GENERAL TECHNICAL GUIDELINES

Release A

TECHNICAL MANUAL FOR **Pacshore Tech** COLLECTION PRODUCTS

The Pacshore Tech Collection Slabs in porcelain stoneware are a product obtained by compacting materials such as clays, feldspars, kaolin and quartz sands, baked in ovens at temperatures above 1,200° C.
With a size of 1,600x3,200 and 12 mm thick, the **Pacshore Tech** Slab is suitable for the most varied applications such as kitchen tops, bathroom vanity tops, table tops and furnishing in general; façade cladding, floorings, etc…

TECHNICAL FEATURES

100% NATURAL	FROST RESISTANT
HYGIENIC	100% RECYCLABLE
SCRATCHPROOF	RESISTANT TO HIGH TEMPERATURES
EASY TO CLEAN	NON-POROUS
UV RESISTANT	

- Hygienic surface suitable for food contact
- Easy to clean and maintain
- Frost and high temperatures resistant
- Thermal shocks resistant
- Mold- and mildew-resistant
- Stains and acids- resistant
- UV resistant
- Resistant to bending and shocks
- Highly resistant to scratches and abrasion

1) GENERAL GUIDELINES

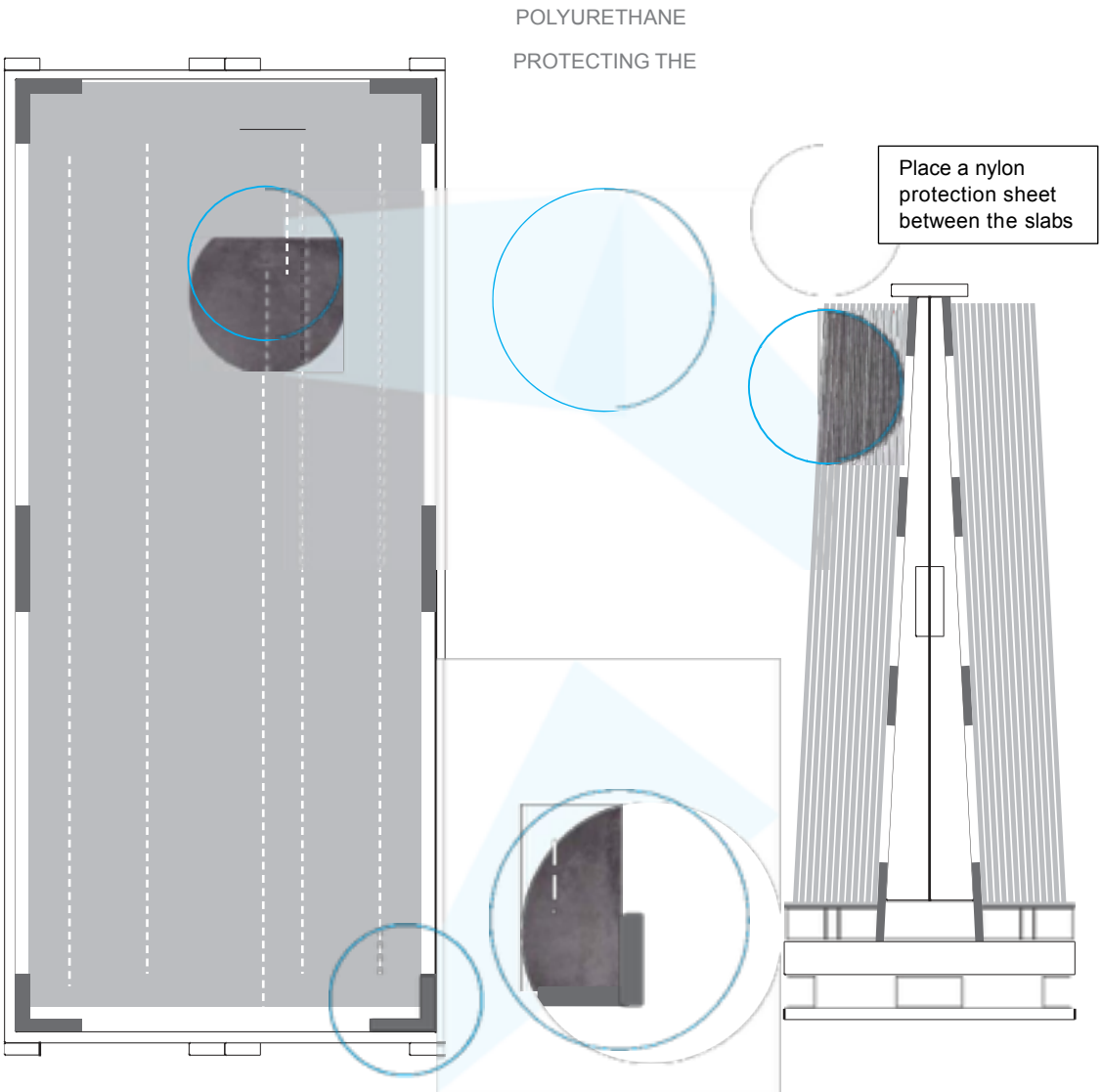
What stated herein is a technical opinion that must NOT imply any responsibility and / or indisputable standards; however, these guidelines are the result of Working Tests performed by fabricators who agreed to check the operations listed hereafter.

