Antolini®
ITALY

Antolini | Tech®

GENERAL TECHNICAL GUIDELINES

Release F

JANUARY 2023

TECHNICAL GUIDE - ANTOLINI TECH COLLECTION PRODUCTS

The slabs of the Antolini Tech collection in porcelain stoneware are products obtained from the compaction of materials such as clays, feldspar, kaolin and quartz sands, baked in ovens at temperatures above 1200° C.
With the size of 1600x3200mm and 6.5-12-20mm thick, the Antolini Tech Slab is ideal for a variety of applications such as: kitchen tops, vanity tops, tables and furniture in general; cladding of facades, floors, etc.

FEATURES

100% NATURAL

HYGIENIC

HIGH SCRATCH RESISTANCE*

EASY TO CLEAN

UV RESISTANT

FROST RESISTANT

100% RECYCLABLE

RESISTANT TO HIGH TEMPERATURES

WATERPROOF

- Hygienic surface, suitable for contact with food
- Easy care and maintenance
- Immunity to freeze and heat resistant
- Thermal shock resistant
- Mold- and mildew-resistant
- Resistant to stains and acids
- Resistant to UV rays
- Resistant to bending and impact

* Antolini Tech satin and rock surface offer high-performance resistance to scratching and abrasion

1) CAUTION! SILICA DUST:

Sanding/cutting/drilling operations on ceramic and porcelain stoneware products can generate dust (crystalline silica) containing chemical elements that can cause serious or fatal illnesses, such as respiratory or other diseases and cancer. If inhaled, crystalline silica can cause silicosis, a lung fibrosis. Silicosis can lead to disability, increased risk of tuberculosis and death. In addition, exposure to silica dust, generated by grinding, cutting or drilling ceramic and porcelain stoneware products, can cause corneal abrasion or irritation of the eyes or skin.

N.B.: Before working with AntoliniTech® products, all distributors, dealers and installers (referred to here as "dealers") must read all relevant warnings (including the material data sheet or MSDS), provide their workers, masons and processors (referred to here as "workers" or "masons") with appropriate training and information on the potential harmful effects of exposure to crystalline silica on health, and present best practices to reduce exposure. Failure to do so could result in serious illness or death.

Antolini Luigi & C. S.p.A. cannot be held responsible for any damage or loss resulting from the dealer's failure to comply with these instructions or to ensure compliance with the best practices in the sector by its processors.

OBSERVE AND ENFORCE THE FOLLOWING INSTRUCTIONS TO ENSURE THE SAFETY OF WORKERS:

• Ensure adequate ventilation in all working areas.

• Display warning signs in all work areas and other unprotected neighbouring areas, alerting workers to the dangers of crystalline silica and the risks of handling materials without the required protective equipment.

• Provide workers with training that includes information on health effects, work practices and protective equipment for crystalline silica.

• Require workers to wear a suitable agency-approved dust mask in accordance with applicable government regulations and the manufacturer's instructions to further limit exposure to respirable crystalline silica in all areas marked "Hazardous Dusts".

Make sure that all workers are using them correctly, and check from time to time that workers are actually using them. Inform workers that paper masks are NOT effective protection from exposure.

For further information, please refer to the following organisations:
• International Labor Organization (http://ilo. org/safework/info)
• Occupational Safety & Health Administration (www.osha.gov)
• European Network for Silica (http://www.nepsi.eu/good- practice-guide.aspx)

CAUTION! The warnings, precautions and communications described in this instruction manual cannot cover all possible conditions and situations that may occur. Common sense and caution are essential factors that should always be applied by operators.

FAILURE TO COMPLY WITH OUR CAUTIONS AND OTHER INSTRUCTIONS COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH. ANTOLINI LUIGI & C. DECLINES ALL RESPONSIBILITY IF THE DEALER/PROCESSOR DOES NOT COMPLY WITH THE RECOMMENDATIONS AND WARNINGS CONTAINED IN THESE INSTRUCTIONS.

2) GENERAL INFORMATION

The information provided represents a technical opinion that should not be the subject of liability and / or shall not set any indisputable standards; however, these Processing Tests were performed by transformers who verified the operations listed below.

. Storage of the slabs

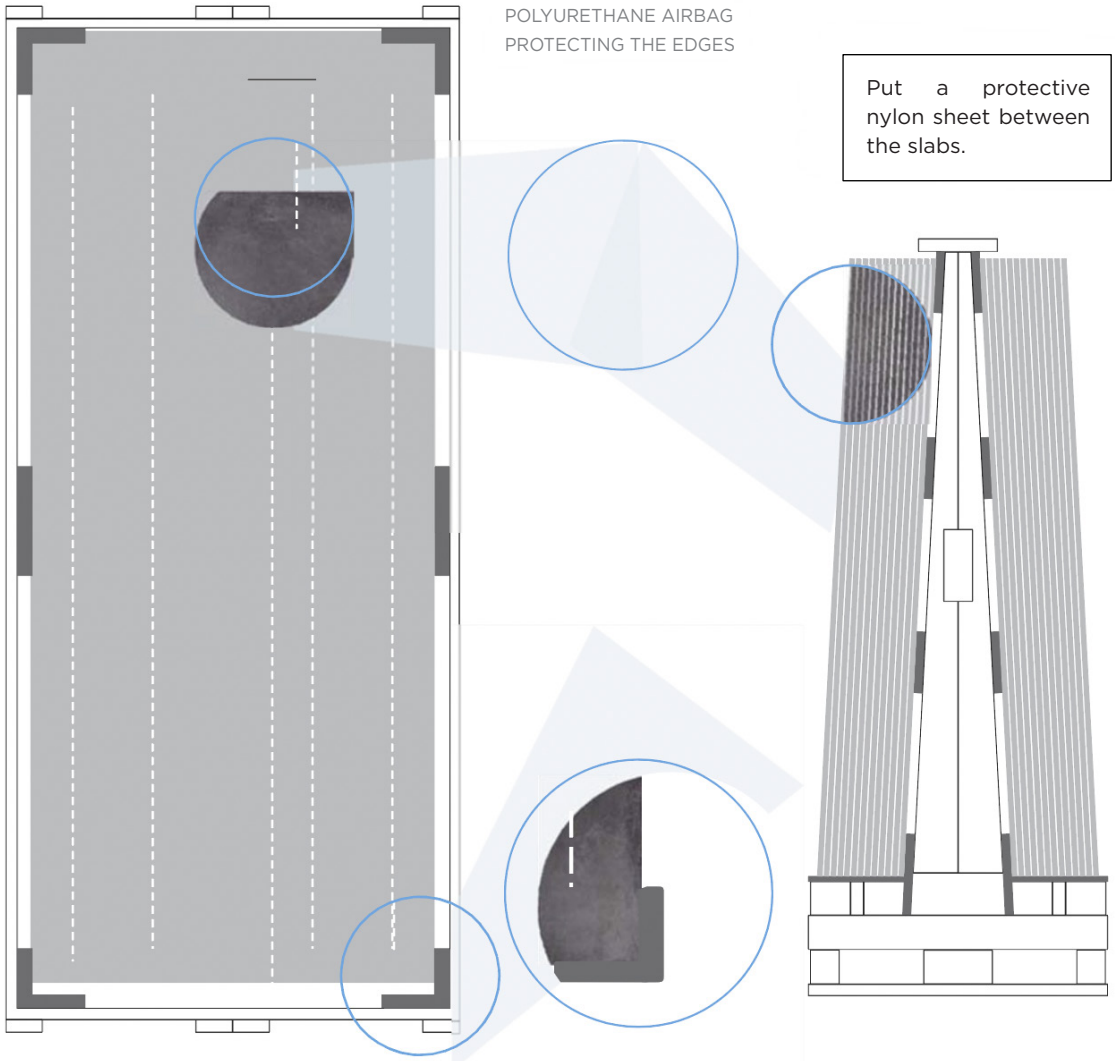
Indoor storage is recommended. Even if the slabs are resistant, problems could arise with the materials used for packaging, such as wood. For these reasons, storage is recommended at least in a shed area and away from heat sources.

