject to heavy concentrated loads (e.g. it is not suitable for areas subject to the passage of trolleys with hard wheels). The product can be installed in exterior environments upon condition that these are covered (balconies, terraces, verandas) and perfectly water-proof.

Preparing the surface

The existing floor must be dry, stable, sound, perfectly flat and clean, which means that there must not be brittle fragments compromising adhesion.

Flatness checking should be performed using a screed with a length of at least 2 metres. Place the screed on the slab in all directions.

Any differences in level must be corrected beforehand using suitable levelling products.

Check the solidity and firmness of the slab. Wash old glazed ceramic floors with a solution of water and caustic soda and rinse thoroughly before installation. If chemical cleaning is not possible, adopt mechanical abrasion techniques.

Characteristics of surfaces on which Kerlite Plus can be installed

- **Parquet:** make sure that the existing floor is firmly secured in place and perfectly flat. Sandpaper the surface of the parquet until it is rough. Use a class R2 adhesive (for instance Keralastic made by Mapei) or a R2T (for instance Superflex Eco made by Kerakoll).
- **Other wooden surfaces:** wooden elements must be used in dry environments only. The wooden surface must be assembled in accordance to the instructions of the manufacturer. The surface must be firmly secured in place and stable over time.
- **Existing floors:** as far as old ceramic, cotto, stone, marble or PVC floors are concerned, make sure they are sound and firmly fixed. Eliminate any residues of oil, grease or wax by washing with a solution of water and caustic soda followed by thorough rinsing. If chemical cleaning is not possible, adopt mechanical abrasion techniques.

Apart from the indications given, to install 3000x1000 mm Kerlite Plus on existing floors, scrupulously follow the instructions given in paragraph 3 "INSTALLATION OF SIZE 3000X1000 mm".

3. INSTALLATION OF SIZE 3000X1000 mm

Considering the dimensions of 3000x1000 Kerlite Plus, based on the many laboratory tests performed by Panariagroup with some of the leading manufacturers of adhesives and simulated installation procedures performed to create the conditions of a worksite, to correctly install your floor, **it is essential to follow these instructions:**

- If you are installing on a new slab, make sure it has been made in accordance to the instructions given in paragraph 1 "INSTALLATION ON A NEW SLAB".
- If you are installing on an existing floor, pay particular attention to its preparation, in accordance to the instructions given in paragraph 2 "INSTALLATION ON AN EXISTING FLOOR".
- Use an adhesive with standard bond strength (or, if necessary, a quick-dry adhesive) **using the 'double spread' technique.**
- Spread the adhesive with a **notched trowel with 3 mm notches on the rear side of the slab**, and also, using an **8 mm notched trowel, on the slab or existing floor.** When fitting the slab, make sure that the direction in which the adhesive is spread on the support is perpendicular to the direction in which the adhesive is spread on Kerlite Plus.
- Leave **joints of at least 3 mm.**
- **Respect any joints on the support** and leave **expansion joints every 12 m².**
- Leave a **gap of at least 5 mm from walls, columns and other vertical elements.**
- Wait at least **48 hours before treading on the floor** and **15 days before actually using it.**

Kerlite®

THE ORIGINAL
The advantage
of being
unique

resistant

Kerlite Plus
resists a bending
stress of 1235
Newton

large

A range of 7
sizes, up to 3 x 1
metres

flat

The surface is
perfectly flat

**thin and
light**

A thickness of 3
mm and a weight
of only 7 kg/m²

easy

To cut, drill and
install

reliable









It has been
chosen for many
prestigious
projects all over
the world

guaranteed

20-year
guarantee

COTTO D'ESTE®
Nuove Superfici

www.kerlite.it

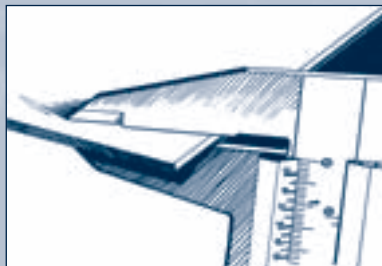
SIZES	KERLITE 3 mm	KERLITE PLUS	KERLITE TWIN
	3 mm	3,5 mm	7 mm
cm 100x300	 WALL	 WALL	 FLOORS ON NEW SLABS
cm 100x100	 WALL	 EXISTING FLOORS AND WALLS	 FLOORS ON NEW SLABS
cm 20x150	 -	 EXISTING FLOORS	-
cm 50x50	WALL	EXISTING FLOORS AND WALLS	-
cm 40x100	WALL	-	-
cm 14,3x100	-	EXISTING FLOORS AND WALLS	-
cm 4,9x100	WALL	-	-

SIZES AND THICKNESS

KERLITE slabs have an original thickness of only 3 mm: this makes them flexible, light and extremely easy to handle.

The minimum thickness is the innovative feature, which makes the product suitable for a variety of different applications. Slabs exiting the kiln have a rated size of 100x300 cm.

KERLITE is now available in three different types for different applications.



kerlite® 3mm

The new surface for architecture



INTENDED USAGE

Ideal for walls in residential or public buildings; suitable for indoor and outdoor use. Grouting joints of at least 1 mm.



SUBSTRATE

Check flatness of the substrate and level off if necessary.



INSTALLATION

Apply the adhesive full-bed on the substrate using a 4 mm trowel. Tap the surface using a rubber trowel to ensure adhesion all over.

kerlite® plus

Renovate your home without demolishing



INTENDED USAGE

For covering old floors in areas that are not subject to the passage of loads on trolleys with hard wheels. Grouting joints of at least 2 mm. KERLITE PLUS slabs of size 300x100 are not suitable for floor installation.



SUBSTRATE

Check flatness of the substrate and level off if necessary.



INSTALLATION WITH A DOUBLE LAYER OF ADHESIVE

Apply the adhesive full-bed on the floor using a trowel with 6 mm tilted teeth. Also apply adhesive on the back of the tile using a trowel with 3 mm flat teeth. Tap the surface using a rubber trowel to ensure adhesion all over.

kerlite® twin

Two-layer slab with a high resistance



INTENDED USAGE

For floor installation on any substrate. All sizes are suitable for installation on all supporting surfaces, new slabs included. Ideal in environments subject to heavy traffic. Grouting joints of at least 2 mm.



SUBSTRATE

Check flatness of the substrate and level off if necessary.



INSTALLATION

Apply the adhesive full-bed on the substrate using a trowel with 6 mm tilted teeth. Tap the surface using a rubber trowel to ensure adhesion all over. Double adhesive application is not necessary.