. Slabs Storage

Indoor storage is recommended. Although the slabs are durable, problems with the materials used for packing, such as wood, may arise. For this reason, we recommend storage at least in a shed area and away from heat sources.
Both trestles and rails can be used, always providing support stakes so that they can evenly support the slabs thus avoiding any flexure point that could compromise the integrity of the slabs. It is also advisable to prepare a support consisting of a first slab of a very low flexing material, such as a 3/4 cm thick granite slab supporting the whole surface of the Pacshore Tech Slabs.
In case of storage with rails or metal trestles, the parts in contact with the material should be coated (with a wood or rubber protection) in order to prevent chipping of the material.
Here are some examples of storage and bundle compositions:

Bundles Composition:

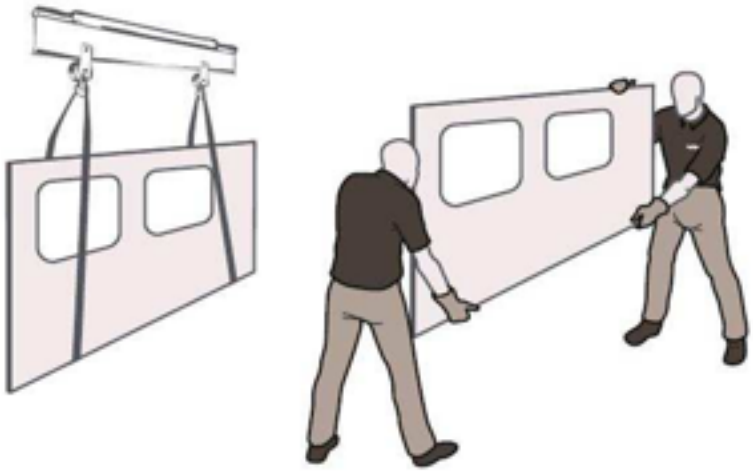
Wooden crates or trestles composition:



The crates (or the trestles) should be handled with forklifts from the long side with 2,5 m. forks. The slabs must be moved vertically and, in case of handling with cranes, slings must be made of hemp ropes (steel chains not recommended) in order to avoid breakage and/ or chipping. In case of storage on metal trestles, these must be lined with wood or rubber.

. Handling

Always handle the slabs vertically, never horizontally.



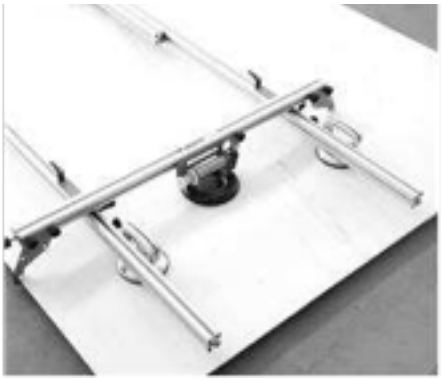
For a proper vertical handling there are suitable tools on the market specifically meant for site or storage handling.