Both racks and rails can be used. Some support posts should be arranged in order to allow uniform support of the slabs, and to avoid any bending points that could compromise the integrity of the slabs. It is also recommended to prepare a first support slab made of material with very low flexion, for example granite 3 / 4cm thick, supporting the whole surface of the Antolini tech slabs.
In case of storage on metal rails or racks, the parts in contact with the material should be coated (with wood or rubber) in order to avoid chipping of the material.

Here are some examples of storage and bundle composition:

Bundle Composition:

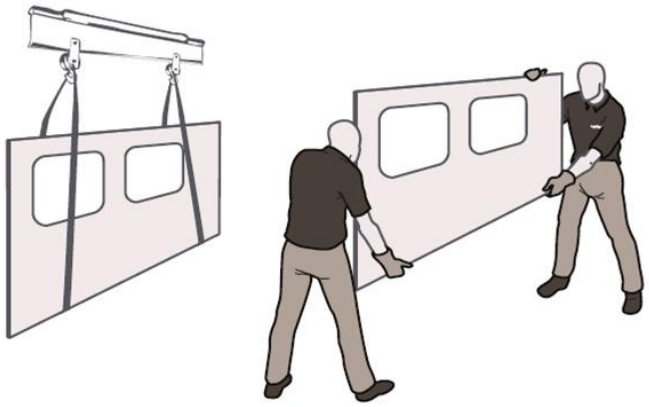
Composition in the case of wooden crates or racks:



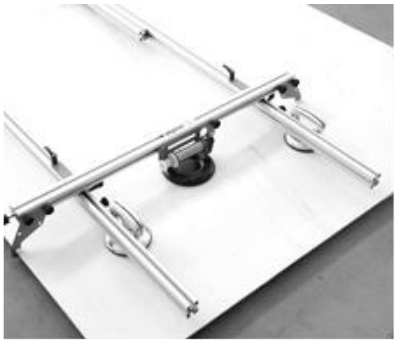
The crates (or racks) should be handled with forks from the long side with the 2.5 m forklifts. The slabs must be handled vertically, and in the case of handling with overhead cranes, the harness must be made with hemp ropes (steel chains are not recommended) in order to avoid breakage and / or chipping.

. Handling

Handling shall always be performed with the slabs positioned vertically, never horizontally.



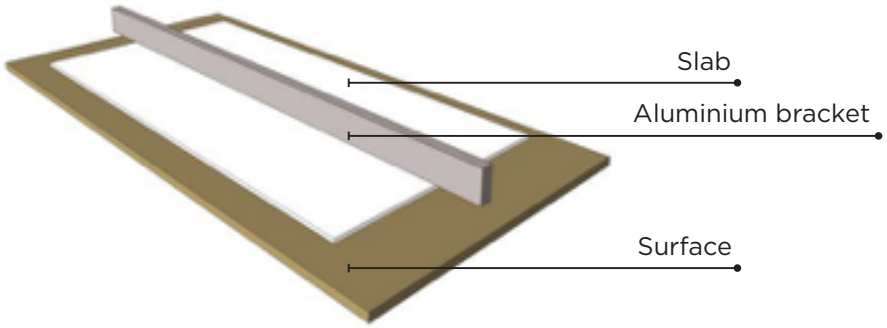
For this operation, equipment suitable for handling on site or in storage is available on the market.
For gripping a single slab, safety ropes coated with appropriate anti-cut protections can be used, or even specific pliers certified for this use.
When handling multiple slabs, a certified safety sling bar shall be used, equipped with canvas belts with anti-cut protection.
In some cases, it may be useful to use spacers to be positioned above and below the slabs, in order to avoid breakage due to the point of effort of the belts.
In the case of handling on site, it is recommended to use frames equipped with suction cup units sized to work in complete safety.
Some examples in the photographs:


3) PRELIMINARY CHECKS VALID FOR ALL THICKNESSES (6.5 - 12 - 20 MM)

Premise: For the processing of Antolini Tech slabs, only specific equipment for the processing of porcelain stoneware should be used; in particular, non-specific cutting discs should never be used. The use of discs with a segmented rim intended for processing, for example, natural stone, could irreparably damage the slab causing an uncontrolled breakage. Always contact the tool manufacturer for the instructions on the ideal tool to carry out the processing operations.

- In the case of projects requiring several slabs, it is the customer's responsibility to request at the time of the purchase order, that all the slabs are from the same production batch (indicated in the RFID tag applied to each slab). If this is not possible, always perform a visual check of the matching of the graphics and the colour tone between the available slabs, before carrying out any type of processing.
- Always make sure that the worktop is perfectly flat, and that there are no processing residues or depressions on the surface. Even small imperfections may cause the material to break. For these reasons, various machinery manufacturers have provided specific processing benches for porcelain stoneware made with materials suitable for use.
- The flatness check must be carried out before any machining. To check it, place the slab horizontally on a completely flat surface large enough to ensure that all corners touch the support surface; after which it is necessary to position the test bar on the surface. The standard tolerance should not exceed 2 mm.



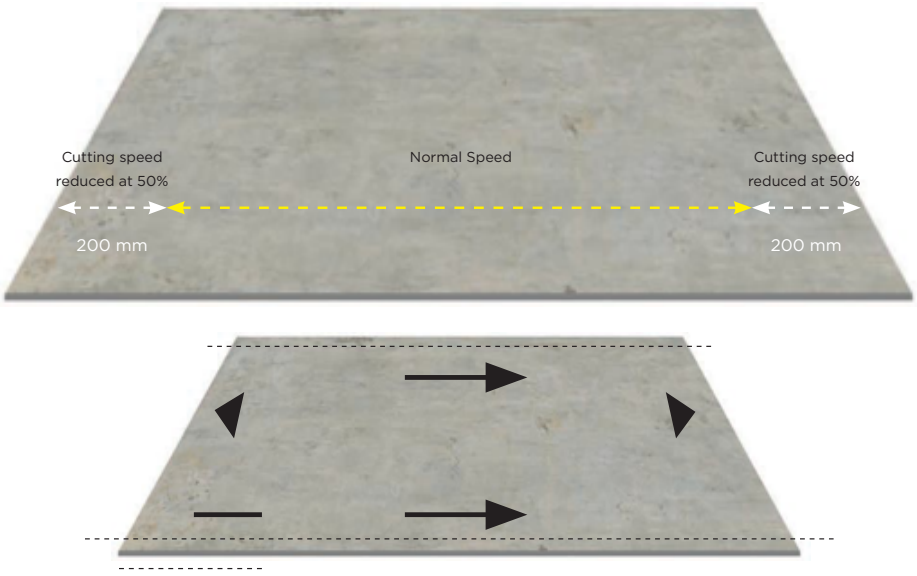
According to the UNI EN ISO 10545-2 standards, the material must be checked horizontally at a distance of 1 mt. Antolini Tech slabs are the result of the processing of raw materials of natural origin. The different composition and the potential presence of tiny impurities may result in differences in tone both between slabs from different production batches and between surfaces and substrate. Any imperfections are considered acceptable within the following limits provided by the standard:

- pollution (colour dots unrelated to the graphic in strong contrast with the background) or holes of approximately 1 mm in diameter;
- lumps in relief (same colour as the background) up to 3 mm in diameter and up to 1 mm thick.

