

Technical
Guide /

Laminam 12+
1620x3240x12mm

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Intro /

Laminam 1620x3240x12mm

The Laminam pure ceramic slabs in the 1620x3240mm size, 12mm thick. They offer priceless millimetres of extra space for the hands of skilled workers, providing them with more creative freedom than ever before.

These surfaces are designed **for the world of furnishings, from horizontal surfaces to large, top-of-the-range kitchens and bathroom.**

Thanks to their excellent technical performance, Laminam slabs are ideal for the most delicate of uses, requiring maximum hygiene and resistance. The aesthetic virtues of the large size offer a major artistic advantage, guaranteeing material continuity throughout the settings, in sophisticated, natural shades.



/Laminam
1620x3240x12mm

Benchtop
I Naturali, Bianco
Statuario Venato



1 / The product

The special features of LAMINAM 12+

Ideal material for creating horizontal surfaces: kitchen worktops, bathroom countertops, table tops. 12mm thick, full-body porcelain stoneware surface in the 1620x3240mm size.

Fibre reinforcement applied to the back during an automated industrial process.

Laminam 12+

Laminam 12+ is made up of a base slab, strengthened with a fiberglass blanket bonded on the back.

Processing surface: 1620x3240mm

Nominal thickness: 12mm

Use of Laminam 12+

- > Furnishing and interior design sector: flat surfaces for bathrooms and kitchens, splashbacks, tables, desks and furnishings in general.
- > Shipbuilding sector: finishing material.
- > Building sector***: wall covering systems.

Technical specifications Laminam 12+

Laminate porcelain obtained by wet grinding of clay raw materials, granite and metamorphic rocks, with a feldspathic component and ceramic pigments. Specially shaped in a compactor and sintered at 1200°C, with gas firing. Structurally reinforced with inert material (fiberglass blanket bonded on the back).

Hygienic surface suitable for contact with foodstuffs. Laboratory tests have proven that Laminam is totally compatible with foodstuffs, as it does not release elements in solution.

Easy to clean and maintain. Laminam 12+ is simple, fast and easy to clean. Laminam 12+ has no special maintenance requirements as time goes by; generally speaking, all you need to clean the surface is warm water and a neutral detergent.

Compact surface, no surface porosity (water absorption 0.1% average value). The water absorption of Laminam is average 0.1%.

Dimensional stability. Laminam 12+ is not subject to dimensional variations of any significance, as it has a low coefficient of thermal expansion.

Suitable as an indoor or outdoor solution. Laminam can be used as a surface for interior or exterior décor.

Resistant to heat and high temperatures. The ceramic surface does not contain any organic materials and so its surface is not altered in case of direct contact with very hot items in the kitchen, like pots and pans, and high temperatures.

Resistant to mould and fungi. Laminam does not allow mould, bacteria or fungi to grow.

Resistance to staining. Laminam 12+ is not affected by prolonged contact with products commonly found in the kitchen that can cause staining, such as wine, coffee, olive oil, or lemon juice, and its colour or shine will not be affected permanently.

Resistant to detergents and cleaning products. Laminam 12+ is not affected by prolonged contact with normal household detergents, including products to eliminate grease or lime scale.

Resistant to chemicals, acids, alkalis and solvents. Laminam 12+ is not affected by chemicals, solvents or disinfectants. The only chemical that can damage ceramics is *hydrofluoric acid*.

Resistant to thermal shock. Sudden changes in temperature out of doors will not damage Laminam 12+.

Frost resistant. The ceramic surface of Laminam 12+ is not affected by drops in temperature or the formation of ice.

Resistance to humidity. The ceramic surface of Laminam 12+ is not affected by long-term humidity.

Resistant to UV light, no alteration to colours. Laminam 12+ is not affected by exposure to UV light and will preserve its original good looks throughout its lifetime.

Resistant to flexion. Laminam 12+ has a high modulus of rupture.

Resistant to scratching and abrasion.** Laminam 12+ is resistant to scratching and deep abrasion. Its properties do not change even if it is subjected to intensive use in the kitchen and frequent cleaning.