For a single slab handling, safety ropes with a special anti-cut covering as well as specifically certified grabs should be used.

In case of multiple slabs handling, safety certified spreader bars with canvas straps with anti-cut protection should be used. In some cases, it might be helpful to place spacers underneath and above the slabs, in order to avoid breakages due to the straps stress point.

For on-site handling, we recommend the use of frames equipped with suction cups sized groups allowing to work in complete safety.

The photographs show some examples.

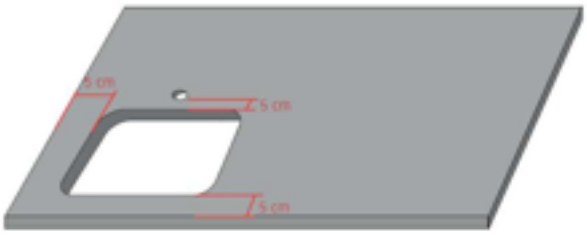




2) TECHNICAL HINTS FOR PROCESSING

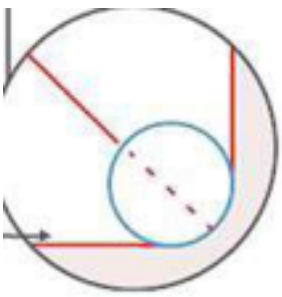
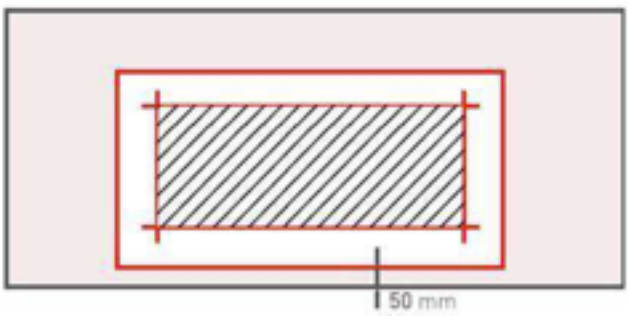
For processing Pacshore Tech materials only special equipment for the processing of porcelain stoneware can be used; particularly, never user non-specific cutting disks. The use of cutting disks meant for natural stone cutting (i.e. non-continuous rim blades), for instance, may irreparably compromise the slab, by causing its uncontrolled breakage. Always contact the tools manufacturer in order to obtain the correct information about the proper tools to perform the work.

Preliminary checks

- Always make sure that the work surface is level and that there are no processing residues.
- For light colors, use a reduced cutting speed compared to the one used for natural stone processing, in order to avoid cracks and creases in the material. According to the kind of equipment used, the tools manufacturer for porcelain stoneware will provide all necessary technical instructions.
- The glass fiber mat (or net) applied to the rear part of the slab creates no problem during processing; yet, the slab should be carefully checked for any irregularities on the rear due to the application of the safety net cloth; in case of irregularities, these should be removed before processing the slab.
- The distance between the hole (for the sink or the cooker) and the edge should never be less than 5 cm.; the same applies to the distance between the hole for the sink and for the tap.



Never cut holes with angles at 90 degrees.

3) GENERAL GUIDELINES FOR PROCESSING WITH AUTOMATIC MACHINES

WATERJET CUT

Water Jet	Min. pressure in bar	Forward movement in mm/min	Abrasive gr./min
Inlet hole	600	-	380 - 500
Cut	3500/3800	600/800	380 - 500

With a new 0,33 orifice and a new 1,02 mm focus, at peak performance, for a good cutting quality we recommend a forward movement between 700 and 800 per minute, with 400 gr. of Garnet abrasive grit and 3500/3600 BAR.

The quality of the abrasive used is fundamental.

TIPS: if possible, perform the inlet hole externally to the slab. Otherwise, perform the inlet hole a few inches away from the cutting edge and in any case never less than 9 mm.
In the corners of closed holes paths, low pressure circular drilling and minimum radius (5 mm) are recommended.

Disk diameter mm	Spindle revolutions (rpm)
300	2300/2500
350	2000/2200
400	1700/1900

Cutting parameters	Forward movement mm/min
Slab cutting entrance from above	100
Straight cutting	
Inclined cutting	800

It is essential to use special tools for the processing of porcelain stoneware and it is highly recommended not to use other types of tools.