4) TECHNICAL HINTS FOR PROCESSING SLABS WITH THICKNESS 12 MM

• Before starting any manufacturing process, the slab must be cleaned and visually inspected to verify that it complies with the quality requirements indicated above. Do not process slabs with any type of surface defect such as stains, drops of enamel, chips or scratches due to handling, which cannot be eliminated through the cutting layout. Complaints regarding processed or installed slabs shall not be accepted.
• Always make sure that the work surface is perfectly flat, and that there are no processing residues or depressions on the surface: even small imperfections may cause breakage of the material.
• In general, a reduced cutting speed should be used compared to the one used for processing natural stone, this to avoid cracks and creases of the material. Depending on the type of machine used, the supplier of the porcelain stoneware tool will be able to provide all the necessary technical information.
• The fiberglass mat (or mesh) applied to the back of the slab does not create any problems during processing; yet, the slab should be carefully checked for any irregularities due to the application of the safety net mat. If they are found, they should be removed before processing the slab.
• The slabs are supplied full size, not squared on the perimeter. Before starting the processing operations, the slab should be de-tensioned, cutting the edges by about 20 mm. It is recommended to carry out this operation with the disc / bur and not with the Waterjet.

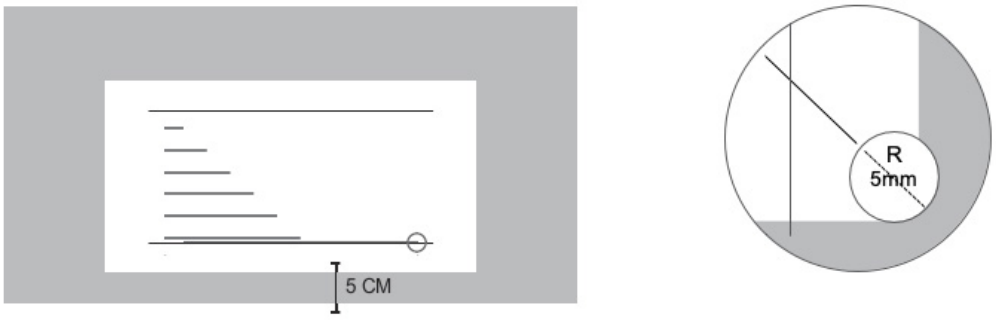
Both the 1st and the 2nd cut, as well as the 3rd and 4th must be made in the same direction and using a speed reduced by 50% at the beginning and at the end of the cut.

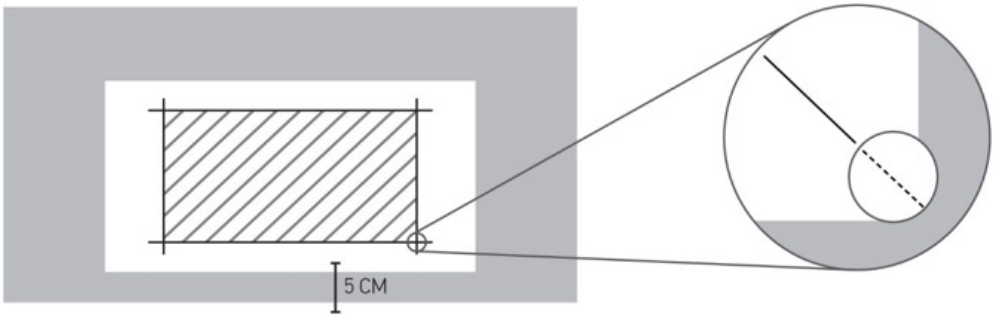


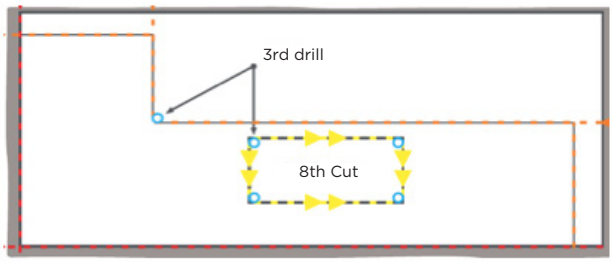
HOLES

The distance between the hole (for the sink or for the burners) and the edge should never be less than 5cm. The same applies to the distance between the hole for the sink and for the tap.

Never cut holes with angles at 90 degrees. A minimum radius of 5 mm is always recommended. Avoid making cross cuts. Always drill the small pilot holes first.

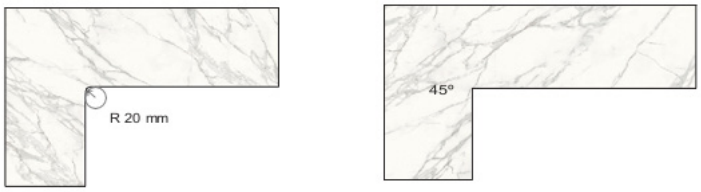






HORIZONTAL JOINTS

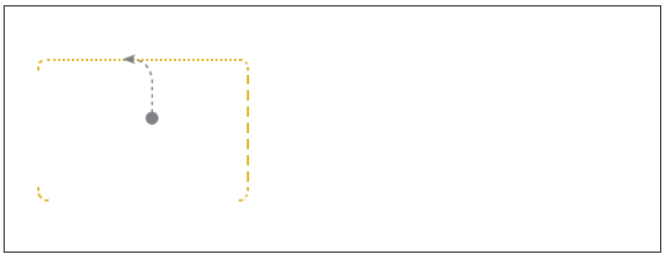
L-shaped pieces must have a junction.



5) GENERAL GUIDELINES FOR PROCESSING WITH AUTOMATIC MACHINES

WATERJET CUT

This equipment allows to perform various operations of cutting, shaping and drilling with a high degree of precision. It is advisable to check that the metal grid that will support the material is in good condition and perfectly flat and that the piece, once positioned, is adequately locked in order to prevent movements that may compromise the quality of the work.
The feed rate depends on the type of cut that will be performed, as well as on the type of machine. Below is a non-binding example. Always contact the manufacturer of the machinery to receive all the necessary information.



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

EXAMPLE: With a new 0,33 orifice and a new 1,02 mm focusing tube, 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 per minute and 3500/3600 BAR.
The quality of the abrasive used is fundamental.

TIPS: If possible, perform the entry hole, outside the slab. If not, make the entry hole a few centimeters from the cutting edge and, in any case, never less than 9mm away.
In the corners of closed paths, circular drilling at low pressure and a minimum radius of 5mm are recommended.

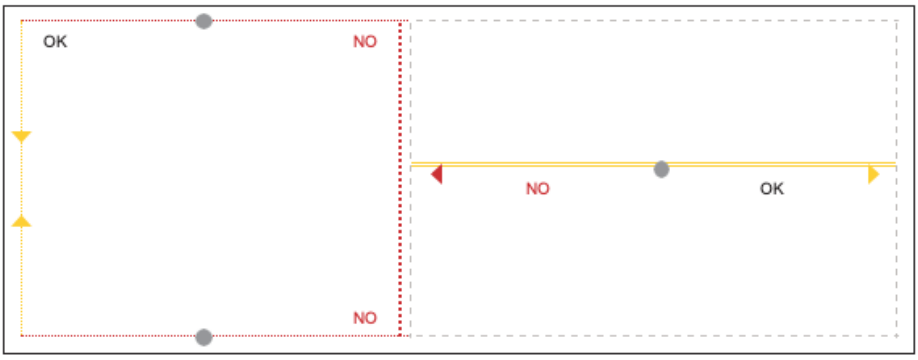
BRIDGE SAW - CNC

Disk diameter mm	Spindle revolutions (rpm)
300	2300/2600
350	2100/2500
400	1900/2200

Cutting parameters examples	**mtl/min feed**
Straight cutting	0.6-1
Inclined cutting	0.4-0.8

The data indicated above are given only as an indication. The tool manufacturer shall be able to provide all the technical information concerning the parameters to be used to optimize the material processing.

TIPS: While cutting, use plenty of water and direct the jet as close as possible to the cutting area; an insufficient flow of water causes the disc to overheat, which compromises the processing and the disc itself.
When making large pieces, consider the following cutting sequence:



It is also suggested to reduce the feed speed when the tool enters and exits the slab by about 50% of the speed used for cutting.