HANDLING

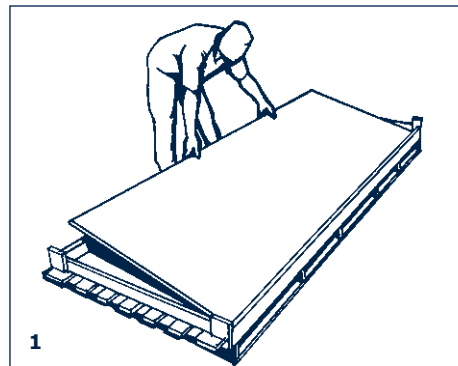
By virtue of its lightness, KERLITE 3 mm is easy to transport and handle. You will carry the same weight but transport 4 times the surface to tile. The weight of a 100x100 cm slab is 7.4 kg for KERLITE 3 mm, 7.8 kg for KERLITE PLUS and 16 kg for KERLITE TWIN.

HANDLING WHOLE SLABS (300x100 cm)

Slabs of KERLITE 3 mm and KERLITE PLUS can be lifted and handled 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 (**fig. 1**).

You can now guide the slab to its upright position, keeping it as straight as possible (**fig. 2**). 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 (**fig. 3**). Slabs of KERLITE TWIN must be handled by two persons using the Kerlite frame (**fig. 7**).

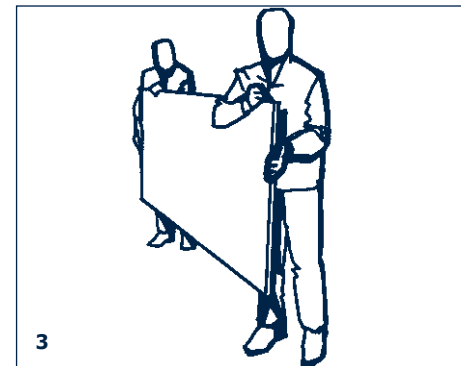
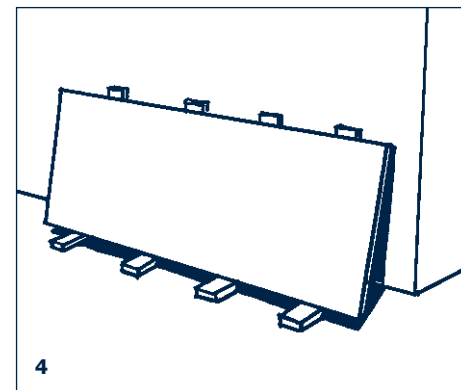
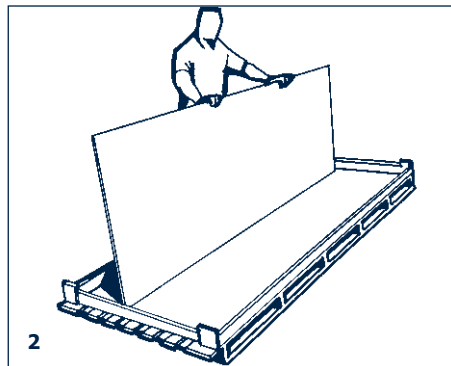
Fasten the frame to the slab when it is still on the pallet. Now raise the frame and slab to eliminate the suction effect.

STORAGE OF SLABS

Slabs of KERLITE 3 mm, KERLITE PLUS and KERLITE TWIN (300x100 cm) can be stored both upright or horizontal.

If you place 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.

As concerns the upright position, place the long side of the slab on a wooden board (**fig. 4**).

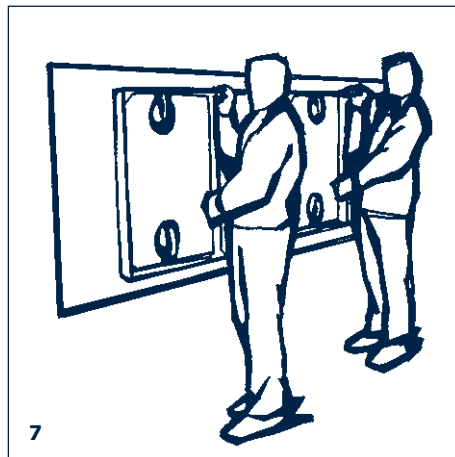
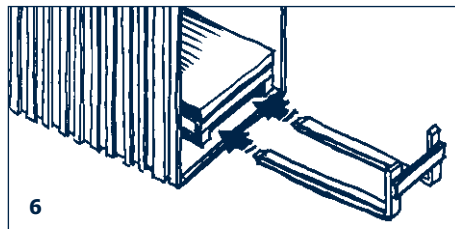
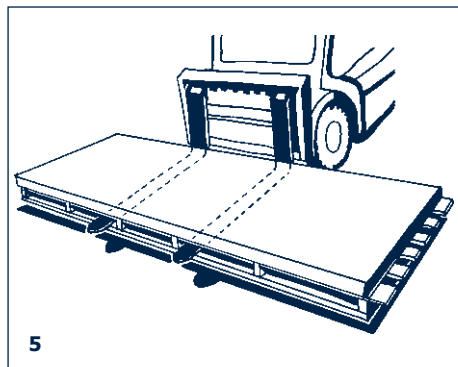


HANDLING PACKAGES WITH 100X300 cm SLABS

To correctly lift and handle the palletised packs using a forklift truck, position the forks at a distance of at least 1 metre the one from the other, perpendicular to the long side of the pallet and at the centre of the latter. Forks must be supporting the entire surface of the pallet.

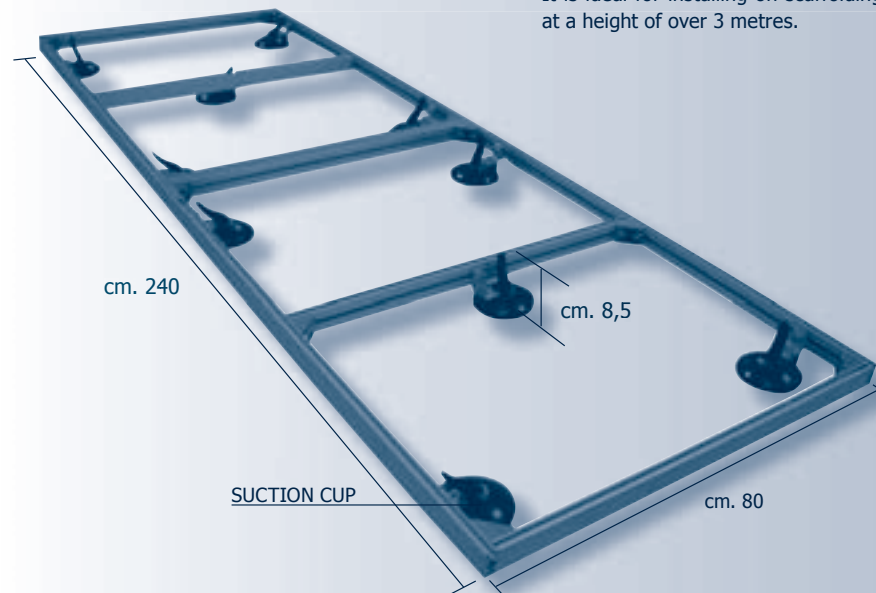
When handling with forklift trucks, it is recommended to insert the forks in the short side of the pallet (**fig. 5**).