For instance, with a disk for cutting 300 mm stoneware and a 2500 rpm we can get a forward movement up to 800 mm/min. Of course, each piece should be evaluated in itself, according to the colors and the geometric features of the artifact to be performed.

TIPS: during the cutting operation use plenty of water and direct the waterjet as close as possible to the cutting area; an **insufficient** water flow causes the disk to overheat, which compromises the operation as well as the disk itself.

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

4) GENERAL GUIDELINES FOR ON-SITE PROCESSING

For a good cutting and drilling performance, place the slab on a stable, flat and non-flexible surface (an aluminum profiled bench). For the cutting operation, use the aluminum guide with suction cups; the cut can be performed with a simple cutting cart. Once engraving has been carried out, move the slab outward and let it protrude about 10 cm; then, with the use of cutter pliers, begin to cut starting first from the two ends and following the engraving line.




For slab internal cuts it is recommended to draw some guidelines. In addition, in order to limit the occurrence of breakage, it is recommended to perform a hole of Ø 5 mm at the corners (with the use of a non-percussive drill). While drilling holes it is necessary to damp both the slab and the drilling bit. Follow the drawn guidelines with an angular grinder equipped with a diamond disk and then finish the edges with a diamond pad. In case of 45° cuts, traction devices are available.






5) GENERAL GUIDELINES FOR LAYING

The best technical and aesthetic result can be achieved only with a proper laying methodology. The substrate must be stable and properly seasoned, free of cracking, planar (with a 2 meter screed, maximum acceptable deviation 1mm), mechanically resistant and clean. To lay the material, both for flooring and for wall cladding, glue the slabs using porcelain stoneware adhesives of C2 TE S1 or S2 type.

Traditional cement screed: thickness must be at least 4 cm in case of desolidarized screed and the composition of the dough must be assessed according to the required mechanical strength performance. The screed should be planar and any possible cracks must be sealed monolithically with an epoxy resin. The screeds must be properly seasoned and the waiting time required before laying is approximately 7-10 days per centimeter of thickness.

Screeds for radiant floor systems: it is necessary to comply with the instructions given by the plant manufacturer, and it is also essential to switch on and test the system ignition before laying, according to UNI EN 1264-4. Waiting times depend on the type of material used for the screed. The adhesive to be used on the screed must be of improved adhesion (C2) and highly deformable type (S2) according to standard 12004.

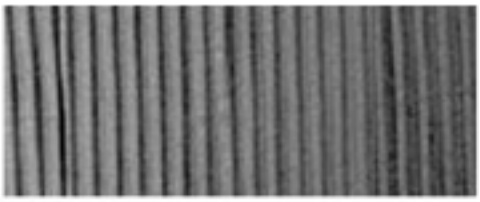
Concrete: it must have reached an adequate maturity (at least 3 months of seasoning); in addition, to ensure the claddin durability, the retaining walls must be properly insulated in order to prevent damp rising problems. The concrete on the wall must be free from treatments (anti-evaporation compounds, old paintings, etc.) which may affect its adhesion capacity.

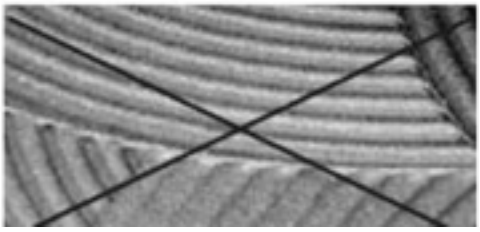
Special binders based screeds or pre-mixed mortars: waiting times before laying can be greatly reduced by using special binders or pre-mixed mortars with standard and quick setting or quick setting and drying.

Existing floors: to lay a new floor over a ceramic, tiles or natural stone pre-existing floor, these must be well anchored to the substrate, free of cracks and thoroughly clean from oils, waxes and grease. Otherwise, some “useful” products and tools recommended by the glue manufacturers shall have to be used.