Technical specifications - furniture industry /

physical and chemical properties /	norm / test method	Laminam 12+
density /	EN 14617-1 ASTM C97	2500 kg/m ³ (average value)
water absorption /	EN 14617-1	average value 0.1%
bending strength /	EN 14617-2	50 MPa (average value)
freeze and thaw resistance /	EN 14617-5	resistant
dry heat resistance /	EN 12722 EN 438-2 par.16	5 (no visible effect till 200°C)
chemical resistance /	ISO 10545-13	from class A to B
chemical resistance /	ASTM C650	resistant
cold liquid resistance /	EN 12720	5 no visible effect except ink (2)
cleaner product resistance /	PTP 53 CATAS	5 no visible effect
abrasion resistance /	EN 14617-4	28.0 mm
hygiene properties /	Metodo CATAS	excellent (high degree of removal of bacterial cells >99% after cleaning with a biocide-free detergent)
resistance to fungi /	ASTM G21	no fungal growth
lead and cadmium given off /	ISO 10545-15	0 mg/dm ³
overall migration /	UNI EN 1186	0 mg/dm ² / no significant migration
VOC emission /	UNI EN 16000-9	class A+ French
shock resistance /	ISO 4211-4 EN 14617-9	no damage 400mm / average value 3
light resistance /	UNI EN 15187	5 no visible effect
thermal shock resistance /	EN 14617-6	resistant
resistance to staining /	ASTM C1378	resistant

Technical specifications /

physical and chemical properties /	norm / test method	Laminam 12+
Full Size: "length and width" nominal size: size / 1620x3240mm	Laminam	minimum size: ≥ 1620x3240 mm full size untrimmed
"length and width" nominal size/manufacturing: 1620x3240mm size	ISO 10545-2	max. deviation on the side +/- 0.5 mm
full size: squareness: 1620x3240mm size	Laminam	not applicable full size untrimmed
rectified: squareness 1620x3240mm size	Laminam	max deviation on the diagonal +/- 1.5 mm
weight /	Laminam	average value 30 kg/m ²
surface quality / % of tiles with no visible flaws	ISO 10545-2	> 95%
water absorption /	ISO 10545-3 / ASTM C373	≤ 0.3%
breaking strength in N / camp. 200x300 mm	ISO 10545-4	average value 1100 (sample dimensions 200x300 mm)
modulus of rupture in N / mm ²	ISO 10545-4	average value 50 (sample dimensions 200x300 mm)
Mohs scale hardness /	UNI EN 101	class: from 5 to 7
resistance to deep abrasion /	ISO 10545-6	≤ 175 mm ³
coefficient of linear thermal expansion / 10 ⁻⁶ /°C	ISO 10545-8	6.6 average value
resistance to thermal shock /	ISO 10545-9	resistant
chemical resistance /	ISO 10545-13	class: from A to B
stain resistance /	ISO 10545-14	class: from 4 to 5
frost resistance /	ISO 10545-12	resistant
fire reaction /	EN 13501 (rev. 2005)	A2 - s1,d0

2 / Handling and storage

Safety is important when handling Laminam 12+ 1620x3240mm Laminam 12+ slabs so that the original appearance of the material is not damaged and to prevent breaking the slabs by accident.

2.1 Handling and storage

The A-frame must be loaded symmetrically before it is moved in order to prevent problems of instability.

The operator should always check that the slabs are secured to the A-frame trestle using the proper straps before attempting to move it.

Take great care when moving the material, as the outer edges of Laminam 12+ slabs are not protected when they are loaded onto the A-frames.

Use a forklift truck with sufficient load capacity.

The preferred grab point when moving Laminam

12+ slabs loaded onto an A-frame, within the warehouse or at the processing company, is the sideways grab point "A", i.e. inserting the forks into the trestle from the 3240 side.

Make sure the load rests securely on the forks without any sway.

When loading and unloading on/off a truck and container, insert the forks into the A-frame at the two grab points "A" and "B" as instructed below.

When loading/unloading and during following transports even of the single slab, secure Laminam 12+ to the trestle using plastic or canvas straps. Do not use for this purpose metal chains.

Before removing the clips from the material, which keep it securely anchored to the trestle, make sure it is placed on a flat surface without any differences in level that might cause the slab(s) to fall.

2.1.1 Loading/Unloading A-frames on/off a truck

When loading/unloading A-frames on/off a truck with fold down sides, insert the forklift forks into the A-frame at the two grab points "A" with a space in-between of at least 740 mm.