Should it be necessary to insert the forks in the long side (e.g. when unloading containers), it is necessary to use forks with a length of at least 2.5 metres so as to ensure perfect support and protect the contents of the package (**fig. 6**).



KERLITE FRAME

To safely handle slabs of KERLITE, KERLITE PLUS and KERLITE TWIN in the 300x100 cm size, a special frame is available upon demand. It is made of aluminium and features suction cups. It is ideal for installing on scaffolding at a height of over 3 metres.



CUTTING, DRILLING AND EDGE-FINISHING

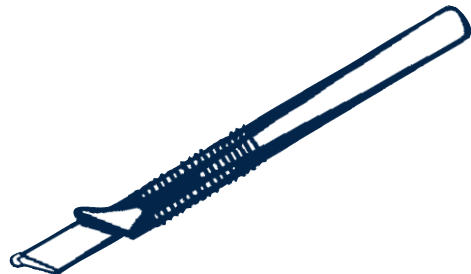
A striking feature of KERLITE 3 mm is its extreme ease-of-installation: it can be easily cut, shaped or drilled with automatic machines and tools used for glass and porcelain stoneware.

PREPARATION

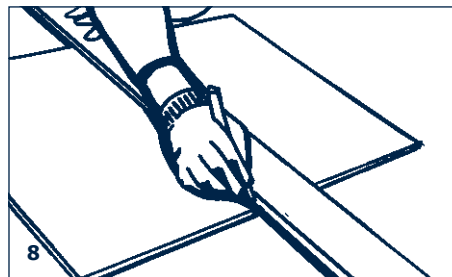
It is essential to work on a flat and clean surface. As an alternative, you may use the cover of the pallet of the KERLITE 3 mm 300x100 cm slab.

CUTTING WITH BLADES FOR GLASS (KERLITE 3 mm and KERLITE PLUS only)

You can obtain excellent results in terms of shape and clear cuts by engraving KERLITE 3 mm and KERLITE PLUS with the glass cutters sold by BOHLE ITALIA, such as the **Silberschnitt 2000 Special Glass Cutter**. This is a 'Toplife' type glass cutter with wheels and a plastic handle to ensure a better grip. To obtain good results, when engraving KERLITE 3 mm and KERLITE PLUS, never detach the glass cutter from the slab throughout the entire cutting operation.



To ensure that the engraving is as straight as possible, you may use aluminium levelling rods of the type commonly used by brick layers (**fig. 8**). After completing the cut, it is sufficient to bend the slab to detach the two pieces (**fig. 9**).

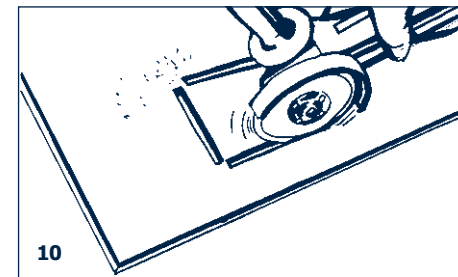


As far as KERLITE PLUS is concerned, after engraving the ceramic part and splitting the slab, complete the operation by cutting the fibreglass mesh with a standard cutter.

CUTTING WITH DIAMOND DISCS

All versions of KERLITE can be cut using diamond discs.

Discs must be of the "smooth crown" type and can be used on electrical or hand-held grinding machines or cutting benches (**fig. 10**).



In both cases, disc rotation speed must be high (>2500 RPM) and speed at which tool is pushed 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.

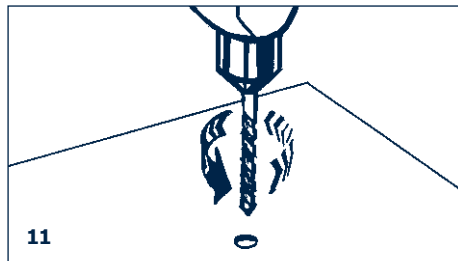
Cotto d'Este has used TYROLIT VINCENT smooth crown diamond discs with excellent results. These discs do not need to be cooled with water.

HYDROJET CUTTING AND SHAPING

For shaped cuts, hydrojet cutting machines can be used. For this type of work, contact specialised firms.

DRILLING

As far as drilling is concerned, you can use bits of glass or bits made of tungsten made by TYROLIT VINCENT, **with diameters up to 8 mm**, fitted to electrical drills or battery-operated screwdrivers. **(fig. 11).**

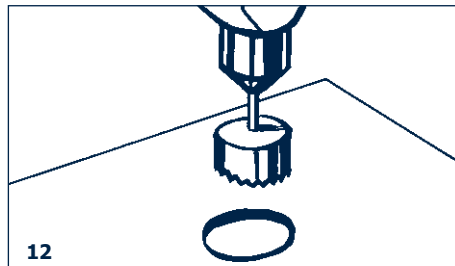


When using these tools:

1. Cool the point drilled with water.
2. Begin drilling at a low speed.
3. Never exert excessive pressure and in any case bear in mind the resistance of KERLITE.

Holes larger than 8 mm can be drilled using cutting discs fitted to electrical drills or battery-operated screwdrivers. Recommended dry-operating cutters are supplied by TYROLIT VINCENT, RUBI ITALIA and MONOLIT.

IF YOU ARE USING A DRILL, DO NOT ADOPT THE HAMMERING MODE.