CNC PROCESSING

The slabs can be cut with numerical control machines; the most performing ones can tilt and rotate the work head, thus making it possible to create a wide range of shapes. This machine is in fact mainly used to make the housings for hobs and sinks, holes as well as inclined cuts, etc. The tool used must be specific for porcelain stoneware.

An example of parameters used

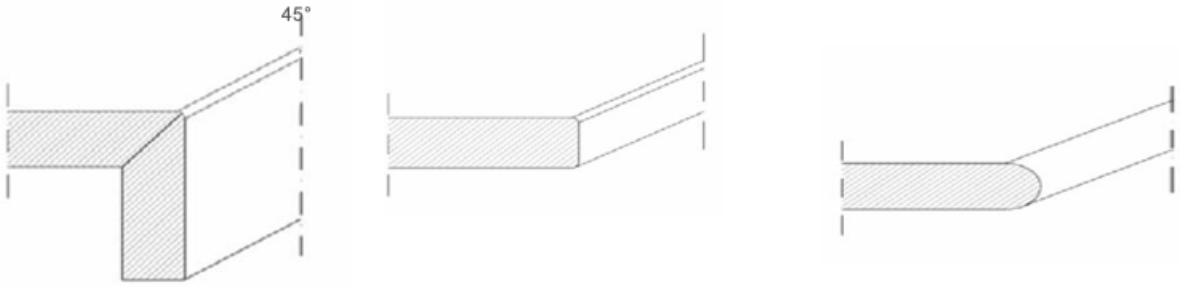
Tool		RPM	Speed (mm/min)
Core drills		2000 - 2500	10
Cutter	12 mm	4500 - 5500	150
	20 mm	4500 - 5500	125
Filotop cutter (milling an stubbing)		6000 - 8000	250

Example of cutting scheme

1. De-tension the material through a perimeter cut
2. Core drill bit perforation
3. All corners need a radius of at least 5 mm and more, if possible.

Edges

The most common are 3:



In order to reduce the risk of edge chipping, it is recommended to perform beveling before finishing the edge.

6) TECHNICAL HINTS FOR PROCESSING 6.5 MM THICK SLABS

The instructions for handling, transport, cleaning, maintenance and storage are the same for all thicknesses (6 mm, 12 mm and 20 mm).
Size 320mm x 160mm - Thickness 6.5 - Weight 15.6 kg / m2 - 80kg / slab.

INTRODUCTION

The Antolini Tech slabs can be cut with “conventional” cutting machine (eg. Kera cut SIGMA) or using machinery for cutting stone materials, marble and agglomerates, taking care to use tools suitable for porcelain stoneware processing.

INSPECTION PRIOR TO PROCESSING

The general indications of the previous paragraphs apply, using an even greater caution in handling large-size materials, given the reduced thickness.

The operating parameters for processing are those stated by the manufacturers of machinery and tools. These parameters are given only as an indication, and should always be verified and adapted by the transformer based on the machines used, on his experience, and the desired finish.
It is therefore advisable to carry out preliminary tests on samples before performing cuts and processes, in order to test and correctly use the machine and tool available. If the finish of the cut is not satisfactory, then the reasons may be attributable to the incorrect cutting feed speed, the execution pressure, the tool rotation speed, the imperfect flatness of the surface, the movements or vibrations suffered by the slab during the cutting operations, or else the wrong choice of tool.

IMPORTANT

At the end of the process, we recommend cleaning the slab with plenty of water and, if necessary, a neutral detergent to eliminate any processing residues.
After completing the cleaning operations, it is essential to pay particular attention to the handling of the parts, especially if there are openings or internal holes. Use suction cup lifters only if they are equipped with a sufficient number of grips which can prevent bending of the processed slab. Alternatively, manually handle the piece vertically, taking care to avoid twisting.

CUTTING LAYOUT

The slab is “Full Size”, and its external edges are not squared (not trimmed).
Slabs with this thickness do not require perimeter squaring (trimming), but it is recommended, before starting the work, to square (trim) two sides, in order to obtain two perfectly orthogonal sides and thus be able to start the creation of the object from this area.

DISC CUTTING (Bridge saw)

When cutting with disc machines, it is necessary to use discs for porcelain stoneware.
The cutting cooling water must be pointed in the direction of rotation of the disc. The cut is made by erosion of a width proportional to the width of the disc.
Here are some general guidelines for cutting:
- The smaller the disc diameter, the higher the spindle rotation speed
- The slower the feed rate, the higher the quality of the cut
- A slower feed rate allows to finish the edge with a small bevel.
- The input and the output speed of the cut should always be reduced by 50% compared to the standard cutting speed.
- Properly direct the water flow and assess the power supply while cutting.
- The manufacturing process is successful if the vibrations due to cutting operations are reduced to a minimum. To limit such vibrations, it is recommended to place a disposable wood- or rubber-based panel (eg. vulcanized) under the slab.

NUMERICAL CONTROL PROCESSING

The slabs can also be cut with numerical control machines. The most complex CNC can rotate and tilt the head, making it possible to create a wide variety of shapes. This machine is in fact mainly used to chamfer hobs and sinks housings, finishing of edges for upper edge, holes, edges, curved cuts.
The tool used must be diamond-coated and suitable for working with porcelain stoneware. The choice depends on the specific work to be performed. Never perform cuts or holes with the oscillation of the tool. While processing, it is important to use a lot of water correctly directed, both inside and outside the tool.

Before starting processing, check the correct grip of the suction cups on the back of the slab. If unsatisfactory, use softer suction cups with a more suitable thickness. If the slab is not perfectly fixed, it could move, thus making the piece unusable.
The correct positioning of the suction cups supporting the slab is a fundamental element for effective cutting. For this reason, evenly position the suction cups in order to support the slab near the cut and under the part to be removed after cutting.
As the cut progresses, it is important to avoid any twisting between the part to be removed and the processed part, because this could cause cracks and / or breakages.
As an alternative to suction cups, you can use special clamps: in this case, keep in mind that the part on which the clamp is placed cannot be processed.

WATERJET PROCESSING

The slabs can be cut with water jet machines: this method allows the performance of any cutting, shaping and drilling operation with a high degree of precision.
It is advisable to check that the metal grid supporting the material is in good condition and flat, and that the piece is properly clamped in order to avoid movements that could compromise the quality of the cut.

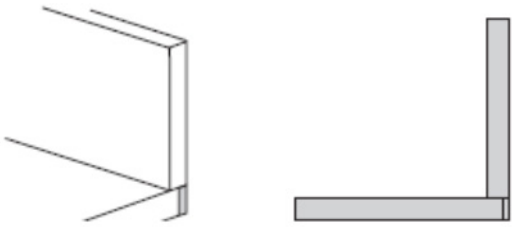
We suggest the use of a disposable support (made of material such as wood or polystyrene) to be placed under the porcelain stoneware slab, which prevents damage caused by water which, hitting the grid, could hit the back of the slab and thus damage it.
If the machine allows it, it is also possible to make 45 ° cuts. By adjusting the machining parameters, it is possible to obtain a straighter or more rounded edge.
For the holes to be made inside the slab, it is advisable to start cutting at a point inside the hole, and then approach the cutting perimeter. Maintain a recommended minimum radius of 5mm for internal corners.
When possible, depending on the size of the project, perform a central cut to split the slab.
Always start from the centre of the long side of the cut (e.g. the sink).
Maintain the water level for approx. 1.5 cm below the grid level.

EDGE BONDING

For bonding, two-component adhesives are used, generally epoxy or equivalent.
For an optimal finish, we recommend the use of coloured adhesives in shades as close as possible to those of the base or of the surface finish of the slab to be processed. Pre-coloured adhesives or adhesives to which special dyes can be added, are available on the market. Perform bonding and respect the adhesive curing times as prescribed in the manufacturer's technical data sheet.