Lying tiles with joints of at least 2/3 mm. (about 5mm for exterior flooring), as provided by the different laying standards, is of paramount importance, as well as using expansion joints every 25 sq. m.. A flooring surface with joints permits to withstand the differentiated movements between the substrate and the coating, due to structure settlements, thermal expansion, etc. thus avoiding dangerous tensions and consequent detachments or breakages of the slabs.

When laying, a double spreading technique must be used, i.e. the adhesive must be applied both on the slab and on the substrate. Apply the adhesive on the rear of the slab with a 3 mm toothed spatula; for the substrate, instead, use a 15 mm. round toothed or 10 mm. spatula with inclined teeth. Lay the adhesive in parallel, always in the same direction, without crossing movements, in order to avoid empty spaces. In addition, to complete the laying operations, use also the devices to join the slabs as well as the leveling wedges.





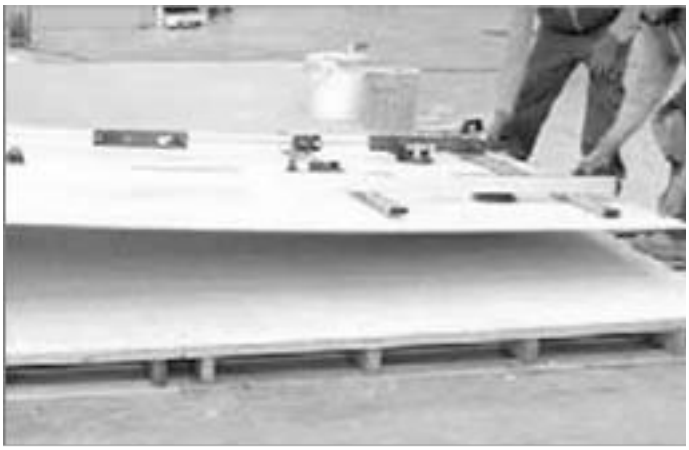
TAPPING AND TILTING

Air gaps and bubbles beneath the tile may pose a danger. To improve adhesion of the glue and facilitate the leakage of the air, use an anti-rebound plastic trowel (no rubber hammer). Perform tapping starting from the center toward the outer sides, following the channels created while laying the adhesive.

TILE LEVELING SYSTEMS

For a better floor leveling, we recommend using the leveling systems that replace the common spacer crosses. These spacers are made up of bases and leveling systems which, regardless of the type, help maintain the alignment of the slabs.

Use the special frame with suction cups to position the slab upon the adhesive bed and tap the slab with the special rubber-coated anti-rebound trowel starting from the center toward the outer sides, in order to ensure complete adhesion and the air outlet. Joints can be grouted after about 2/3 hours in case of fast setting adhesives or after about 24 hours in case of standard setting adhesives.



After the installation it is recommended to clean the slabs with acid-based detergents for cement-based plaster or with special detergents possibly suggested by the manufacturer in case of epoxy or polyurethane products.
For the installation of kitchen countertops, sinks, etc…, glue the slabs with polyurethane or epoxy adhesives, grout the joints with suitable adhesives and polish manually.

Both for flooring and wall cladding installations, the laying substrate must have the features indicated below. The warranty and control of the following features shall be the responsibility of the designer and of the installer performing the work.

CLEANING, MAINTENANCE AND CARE

Perform daily cleaning with lukewarm water and home detergent, if necessary; for more stubborn stains the following detergents are suggested:

Acid: acid detergents, descaling products, concrete removers i.e.. Viakal. Alkaline: basic detergent, ammonia, degreaser e.i. Chante Clair, Cif. Solvent: universal solvent, thinner, turpentine, alcohol.

Oxidizer: bleach, hydrogen peroxide.

After user, always rinse thoroughly with water.