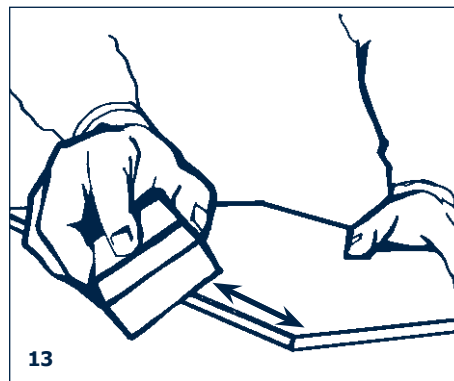


EDGE-FINISHING

Edges can be finished by hand using abrasive diamond sponges or emery paper. With a light passage on the side of the slab, you can obtain a slightly rounded-off edge or with repeated passages a bevelled effect **(fig. 13).**

The same results can be obtained with TYROLIT VINCENT sanding discs applied to angle grinders.

If you have to drill several holes for pipes or perform several cuts for switch boxes or other items on 100x300 cm slabs, you must use the reinforced version of KERLITE, namely KERLITE PLUS.



LAYER'S KIT

The **Layer's Kit** contains all the equipment needed for cutting and finishing slabs of KERLITE and KERLITE PLUS.

Contents of the **Layer's Kit**:

- 1 technical manual;
- 1 abrasive sponge;
- 1 glass cutter;
- 1 tungsten bit.



WALL INSTALLATION

kerlite[®] 3mm

kerlite[®] plus

PREPARING THE SURFACE

To prepare the surface for installation of **KERLITE 3 mm** or **KERLITE PLUS**, perform the same operations normally performed for standard porcelain stoneware tile.

As a general rule, cement supports must be dust-, oil- and grease-free, and also dry and with no rising damp. Any brittle debris, such as residues of cement, plaster or paint must be removed; on the contrary, they must be removed. The supporting surface must be stable and without cracks. It must also be seasoned and hygrometric shrinkage must have ended. Any differences in level must be corrected beforehand using suitable levelling products.

WALL INSTALLATION ON EXTERIOR PLASTER

For wall installation on exterior plaster, KERLITE 3 mm or KERLITE PLUS must be glued onto a support with a high performance, which resists mechanical stress, such as structural movements, the weight of the tiles, any thermal expansion and atmospheric agents. In this case, Cotto d'Este recommends plaster such as KR100 made by Fassa Bortolo or BF02 by Grigolin, or plaster with the same characteristics. Plaster must have an average adhesion to brick of at least 1 N/mm² (about 10 kg/cm²).

PREPARING A SURFACE WITH A HIGH ABSORPTION

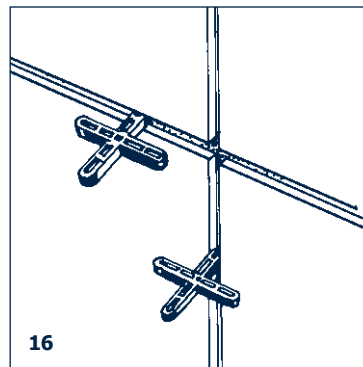
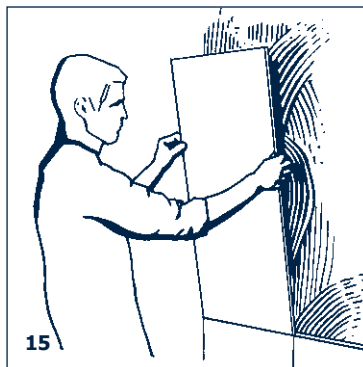
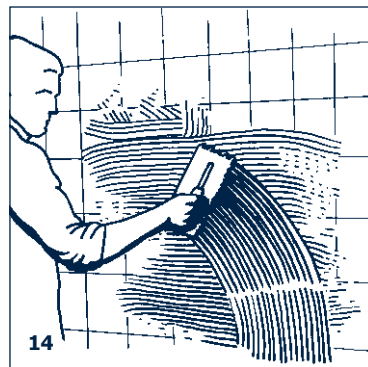
Gypsum based plaster work, which is very absorbent and has a powdery surface, must be

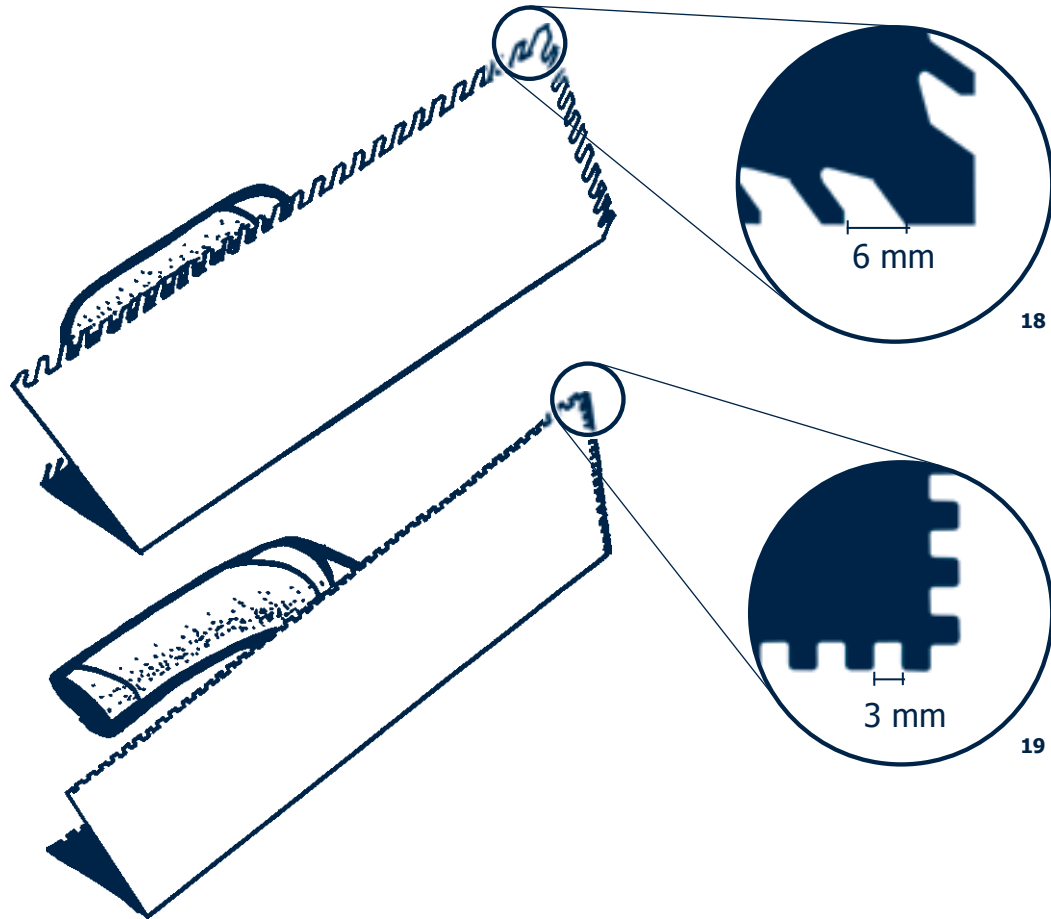
treated with one or two coats of concentrated, water-based professional insulating agent (PRIMER), as indicated in the instructions for use, in order to reduce water absorption and improve adhesive application.