Eg.: BACKSPLASH

Due to the imperfections of the wall and the structural movement of the building, it is recommended to leave a gap of 3 mm between the worktop and the wall. This gap must first be filled with silicone; the backsplash can be installed to cover this gap. The backsplash must first adhere to the wall with silicone and then be sealed to the top with silicone.



OUTDOOR INSTALLATION

- When installing slabs outdoors, special attention must be paid to the support material and adhesives used.
- Plywood underlay is not recommended for outdoor installations, while high density foam boards are recommended.
- The adhesive used for bonding the surface must be evaluated depending on the environment of the installation. For example, silicone is not recommended for low temperatures - use for example a flexible polyurethane construction adhesive, which is suitable for low temperatures.

7) TECHNICAL HINTS FOR PROCESSING 20 MM THICK SLABS

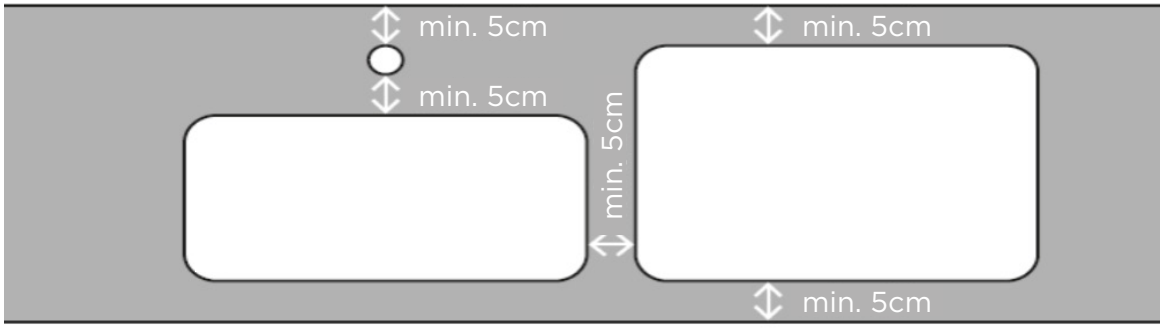
The instructions for handling, transport, cleaning, maintenance and storage are the same for all thicknesses of 6 mm, 12 mm and 20 mm.
Size 320mmx160mm - Thickness 20mm - Weight 48 kg / sqm - 245 kg / slab.

PROCESSING

In the case of projects requiring several slabs, it is the customer's responsibility to request at the time of the purchase order that all the slabs are from the same production batch (indicated in the RFID tag applied to each slab). If this is not possible, it is always necessary to perform a visual check of the matching of the graphics and the colour tone among the available slabs, before carrying out any type of processing.
Before starting any processing, the slab must be cleaned and visually inspected, in order to verify that it meets the quality requirements.
Complaints for processed or installed slabs shall not be accepted, when there were no defects on delivery. Before processing, it is recommended to perform a processing test on a sample slab, in order to set the optimal processing parameters and verify the suitability of the tool.
The slabs are supplied FULL SIZE and untrimmed. Before starting processing, cut the perimeter of the slab by 2 cm and de-tension following the instructions provided in the previous paragraphs.
The effective working area will be 1600x3200mm. The slab can be processed using machinery for processing stone materials, equipped with tools in good condition suitable for cutting porcelain stoneware. When using a diamond disc, carefully reduce the speed by 50%, both at the beginning and at the end of the cutting process.
The workbench must be clean, solid, resistant and perfectly flat, and it is essential to follow the general indications given in the previous paragraphs.
In the case of a machining centre, the CNC suction cups should be positioned under the entire slab, with particular attention to the areas next to the holes (sinks and hob holes). The processed slab must be handled with care, especially when there are internal openings or holes.
The processed slab must be handled with care in order to avoid bending or twisting it.

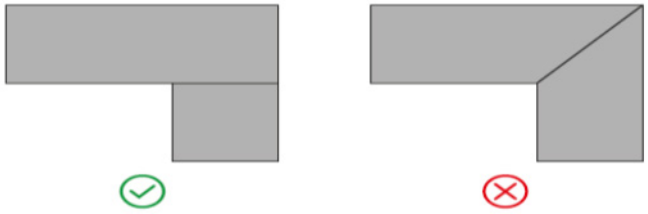
EXAMPLE OF CUT LAYOUT VALID FOR ALL THICKNESSES

Maintain a minimum distance of 5 cm from the outer edge of the holes, and between the faucet and sink holes, the grooves as well as between adjacent openings.
All cutting angles must have a minimum radius of 5 mm.



HORIZONTAL JOINTS

L-shaped tops must have a joint made with 2 units mounted in a straight pattern.
The intermediate joint must be filled with silicone or epoxy glue. Diagonal joints are not recommended. The minimum distance from the walls should be at least 3 mm. When manufacturing an L-shape piece using a single unit, the internal corner must have a radius of 5 mm.



Eg.: BACKSPLASH

For tops without bottom panel support, the width recommended for the overhand should not exceed 20cm. When installing tops with holes, the width for the overhang should be reduced to 10 cm. Any wider overhang should be installed with a bottom support or fixed to a rear structure.

EXAMPLE OF CUTTING PARAMETERS FOR 20 MM SLABS

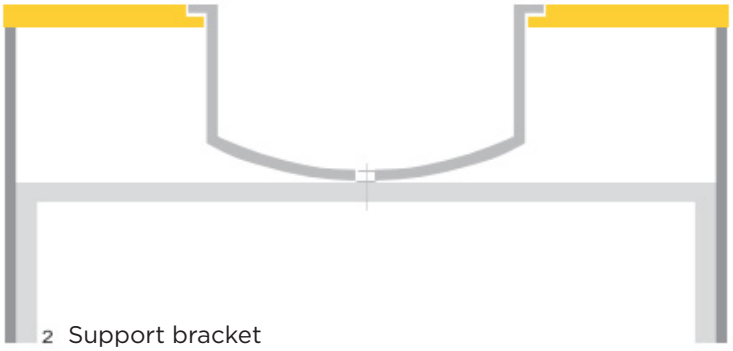
The parameters must be verified with the machinery and the tools manufacturer and must always be verified by carrying out test processes before proceeding with the actual machining.

Cutting Parameter			
Bridge saw			
Speed	mt/min.	0,6	
Rotation	RPM	2.400	1500/1800
Disc type		Tecnodiamant D350	Tirolit
De-tensioning cut		Yes	
Water Jet			
Speed	mt/min.	0,5	
45° cut	mt/min.	0,37	
Pressure	Bar	3600/3800	
Sand	kg/min.	0,4	
MESH		80	
De-tensioning cut		Yes	

- In all cases, the cutting speed at the begin and the end of the operation must always be reduced by 50%.
Another highly recommended option, in case a bridge saw is used, is to make several cutting steps at different depths in the same direction of the cut. This ensures a more precise cut and minimizes the risk of breakage.

Remember to make the edge with a bevel of at least 2 mm or rounded to avoid chipping; after processing, it is recommended to treat the exposed edge with a suitable oil-water repellent impregnating agent.

For large sinks, it is recommended to place a support bracket at the bottom of the sink.



2 Support bracket

8) GENERAL INSTRUCTIONS FOR ON SITE PROCESSING OF 6.5 MM THICK MATERIAL

For a successful cutting and drilling operation, place the slab on a stable, flat and non-flexible surface (a bench with aluminium profiles). For cutting, use the aluminium guide equipped with suction cups; the cut can be carried out with a simple engraving trolley . Once the incision has been made, move the slab outwards and let it protrude by approx. 10 cm. Then with the cutting-off pliers start the splitting operation, starting from the 2 ends and following the break line.

To make internal cuts to the slab, it is advisable to draw the guidelines. Furthermore, in order to limit the risks of breakage, it is recommended to make a hole of Ø 5 mm at the corners (using a non-impact drill).
When making holes, it is necessary to moisten both the slab and the drill bit. Follow the lines drawn with an angle grinder equipped with a diamond disc, and then finish the edges with a diamond pad. For 45 ° cuts, traction devices are available.