KIND OF STAIN	DETERGENTS
Beer, wine, co!ee	Sodium hypochlorite (bleach) solution or alkaline detergent
Ice cream	Diluted solution of sodium hypochlorite (bleach)
Tire rubber	Organic Solvent (Triethylene, thinner)
Grease and oils	Alkaline-based cleaner
Ink	Sodium hypochlorite (bleach) solution or alkaline detergent
Felt-tip pen (permanent marker)	Organic Solvent (nail polish remover, thinner)
Resins	Organic solvent organico (turpentine, thinner)
Aluminium/metal scratches	Acid detergent or cream/powder abrasive cleanser
Rust	Acid-based detergent
Fruit juices	Diluted solution of sodium hypochlorite (bleach)
Other stains	

Repair guide:

Repairing small chippings is possible. Skilled hands can restore small chippings with epoxy resins even if it is not easy to find the right tones and restore the original surface. Once the chipping is fixed, remove the excess resin with a cloth soaked with acetone [nail polish remover] before it hardens. Once hardened, work the resin manually to homogenize the surface.

COMPARATIVE TABLE OF FURNISHING MATERIAL PROPERTIES

	Pacshore Tech Satin	Pacshore Tech Lux	AGGLOQUARTZ	LAMINATES AND WOODS		STEEL
HYGIENIC	● ● ●	● ● ●	● ● ●	●		● ● ●
NON POROUS	● ● ●	● ● ●	● ● ●	●		● ● ●
SUITABLE FOR OUTDOOR INSTALLATIONS	● ● ●	● ● ●	●	●		● ●
HEAT AND HIGH TEMPERATUR RESISTANC	● ● ●	● ● ●	● ●	●		● ● ●
MOULD AND MILDEW RESISTANCE	● ● ●	● ● ●	● ● ●	● ●		● ● ●
STAIN RESISTANCE	● ● ●	● ●	● ●	● ●		● ● ●
DETERGENT RESISTANCE	● ● ●	● ●	● ●	● ●		●
CHEMICAL RESISTANCE	● ● ●	● ●	● ●	●		● ●
THERMAL SHOCK RESISTANCE	● ● ●	● ●	● ●	●		● ● ●
FREEZE/THAW RESISTANCE	● ● ●	● ● ●	● ● ●	●		● ● ●
RESISTANCE TO HUMIDITY	● ● ●	● ● ●	● ● ●	●		● ● ●
UV RAYS RESISTANCE	● ● ●	● ●	● ●	●		● ● ●
RESISTANCE TO SCRATCHES AND ABRASIONS	● ● ●	● ●	● ●	●		●
EASY CLEANING AND MAINTENANCE	● ● ●	● ● ●	● ● ●	● ●		●

TECHNICAL SPECIFICATIONS

PORCELAIN STONEWARE				
CHARACTERISTIC	UNIT MEASU	AVERA VALU	PRESCRIBED VALUE	TEST
SIDES DIMENSION	%	COMPLIANT	+/- 0,6 MAX	UNI EN ISO
SIDES STRAIGHTNESS	%	COMPLIANT	+/- 0,5 MAX	UNI EN ISO
SIDES STRAIGHTNESS	%	COMPLIANT	+/- 0,6 MAX	UNI EN ISO
PLANARITY [FLATNESS]	%	COMPLIANT	+/- 1MAX	UNI EN ISO
THICKNESS	%	COMPLIANT	+/- 0,5 MAX	UNI EN ISO
WATER ABSORPTION	%	COMPLIANT	≤ 0,5	UNI EN ISO
BREAKING RESISTANCE	N	COMPLIANT	≥ 700	UNI EN ISO
BREAKING MODULE	N/mm2	COMPLIANT	≥ 28	UNI EN ISO
LINEAR EXPANSION	MK [- 1]	a7,00	DECLARED VALUE	UNI EN ISO 10545-8
THERMAL SHOCK RESISTANCE		RESISTANT	PASS. ACC. TO 10545-1	UNI EN ISO
CHEMICAL RESISTANCE		COMPLIANT	MINGB	UNI EN ISO
RESISTANCE TO ACIDS LOW CONCENTRATED		ULA	METHOD AVAILABLE	UNI EN ISO
FREEZE RESISTANCE		RESISTANT	PASS. ACC. TO 10545-1	UNI EN ISO
STAIN RESISTANCE		COMPLIANT	MINIMUM CLASS	UNI EN ISO
MOHS HARDNESS SCALE		5-8	>-5	[EN

www.pacificshorestones.com/pacshore-tech