APPLICATION OF ADHESIVE AND INSTALLATION

Spread the adhesive on the substrate using a 3-4 mm notched trowel (**fig. 19**). Make sure the amount of adhesive is consistent and evenly spread "thick-bed". Work on small areas of wall at a time (**fig. 14 and 15**). Leave joints using special spacer crosses of at least 1 mm (**fig. 16**).

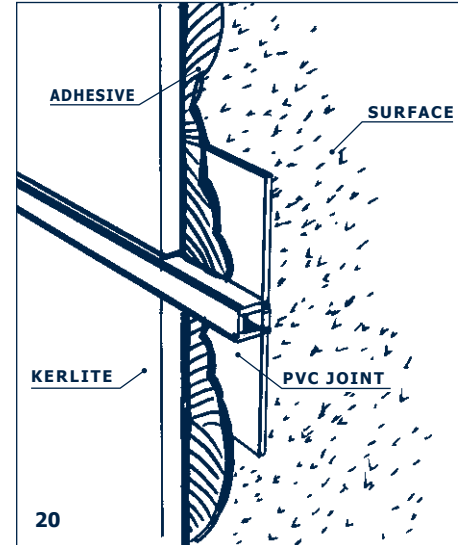
To ensure correct adhesion of the slab, tap the surface with a rubber trowel (**fig. 17**).





EXPANSION JOINTS

Variation of the length of the joint depends on the expansion coefficient, which for KERLITE is $7.0 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ (i.e. for a temperature range of 70°C , expansion is 0.5 mm per linear metre). **In any case, provision of expansion joints must be calculated by the person in charge of the building site.** On large surfaces, in particular outdoors, use PVC expansion joints such as for instance: BWS45 made by SCHLUETER SYSTEMS (fig. 20).



WALL INSTALLATION OF THE 300X100 SLAB

The 100x300 cm size with a thickness of 3 mm KERLITE and 3.5 mm KERLITE PLUS is suitable only for **vertical wall covering**. For correct installation of the 300x100 cm size, follow the rules provided below:

1. Check if the substrate is perfectly flat and if necessary level it off.
2. After checking the above conditions, position the references for correct levelling and alignment of the slab with respect to the surfaces.
3. Spread the adhesive full-bed on the substrate using a trowel with tilted teeth (fig. 18), then shift the slab using the aluminium frame with suction cups (KERLITE frame) which can keep the slab perfectly stiff and ensure safe handling (fig. 7).
4. Secure the slab to the wall, level and tap the entire surface with a rubber trowel (fig. 17).

Use the KERLITE PLUS 3.5 mm version if you have to drill holes or perform cuts. Furthermore, since it has a fibreglass mesh reinforcement, it is safer and easier to handle.

INSTALLATION ON EXISTING FLOORS

kerlite[®] plus

KERLITE PLUS can also be installed on old floors in areas that are not subject to heavy traffic, such as trolleys with hard wheels.

For new slabs, the use of KERLITE TWIN is recommended.

With respect to other ceramic products, KERLITE PLUS allows you to save time and money, as well as to eliminate dust, noise, debris disposal and modification of doors.

It can be installed in exterior environments provided that surfaces are made totally impervious.

PREPARING THE SURFACE

The existing floor must be dry, stable, sound, perfectly flat and clean, which means that there must not be brittle fragments compromising adhesion of KERLITE PLUS. Flatness checking should be performed using a screed with a length of at least 2 metres. Place the screed on the old floor in all directions and, if necessary, compensate for any differences in level.

Any differences in level must be corrected beforehand using suitable levelling products. Check the solidity and firmness of the slab. Wash old glazed ceramic floors with a solution of water and caustic soda and rinse thoroughly before installation. If chemical cleaning is not possible, adopt mechanical abrasion techniques.

CHARACTERISTICS OF SURFACES ON WHICH KERLITE PLUS CAN BE INSTALLED

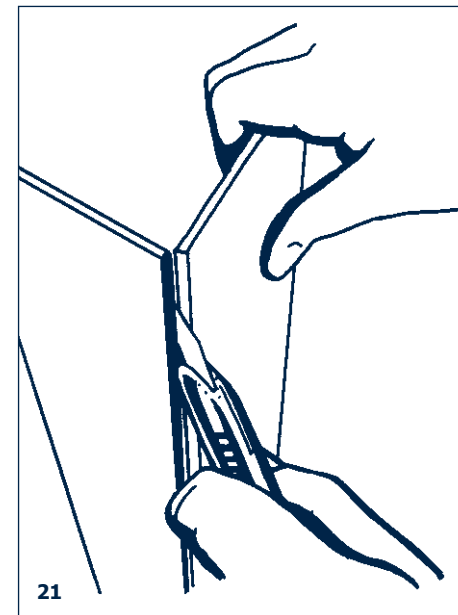
Parquet: make sure that the existing floor is firmly secured in place and perfectly flat. Sandpaper the surface of the parquet until it is rough. Use a class R2 adhesive (for instance Keralastic made by Mapei) or a R2T (for instance Superflex made by Kerakoll).

Other wooden surfaces: wooden elements must be used in dry environments only. The wooden surface must be assembled in accordance to the instructions of the manufacturer. The surface must be firmly secured in place and stable over time.

Existing floors: as far as old ceramic, cotto, stone, marble or PVC floors are concerned, make sure they are sound and firmly fixed. Eliminate any residues of oil, grease or wax by washing with a solution of water and caustic soda followed by thorough rinsing. If chemical cleaning is not possible, adopt mechanical abrasion techniques.

CUTTING KERLITE PLUS

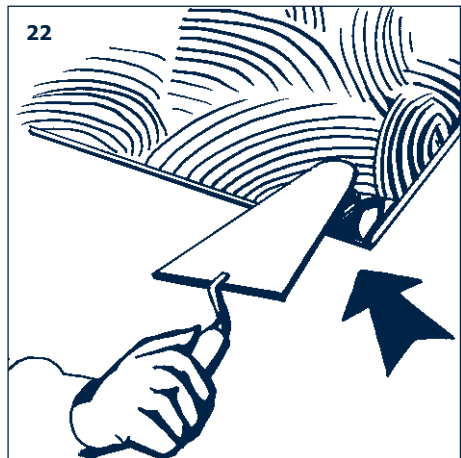
KERLITE PLUS can be cut in the same manner as KERLITE, using a glass cutter. After positioning the slab to cut on a perfectly flat and clean surface, engrave the surface with a straight and clean cut, from edge to edge. Applying light pressure, split the KERLITE 3 mm part and separate the two sections by using a cutter to cut the fibreglass mesh (**fig. 21**).