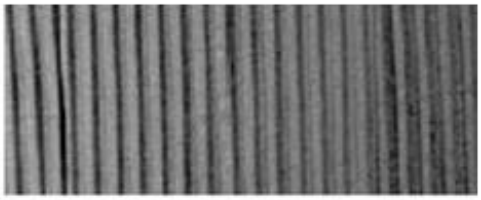
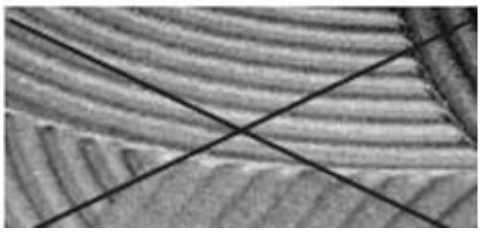





9) SOME GENERAL INSTRUCTIONS FOR LAYING 6.5 - 12 MM THICK MATERIALS

The best technical and aesthetic result can be achieved through a correct method of installation. The substrate must be stable and properly cured, free of cracks, flat (with a 2-meter straightedge, maximum acceptable tolerance 1mm.), mechanically resistant and clean. For laying, both on the floor and on the wall, bond the slabs using C2 TE S1 type or S2 type adhesives for porcelain stoneware.
Traditional cement screeds: its thickness must be adequate, equal to at least 4 cm in the case of a de-solidarized screed, and the mixture composition should be assessed according to the mechanical resistance performance required. The screed must be flat, and any cracks must be sealed monolithically by using epoxy resin. The screeds must be adequately cured, and the curing time necessary before laying is approximately 7-10 days per cm of thickness.
Screeds for radiant floor systems: it is necessary to comply with the instructions given by the system manufacturer, and it is also essential to switch on and test the system ignition before laying, according to UNI EN 1264-4. Curing 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 of a highly deformable type (S2) according to standard 12004.
Concrete: it should have reached a proper maturation (at least 3 months' curing); in addition, in order to ensure the durability of the coating, the floors against the ground should be suitably insulated in order to prevent problems of rising damp. On the wall, the concrete must be free of treatments (anti-evaporation, old paint etc.).

Screeds based on special binders or premixed mortars: curing times before installation can be significantly reduced by using special binders or premixed mortars with normal setting and quick drying, or with quick setting and drying.
Pre-existing floors: in order to lay a new floor over a pre-existing ceramic, tile or natural stone floor, these must be well anchored to the substrate, free of cracks and thoroughly cleaned from oils, waxes and grease. Otherwise, use some “useful” products and tools recommended by the adhesive manufacturers shall have to be used.
The installation with joints of at least 2/3 mm. (approx. 5mm for outdoor installation), so as required by the various international standards, is crucial, as well as the expansion joints every 25 square meters.
A flooring surface with joints is able to withstand the differentiated movements between the substrate and the coating, due to settlement of the structures, thermal expansion, etc., thus avoiding dangerous tensions and consequent detachment or breakage of the slabs.
A double-spreading technique should be used for the installation, that is, the adhesive should be applied both to the slab and to the substrate. Apply the adhesive on the rear of the slab with a 3mm toothed spatula, while for the substrate, use a 15mm round toothed spatula or a 10mm spatula with inclined teeth.
Lay the adhesive 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

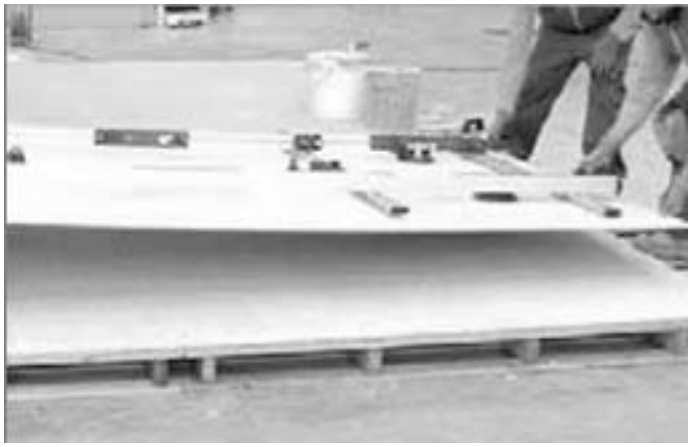
Air gaps and bubbles beneath the tile may pose a danger. To improve adhesion and facilitate the leakage of the air, use an anti-rebound plastic trowel (no rubber hammer). Perform tapping starting from the center toward the outer sides, following the channels created while laying the adhesive..


. TILE LEVELING SYSTEMS

For an optimal flatness of the flooring, it is recommended to use levelling systems that may replace the use of common spacers (spreaders). These spacers consist of bases and levelling systems which, regardless of the type, help to keep the slabs aligned with one another.



Using the special suction cup frame, place the slab on the adhesive bed, and to ensure complete bonding and air outlet, tap the slab with the special rubber-coated anti-rebound trowel starting from the centre toward the outer sides. The joints can be grouted after approx. 2/3 hours, in the case of fast setting adhesives, and after approx. 24 hours in the case of standard setting adhesives.



After laying, it is recommended to clean the slabs with acid-based detergents suitable for cement-based grouts, or special detergents, possibly recommended by the manufacturer, for epoxy or polyurethane grouts.
For the installation of kitchen tops, sinks, etc. bond the slabs with polyurethane or epoxy adhesives, fill the joints with suitable adhesives and polish manually.

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

CLEANING, MAINTENANCE AND CARE

Perform daily cleaning using lukewarm water and, when necessary, a home detergent; for more stubborn stains, the following detergents are recommended:

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
Oxidant: bleach, hydrogen peroxide.

After user, always rinse thoroughly with water.

KIND OF STAIN	DETERGENTS
Beer, wine, coffee	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 (turpentine, thinner)
Resins	Organic Solvent (nail polish remover, 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, although it is not easy to find the right tones and restore the original surface. Once the chip has been repaired, remove the excess resin with a cloth soaked in acetone before it hardens. Once hardened, work the resin manually to homogenize it to the surface.

TECHNICAL SPECIFICATIONS

PORCELAIN STONEWARE				
CHARACTERISTICS	UNIT OF MEASURE	AVERAGE VALUE	PRESCRIBED VALUE	TEST METHOD
SIDE DIMENSION	%	COMPLIANT	+/- 0.6 MAX	UNI EN ISO 10545-2
SIDE STRAIGHTNESS	%	COMPLIANT	+/- 0.5 MAX	UNI EN ISO 10545-2
SIDE ORTHOGONALITY	%	COMPLIANT	+/- 0.6 MAX	UNI EN ISO 10545-2
PLANARITY	%	COMPLIANT	+/- 1 MAX	UNI EN ISO 10545-2
THICKNESS	%	COMPLIANT	+/- 0.5 MAX	UNI EN ISO 10545-2
WATER ABSORPTION	%	COMPLIANT	< 0.5	UNI EN ISO 10545-3
BREAKING RESISTANCE	N	COMPLIANT	> 700	UNI EN ISO 10545-4
BREAKING MODULE	N/mm2	COMPLIANT	> 28	UNI EN ISO 10545-4
LINEAR THERMAL EXPANSION COEFFICIENT	MK [- 1]	a 7,00	DECLARED VALUE	UNI EN ISO 10545-8
CHEMICAL RESISTANCE		RESISTANT	PASS. ACC. TO 10545-1	UNI EN ISO 10545-9
RISISTANCE TO ACIDS AND LOW CONCENTRATED BASES		COMPLIANT	MINGB	UNI EN ISO 10545-13
FREEZE RESISTANCE		ULA	METHOD AVAILABLE	UNI EN ISO 10545-13
STAIN RESISTANCE		RESISTANT	PASS. ACC. TO 10545-1	UNI EN ISO 10545-12
MOHS HARDNESS SCALE		COMPLIANT	MINIMUM CLASS 3	UNI EN ISO 10545-14
HÄRTEGRAD NACH MOHS		5-8	> 5	[EN 101]

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/ UNDERTAKING

1.1 Product identifier

Trade name:	CERAMIC TILE FOR FLOORS/WALLS
CAS number:	Not applicable
EC number:	Not applicable
Registration number:	Not applicable
Registration number without reference to the individual declarant:	Not applicable
Index 67/548/EEC:	Not applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended use:	Flooring, cladding, decorations
Uses not recommended:	This product must not be used in any application other than those recommended herein, without prior advice from the supplier.