APPLICATION OF ADHESIVE AND INSTALLATION

Apply adhesive with the double-spreading technique i.e. by spreading the adhesive full-bed on the surface using a notched trowel with tilted teeth at a distance of 6 mm the one from the other (for instance RAIMONDI item n°138HFV6). Also apply the adhesive on the under side of the slab, using a trowel with 3 mm teeth. Remember to spread extra adhesive on the corners of the slab (fig. 22).

Position the slab and tap it repeatedly using a rubber trowel to ensure adhesion all over and prevent air gaps and bubbles forming (fig. 17).



JOINT BETWEEN PIECES

Use spacer crosses with a size of at least 2 mm.

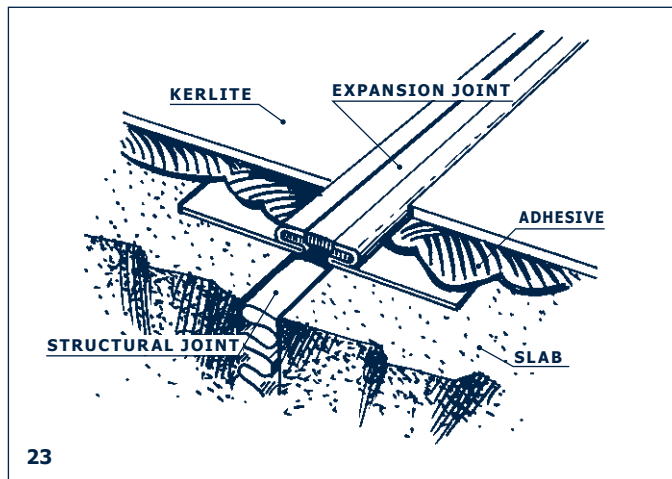
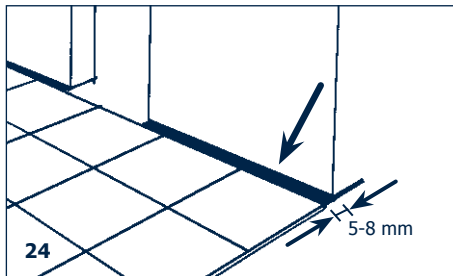
EXPANSION JOINTS

On large surfaces, you must use expansion joints placed on the existing ones on the underlying slab.

Use only expansion joints with metal edges, such as for instance SCHLÜTER SYSTEMS EKS845 (fig. 23).

Variation of the length of the joint depends on the expansion coefficient, which for KERLITE is $7.0 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ (i.e. for a temperature range of 70°C , expansion is 0.5 mm per linear metre).

Perimeter joints must be at 5-8 mm from the wall (fig. 24).

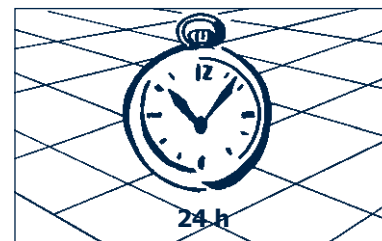
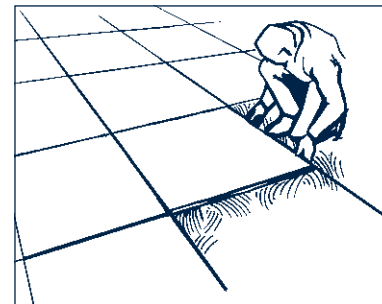
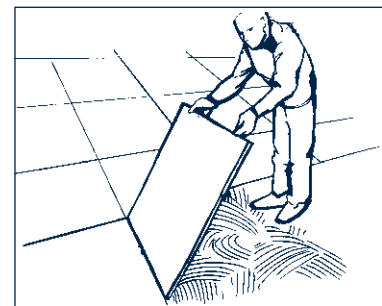


In any case, provision of expansion joints must be calculated by the person in charge of the building site.

NEVER WALK ON THE FLOOR DURING AND AFTER INSTALLATION UNTIL THE ADHESIVE HAS DRIED.

As a general rule, a floor can be walked on after at least 24 hours from completing installation.

In any case, always make reference to the drying time indicated by the manufacturer of the adhesive.



INSTALLATION ON NEW SLABS



KERLITE TWIN can be installed on all building substrates.

It is ideal for areas subject to heavy traffic. Use outdoors is limited to porticos or terraces that have been made perfectly waterproof.

PREPARING THE SURFACE

All surfaces on which you may install KERLITE TWIN must be dry, stable, sound, perfectly flat and free from any loose particles, which could compromise adhesion.

Flatness checking should be performed using a screed with a length of at least 2 metres. Place the screed on the slab in all directions. Any differences in level must be corrected beforehand using suitable levelling products.

The mechanical properties (resistance to compression and bending) of the substrate must make it suitable for withstanding the stress relating to its intended use.

CHARACTERISTICS OF SURFACES TO TILE

Concrete: concrete must be sufficiently cured (this takes about 3 months) and must not feature surface treatments such as mould release agents, resin, anti-evaporation treatments, old adhesives, etc. Apart from the structural joints present, one must provide splitting joints that are suitable for the dimensions of the surface. Slabs must be insulated from rising damp.

Conventional cement slabs: the slab must be compact and even all the way through. Any cracks must be sealed with suitable products. Like concrete, cement slabs must be sufficiently cured; as a general rule, one must consider 8 days of curing for each cm of thickness of the slab. The moisture content of the slab must be lower than 2%.

Anhydrite slabs: before installation, these surfaces must be sandpapered, dedusted and perfectly dry (the permissible moisture content is 0.5%).

Heated floors: slabs built on heated floor systems must be stable, must have undergone shrinkage due to seasoning and not feature cracks. They must also have a mechanical resistance suitable for usage. Before starting the heated floor system, wait at least 14 days after laying the slab. As prescribed by the UNI EN 1264-4 standard, in § 4.4, heating begins at an initial temperature ranging from 20°C to 25°C, which must be maintained for at least 3 days. Then set the maximum permissible temperature and maintain it for at least 4 days. Once the floor has reached ambient temperature, tile installation can begin. Examples of adhesive to use:

- H40 FLEX+TOP LATEX (Kerakoll)
- LATICRETE 335+LATICRETE 282 (Laticrete)
- KERABOND + ISOLASTIC (Mapei)

CUTTING KERLITE TWIN

KERLITE TWIN must be cut using only diamond discs fitted to electrical grinding machines or water-cooled cutting machines for ceramics.

APPLICATION OF ADHESIVE AND INSTALLATION

1. Spread the adhesive full-bed using a trowel with tilted teeth at a distance of 6 mm the one from the other (**fig. 18**).
2. Position the slab and tap it repeatedly using a rubber trowel or by pressing on it with your hands to ensure adhesion all over and prevent air gaps and bubbles forming (**fig. 13**).

JOINT BETWEEN PIECES

Use special spacer crosses with a size of at least 2 mm.

EXPANSION JOINTS

Variation of the length of the joint depends on the expansion coefficient, which for KERLITE is $7.0 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ (i.e. for a temperature range of 70°C, expansion is 0.5 mm per linear metre). Perimeter joints must be at 5-8 mm from the wall (**fig. 24**). **In any case, provision of expansion joints must be calculated by the person in charge of the building site.**

NEVER WALK ON THE FLOOR DURING AND AFTER INSTALLATION UNTIL THE ADHESIVE HAS DRIED.

TECHNICAL CHARACTERISTICS

SLIP RESISTANCE: SAFETY FEATURES IN ACCORDANCE TO ITALIAN LAWS AND DIN STANDARDS

	Dynamic friction leather-dry	Dynamic friction rubber-dry	Dynamic friction rubber-wet	Non-slip properties	
Test method	B.C.R.A	B.C.R.A	B.C.R.A	DIN 51130	ASTM C 1028
Requirements	> 0,40	> 0,40	> 0,40	R9	≥ 0,60 Dry Neolite ≥ 0,60 Wet Neolite
kerlite <small>plus</small>	0,53	0,59	0,56	R9 Avantgarde, Buxy, Elegance, Oaks	≥ 0,68 Dry Neolite ≥ 0,61 Wet Neolite
kerlite <small>twin</small>	0,53	0,59	0,56	R9 Buxy	≥ 0,68 Dry Neolite ≥ 0,61 Wet Neolite

TECHNICAL SPECIFICATIONS ACCORDING TO THE ISO 13006-G AND EN 14411-G STANDARDS

	Water absorption (E)	Breaking stress (S) average value	Deep abrasion resistance	Thermal shock resistance	Linear thermal expansion coefficient	Frost-resistance	Resistance to chemicals	Resistance to stains	Fire-resistance (National)	Fire-resistance (European)
Test method	UNI EN ISO 10545-3	UNI EN ISO 10545-4	UNI EN ISO 10545-6	UNI EN ISO 10545-9	UNI EN ISO 10545-8	UNI EN ISO 10545-12	UNI EN ISO 10545-13	UNI EN ISO 10545-14	UNI EN 13501-1	UNI EN 13501-1
Requirements	< 0,5%	> 700 N > 70 kg	< 175 mm ³	Resistant	As indicated by maker	Frost-proof	As indicated by maker	> Classe 3	National class	European class
kerlite <small>3mm</small>	0,1%	-	146 mm ³	Resistant	7,0x10 ⁻⁶ °C ⁻¹	Frost-proof	ULA-UHA	Classe 5	Classe 0	Classe A1
kerlite <small>plus</small>	0,1%	1235 N 126 kg	146 mm ³	Resistant	7,0x10 ⁻⁶ °C ⁻¹	Frost-proof	ULA-UHA	Classe 5 Classe 3 (SOFT)	Classe 1	Classe A2 s1 d0 (wall installation) Classe A2 fl s1 (floor installation)
kerlite <small>twin</small>	0,4%	1838 N 187 kg	146 mm ³	Resistant	7,0x10 ⁻⁶ °C ⁻¹	Frost-proof	ULA-UHA	Classe 5	Classe 1	-

RECOMMENDED ADHESIVES

Here below is a list of the most common supports used in building with the relative adhesive and class in accordance to the EN 12004 (adhesion) and EN 12002 (deformability) standards.

Adhesive for interior walls with standard bond strength			
Surface	Manufacturer	Product	Class
Gypsum plaster after application of a PRIMER, cement or plasterboard. Fibre cement panels. Light-weight blocks.	Kerakoll	H40 FLEX + TOP LATEX	C2E/S1
	Laticrete	LATICRETE 335 + LATICRETE 282	C2TE/S1
	Mapei	KERAFLEX MAXI	C2TE/S1
Concrete, old ceramic, marble, stone.	Kerakoll	H40 FLEX + TOP LATEX	C2E/S1
	Laticrete	LATICRETE 335 + LATICRETE 333	C2TE/S2
	Mapei	KERABOND + ISOLASTIC	C2/S2
Particle board, metal.	Kerakoll	SUPERFLEX	R2T
	Laticrete	LATALASTIK	R2T
	Mapei	KERALASTIC T	R2T

Adhesive for interior - exterior floors with standard bond strength			
Surface	Manufacturer	Product	Class
Cement slabs and heated floors, concrete, old ceramics, marble and stone.	Kerakoll	H40 FLEX + TOP LATEX	C2E/S1
	Laticrete	LATICRETE 335 + LATICRETE 333	C2TE/S2
	Mapei	KERABOND + ISOLASTIC	C2/S2
Wood, PVC, rubber, metal.	Kerakoll	SUPERFLEX	R2T
	Laticrete	LATALASTIK	R2T
	Mapei	KERALASTIC	R2

Adhesive for exterior walls with standard bond strength			
Surface	Manufacturer	Prodotto	Class
Plaster	Kerakoll	H40 FLEX + TOP LATEX	C2E/S1
	Laticrete	LATICRETE 335 + LATICRETE 333	C2TE/S2
	Mapei	ULTRAFLEX S2 MONO	C2TE/S2
Concrete	Kerakoll	H40 FLEX + TOP LATEX	C2E/S1
	Laticrete	LATICRETE 335 + LATICRETE 333	C2TE/S2
	Mapei	KERABOND + ISOLASTIC	C2/S2

Special cases with standard bond strength			
Surface	Manufacturer	Product	Class
Work benches (marine grade plywood, metal, etc.)	Kerakoll	SUPERFLEX	R2T
	Laticrete	LATALASTIK	R2T
	Mapei	KERALASTIC T	R2

CLEANING AND MAINTENANCE

CLEANING AFTER INSTALLATION

Cleaning after installation is compulsory when building work has been completed.