1.3 Data on the supplier of the substance or mixture

Manufacturer/Supplier:	Antolini Luigi & C. SPA Via Marconi 101 Sega di Cavaion (VR) Italia.
Phone:	+39 0456836611

1.4 Emergency telephone number: + 39 0522/1757111

1.5 Further information: The product is exempt from registration under REACH in accordance with Article 2(7)(b).

2. HAZARD IDENTIFICATION

2.1 2.1 Classification of dust generated by cutting, polishing, drilling of ceramic slabs, containing crystalline silica

(EC) Regulation No. 1272/2008 (CLP)	
Hazard Classes/Hazard Categories	Hazard statements
None	None

EC Directives No. 67/548, 99/45 and subsequent amendments	
Hazard characteristics	**R Phrases**
None	None

2.2 Label elements

Labelling in compliance with (EC) Regulation No. 1272/2008 CLP

Symbol(s): None
Hazard statements: None
CLP Hazard Statements: None

Labelling in compliance with Directive 1999/45/EC

CE symbols: None
EC classification: None
EC risk phrases: None
EC precautionary statements: None

2.3 Other hazards

Important note: CLASSIFICATION OF DUST GENERATED BY TILE PROCESSING

Health risks: Ceramic tiles do not release hazardous substances after installation: stable chemical compounds are formed during the firing process, so ceramic tiles are not considered hazardous to health.
Activities such as cutting, polishing, drilling, etc. of ceramic tiles may generate dust containing crystalline silica.
Inhalation of this type of dust is dangerous to health and should be avoided.
Prevent dust dispersion/inhalation by means of extraction systems or personal protective equipment.

Pictograms: 

Warning: Hazard

Hazard indications:
H372: Causes damage to lungs through prolonged or repeated exposure.

Hazard statements:
P260: Do not breathe dust.
P284: In case of inadequate ventilation wear
respiratory protection
P314: Get medical advice/attention if you feel unwell.
P501: Dispose of contents/container in accordance with national regulation.
Contains: free respirable crystalline silica.

Repeated, prolonged exposure over time and/or massive inhalation of the respirable fraction may affect the lungs causing fibrosis (silicosis).
Prolonged exposure over time to the finer fraction suspended in air may cause irritation of the cornea.
In the case of matted material, the applied glass fibre fabric is not "respirable" (e.g. cannot be inhaled and penetrate deep into the lungs)
Identified risks are:
- *temporary irritation (itching) of a purely mechanical nature, affecting the skin, eyes and upper respiratory tract*
- *Allergies in very rare cases.*
- *Formation, in processes with a high probability of dust generation, of non-respirable fibrous particles and inhalable non-fibrous dust (broken pieces in different sizes) (capable of being breathed into the upper respiratory tract).*

Safety hazard: *The product does not present a safety hazard when used in accordance with normal precautions*.

Environmental hazard: *Not classified as hazardous for the environment.*

3. COMPOSITION/INFORMATION ON INGREDIENTS

Product identification: Ceramic tiles are made from a mixture of natural clays mainly, and other natural mineral substances.
The mixture of natural raw materials is fired at high temperatures, forming a particularly stable crystalline structure that incorporates the individual chemical components.

Note: the quartz present is not in the form of free crystalline silica.

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	15 to 25%
SILICON DIOXIDE	99439-28-8	685-393-2	60 - 70%
ALUMINIUM OXIDE(S)	-	-	16 - 22%
IRON OXIDE(S)	-	-	0.1 - 2,5%
CALCIUM OXIDE(S)	-	-	0.1 - 2,5%
TITANIUM DIOXIDE			0.3 - 2,5%
SODIUM OXIDE(S)	-	-	2.0 - 4,5%
POTASSIUM OXIDE(S)	-	-	1.5 - 4%
MAGNESIUM OXIDE(S)	-	-	0.5 - 2%
ZIRCONIUM DIOXIDE	1314-23-4	215-227-2	0 - 2%

In the case of a matted product:

The glass fibre is manufactured from class E glass.
Class E glass (CAS 65997-17-3) is glass with a low alkaline content. Its composition (expressed in oxides) is below the following percentages:
SiO2 56-62%; Alkali oxides (Na2O, K2O) <2%; Alkaline earth oxides (CaO, MgO) 16-30%; B2O3 0-10%; Al2O3 11-16%; TiO2 0-3%; Fe2O3 0-1%; HF 0-2%

The primer is a mixture of chemical components applied to “E” glass yarns generally in quantities of less than 1%, consisting essentially of non-reactive, high molecular weight polymers, often natural ingredients (starches).
Hazardous components: None

4. 4. FIRST AID MEASURES

Note: this section only applies to cutting, polishing, etc.

4.1 Description of the first aid measures
Skin contact: Rinse, then wash skin with soap and water.
Eye contact: Rinse the eyes thoroughly with water for few minutes, keeping the eyelids open.
If swallowed: In the unlikely event of swallowing, have person drink water.
If inhaled: Move person far from the exposure area, aid breathing fresh air.

4.2 Most important symptoms and effects, both acute and delayed
Irritation of the respiratory tract.
Irritation of the eyes.
In case of persistent irritation, seek medical assistance.

4.3 Indication of any need for immediate medical assistance and special treatment
In case of accident or if you feel unwell, seek medical assistance immediately and show this safety data sheet if possible.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media:
Suitable extinguishing media: Water, CO2, chemical powder, foam, sand or inert.
Extinguishing media wich must not to be used for safety reasons: None.

5.2 Special hazards arising from the substance or preparation
The ceramic part is NOT COMBUSTIBLE and does not create gases or other hazardous elements in case of fire. The adhesive used for matting can release hazardous fumes in case of fire.
Applied glass fibre is non-flammable

5.3 Warning to firefighters
None in particular.

6. 6. ACCIDENTAL RELEASE MEASURES

Note: this section only applies to cutting, polishing, etc.

6.1 Precautions, personal protective equipment and emergency procedures
In case of prolonged exposure or high level of suspended dust, wear personal respiratory protective equipment.

6.2 Environmental precautions
If appropriate, moisten the material to limit dust dispersion.

6.3 Methods and material for containment and cleaning up
Collect the preparation by suction or other mechanical means. Place the preparation in covered containers.

6.4 Reference to other paragraphs
See also paragraphs 8 and 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling.
No special precautions are required for handling and installing tiles, except for the normal PPE used for work activities (gloves, safety footwear).
Safety goggles and respiratory protection equipment are also required for cutting, polishing, etc.
Water cutting systems are preferred to dry cutting systems.

7.2 Conditions for safe storage, including any incompatibilities
No special precautions are required.

7.3 Specific end uses:
No specific technical measures or special precautions are required.

8. PERSONAL PROTECTION/EXPOSURE CONTROL

Note: this section does not apply to the ceramic slab, rather only applies to cutting, polishing, etc.

8.1 Control parameters.

Limit values in working environments:

Comply with legal workplace exposure limits for all types of airborne dust (e.g. total dust, respirable dust, respirable crystalline silica dust).

Respirable crystalline silica dust: OEL (EU) = 0.1 mg/m^3 (respirable fraction, 8h)
VLEP (ITA) = 0.1 mg/m^3 (respirable fraction, 8h)

8.2 Exposure controls.

Suitable technical controls.

Minimize the generation of airborne dust. Use process containment structures of processes, local exhaust ventilation or other technical control systems to keep the levels dispered into the air below the exposure limits. If the user's operations generate dust use ventilation to keep exposure to airborne particles below the exposure limit. Apply organisational measures, e.g. isolating staff from dusty areas. Remove and wash soiled clothing.

Individual protection measures, such as personal protective equipment.

Respiratory protection: If the concentration of dust exceeds the exposure limit value in the workplace, it is necessary to wear proper respiratory protection (nose-mouth mask with anti-dust filter P2 UNI EN 143 recommended).

Hand protection: Prolonged exposure should be avoided by wearing suitable gloves.

Eye protection: : Safety goggles with side protection in compliance with UNI EN 166 are recommended.

Skin protection: Dust of this substance/mixture is not irritating; like all fine dusts it may anyway adsorb moisture and natural oils from the surface of the skin during prolonged exposure. Prolonged exposure should be avoided by wearing protective clothing.

Limitation and control of environmental exposure.
Avoid dispersion by the wind.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on general physical and chemical properties.
Appearance: solid
Odour: odourless
pH: not applicable
Melting point/interval: > 1300° C
Boiling point/interval: not applicable
Flash point: not applicable
Flammability: not flammable
Oxidizing properties: not oxidizing
Explosive properties: not explosive
Density: 2.4-2.5 g/cm^3
Solubility in water: insoluble.

9.2 Other information
Not applicable.

10. STABILITY AND REACTIVITY

10.1 Reactivity
The preparation IS NOT REACTIVE in standard use conditions.

10.2 Chemical stability
The preparation IS STABLE in standard use conditions.

10.3 Possibility of hazardous reactions
The preparation DOES NOT ORIGINATE HAZARDOUS REACTIONS in standard use conditions.

10.4 Conditions to avoid
The preparation IS STABLE in standard use conditions.

10.5 Incompatible materials
No particular incompatibility.

10.6 Decomposition products
The formation of hazardous decomposition products is not expected in standard use and storage conditions.

11. TOXICOLOGICAL INFORMATION

Note: this section only applies to cutting, polishing, etc.

Information on toxicological effects
Repeated, prolonged exposure and/or massive inhalation of the respirable fraction of quartz-containing dust may cause pulmonary fibrosis (silicosis) due to the action of free crystalline silica particles on lung tissue.
NON-TOXIC product, it is to be considered physiologically non-hazardous.

Basis for Assessment: The information provided is based on product data, knowledge of the components and the toxicology of similar products.
Likely routes of exposure: Inhalation is the primary route of exposure.
Acute oral toxicity: Not applicable.

Acute dermal toxicity: Not applicable.
Acute inhalation toxicity: Not applicable.
Skin irritation/corrosion: Not irritating for the skin.
Serious eye damage/irritation: May cause mechanical irritation to the eyes.
Irritation of the respiratory tract: Inhalation of dust may cause irritation to the respiratory system.
Respiratory/skin sensitization: No data available.
Germ cell mutagenicity: No data available.
Carcinogenicity: No data available.
Reproductive and developmental toxicity: No data available.
Specific target organ toxicity - single exposure: No data available.
Specific target organ toxicity - repeated exposure: No data available.

Additional information: In 1997, IARC (International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However, it pointed out that not all industrial situations and not all types of crystalline silica were incriminated. (IARC Monographs on the evaluation of the carcinogenic risks of chemical to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France and IARC MONOGRAPH 100 OF 2009).
In June 2003, SCOEL (the European "Scientific Committee on Occupational Exposure Limits") concluded that the main effect in humans from inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in people with silicosis (and apparently not in employees without silicosis exposed to silica dust in quarries and ceramic industries). Thus, preventing the occurrence of silicosis also reduces the risk of cancer..." (SCOEL SUM Doc 94-final, June 2003)
There is evidence to support that the increased risk of cancer would be limited to people already suffering from silicosis. Worker protection against silicosis should be ensured by compliance with existing Occupational Exposure Limit regulations and when necessary, in the presence of additional risks, implemented by guidance measures (see section 16).

12. ECOLOGICAL INFORMATION

12.1 Toxicity
NON-TOXIC product.
Use the product according to the standard working procedures, avoid scattering it in the environment.

12.2 Persistence and degradability
NON-BIODEGRADABLE product.

12.3 Bioaccumulation potential
It is not expected to bioaccumulate significantly.

12.4 Mobility in the soil
Product not significantly soluble.

12.5 Result of PBT and vPvB assessment
The substance poses no risk of persistence, bioaccumulation and toxicity, and is therefore not considered to be a PBT or vPvB.

12.6 Other harmful effects
No data available on other environmentally hazardous properties.

13. DISPOSAL CONSIDERATIONS

13.1 Treatment methods Disposal of the material:
The product is considered an inert waste.
In the event of any disposal, this must be carried out in accordance with the provisions of the Italian Legislative Decree 152/2006 and subsequent amendments and additions and the provisions laid down by regional authorities.
The waste producer is responsible for determining the toxicity and physical properties of the material generated in order to identify the appropriate waste classification and disposal methods in accordance with applicable regulations.
The waste must be disposed of in accordance with the applicable laws by an authorised waste disposal company. The competence of the disposal company must be verified in advance.
For handling and accidental spillage measures, the guidance given in sections 6 and 7 applies in general.
Do not disperse into the environment, wells or water courses.

Disposal of packaging: Any paper and plastic packaging is recyclable.
13. Packaging must be disposed of after it has been completely emptied. Do not pollute soil, water or the environment with the waste packaging.

14. TRANSPORT INFORMATION

Preparation NOT DANGEROUS according to transport regulations.

Land transport (ADR/RID):
Substance NOT DANGEROUS under road or rail transport regulations.

Sea transport (IMDG code):
Preparation NOT DANGEROUS according to sea transport regulations.

Air transport (ICAO/IATA):
Preparation NOT DANGEROUS according to air transport regulations.

15. REGULATORY INFORMATION

15.1 Health, safety and environmental protection regulations/legislation for the substance or preparation.
Classification, packaging and labelling of hazardous substances (Italian Legislative Decree 52/1997 and subsequent amendments). Classification, packaging and labelling of hazardous preparations (Italian Legislative Decree 65/2003).
Protection of health and safety in the workplace (Italian Legislative Decree 81/2008 and subsequent amendments).

15.2 Chemical Safety Assessment
No chemical safety assessment has been carried out for this preparation.

16. OTHER INFORMATION

Responsibilities: Information in this safety sheet has been compiled to the best of current knowledge and based on currently available sources of information.
The user must comply with the regulations in force, and ensure that the information contained is up-to-date, suitable and complete, in relation to the specific use to be made of the substance in its production cycle.
The information constitutes a description of the product with regard to safety and the users' attention is drawn to the possible risks associated with improper use of the product.

R Phrases: None.

CLP Hazard Statements: None.

Uses identified in accordance with the use description system Recommended restrictions on use (not recommended): This product should not be used in applications other than those recommended in Section 1, without prior advice from the supplier.

Additional Information: This document contains important information regarding the safe storage, handling and use of the product.
The information herein should be brought to the attention of the person in your organisation who is responsible for workplace health and safety.

Distribution of the MSDS: The information herein should be made available to all persons handling the product.

Further information:
Training: Workers must be informed of the presence of crystalline silica and trained in the proper use and handling of this product as required by current regulations.

Respirable crystalline silica - social dialogue: A multi-sectoral social dialogue agreement on "Workers Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it" was signed on 25 April 2006.
This autonomous agreement, which receives financial support from the European Commission, is based on a Good Practise Guide.
The agreement has been operational since 25 October 2006. The agreement was published in the Official Journal of the European Union 2006/C 279/02.
The text of the agreement and its annexes, including the Good Practices Guide, are available at http://www.nepsi.eu and provides useful information and guidance on the handling of products containing respirable crystalline silica.

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