Badly performed cleaning after installation or, worse still, failure to perform after-installation cleaning, may cause stains that will impair floor or wall cleaning, even if this is performed daily.

To guarantee excellent cleaning, it is recommended to use a motorised brush with suitable discs.

CEMENT-BASED PLASTER MIXED WITH WATER

To remove residues of cement, grout, plaster, cement-based grout, etc., after-installation cleaning must be performed after 4 or 5 days from installation (to enable the plaster to harden) and in any case within 10 days. After 10 days, cleaning can become very troublesome. Cleaning is performed with special acid buffer detergents.

These detergents are easy to retrieve. Some are mentioned in the **Table A**.

EPOXY ADHESIVES

These must be removed immediately and accurately using a sponge and plenty of water since these adhesives harden very rapidly, even in just a few minutes.

The day following after-installation cleaning, perform thorough cleaning with alkaline detergents. Some of these are mentioned in **Table B**.

For more information, refer to the instructions provided by the maker.

CEMENT-BASED PLASTER WITH ADDITIVES (LATEX, RESIN, ETC.)

Remove immediately with a sponge and plenty of water,

Do not perform after-installation cleaning if the temperature is high. In Summer, clean during the cooler hours of the day.

DAILY CLEANING

Perform daily/routine cleaning with neutral detergents or degreasers diluted in water, following the instructions given on the packages.

Use standard detergents (see **Table C**).

EXTRA-DUTY CLEANING

This is performed to remove particularly old or deep-down stains or residues.

The most effective detergents and the types of stain they tackle are indicated in **Table D**.

IMPORTANT: always perform tests before using a product (on a spare tile).

REMOVING WAX OR GLOSSY FILMS

Do not use wax on KERLITE wall and floor tiles

Many standard detergents contain wax or gloss-enhancing additives that tend to deposit on the floor and create glossy films, which are troublesome and cause stains.

These films can also result from the use of some types of grouts for joints.

Simple substances, such as Coca Cola, wine, water, etc..., if spilt on the floor will remove this glossy film and give KERLITE its initial matt appearance.

The matt areas will resemble stains whereas they are actually the cleaner areas of the floor.

In these cases, the entire floor must be de-waxed following the instructions in **Table E**. Then, for routine cleaning, use the detergents shown in **Table D**.

TABLE A - STANDARD CLEANING (CEMENT-BASED PLASTER, GROUT, CEMENT, PLASTER)

TYPE OF DETERGENT	NAME OF DETERGENT	MANUFACTURER
Acid base	KERANET	MAPEI
	CEMENT REMOVER	FABERCHIMICA
	DETERDEK	FILA

TABLE B - THOROUGH CLEANING

TYPE OF DETERGENT	NAME OF DETERGENT	MANUFACTURER
Alkali base	WAX REMOVER	FABERCHIMICA
	PS 87	FILA
	CIF degreaser with sodium bicarbonate	UNILEVER ITALIA

TABLE C - DAILY CLEANING

TYPE OF DETERGENT	NAME OF DETERGENT	MANUFACTURER
Neutral detergent or degreaser	GLASSEX degreaser	RECKITT BENCKISER
	AJAX	COLGATE PALMOLIVE
	CIF degreaser with sodium bicarbonate	UNILEVER ITALIA
	FLOOR CLEANER	FABERCHIMICA
	FILA CLEANER	FILA

TABLE D - EXTRA-DUTY CLEANING

RESIDUE TO REMOVE	TYPE OF DETERGENT	NAME OF DETERGENT	MANUFACTURER
Coffee, Coca Cola, fruit juice, wax, grease, etc.	Multipurpose, alkaline-based	COLOURED STAIN REMOVER	FABERCHIMICA
		PS 87	FILA
		CIF degreaser with sodium bicarbonate	UNILEVER ITALIA
Wine	Oxidizer	OXIDANT	FABERCHIMICA
Lime deposit	Acid base	VIAKAL	PROCTER & GAMBLE
Rust	Acid base	DILUTED MURIATIC ACID	VARIOUS MAKERS
Ink, felt-tip pen	Solvent- based	NITRO THINNER, TCE, TURPENTINE	VARIOUS MAKERS
		COLOURED STAIN REMOVER	FABERCHIMICA
Tire marks, rubber marks, suction cup marks, metal or pencil marks	Abrasive paste	VIM CLOREX POWDER	GUABER
		POLISHING CREAM	FABERCHIMICA
		DETERGUM	ZEP ITALIA
		Eraser (for pencil marks only)	-

TABLE E - REMOVAL OF WAX AND GLOSSY FILM CAUSED BY DETERGENTS

TYPE OF DETERGENT	NAME OF DETERGENT	MANUFACTURER
Acid base	VIAKAL (*)	PROCTER & GAMBLE
	TILE CLEANER, undiluted (*)	FABERCHIMICA

(*) Do not follow the instructions on the pack but apply the detergent undiluted; let it work for 15-30 minutes then rub with soft or mildly abrasive pads (white, yellow, red). Rinse thoroughly with water.

PACKAGING





PACKAGING 100x100
cm 106x106x61



PACKAGING 40x100 and 14,3x100
cm 106x92x61



PACKAGING 50x50
cm 106x92x71



PACKAGING 20x150
cm 158x108x40

Size	Pieces per box	Sq.mt. per box	Kg per box	Boxes per pallet	Sq.mt. per pallet	Kg per pallet
cm 300x100x0,7 Kerlite Twin	-	-	-	5 pcs. per pallet	15	240
cm 300x100x0,35 Kerlite Plus	-	-	-	10 pcs. per pallet	30	234
cm 300x100x0,3 Kerlite 3 mm	-	-	-	10 pcs. per pallet	30	222
cm 100x100x0,7 Kerlite Twin	2	2	32	20	40	640
cm 100x100x0,35 Kerlite Plus	3	3	23,4	25	75	585
cm 100x100x0,3 Kerlite 3 mm	3	3	22,2	25	75	555
cm 20x150x0,35 Kerlite Plus	5	1,5	12,8	40	60	512
cm 14,3x100x0,35 Kerlite Plus	10	1,42	12	40	56,8	480
cm 50x50x0,35 Kerlite Plus	7	1,75	13,65	48	84	655,2
cm 40x100x0,3 Kerlite 3 mm	5	2	14,2	35	70	518
cm 4,9x100x0,3 Kerlite 3 mm	10	0,49	3,9	39	19,11	152,1