Use forks that are at least 1800 mm long when loading the trestle at the middle of the truck.

For safe transport on vehicles, secure the trestles to the bottom of the wooden platform and the upper part of the metal structure to the bed of the truck.

For this purpose, use appropriate straps in polyester or similar material (e.g. page 015). When loading multiple rows of trestles, leave a distance of at least 50 mm between each slab.

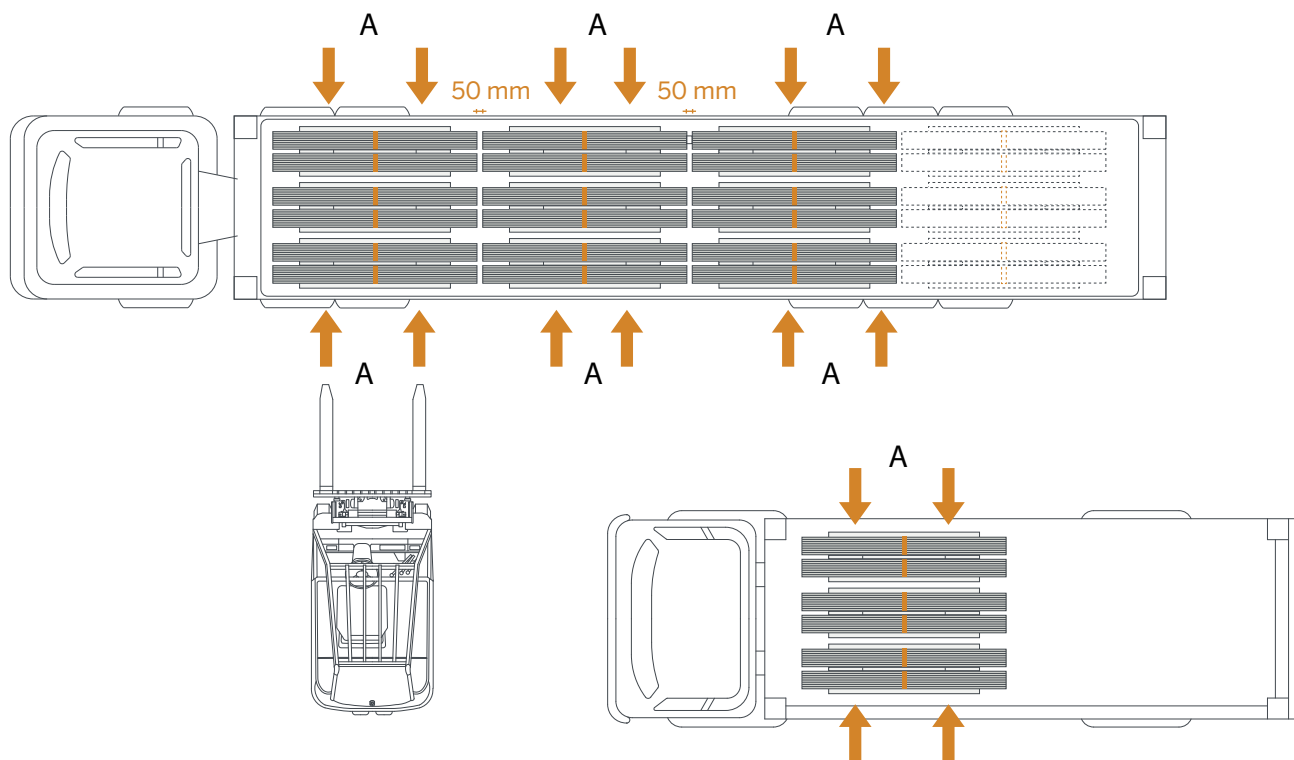
When loading, check the material is stable,

securing the base of the platform to the upper part of the loading pallet. Use suitable straps made from polyester or a similar material (see example on page 015). When loading several rows of trestles, leave a gap between the slabs of at least 50 mm.

Before unloading, always check how the trestles have been secured in place, in order to remove these blocks properly.

During loading and unloading, the operator must pay attention to any people in the direct vicinity and prevent any instability of the load. For this reason, the load should always be in a low position when it is being moved and only lifted when it is in the direct vicinity of the truck.

An example of loading on a standard length 13.50 m truck is shown below.





2.2 Handling and storage of individual slabs

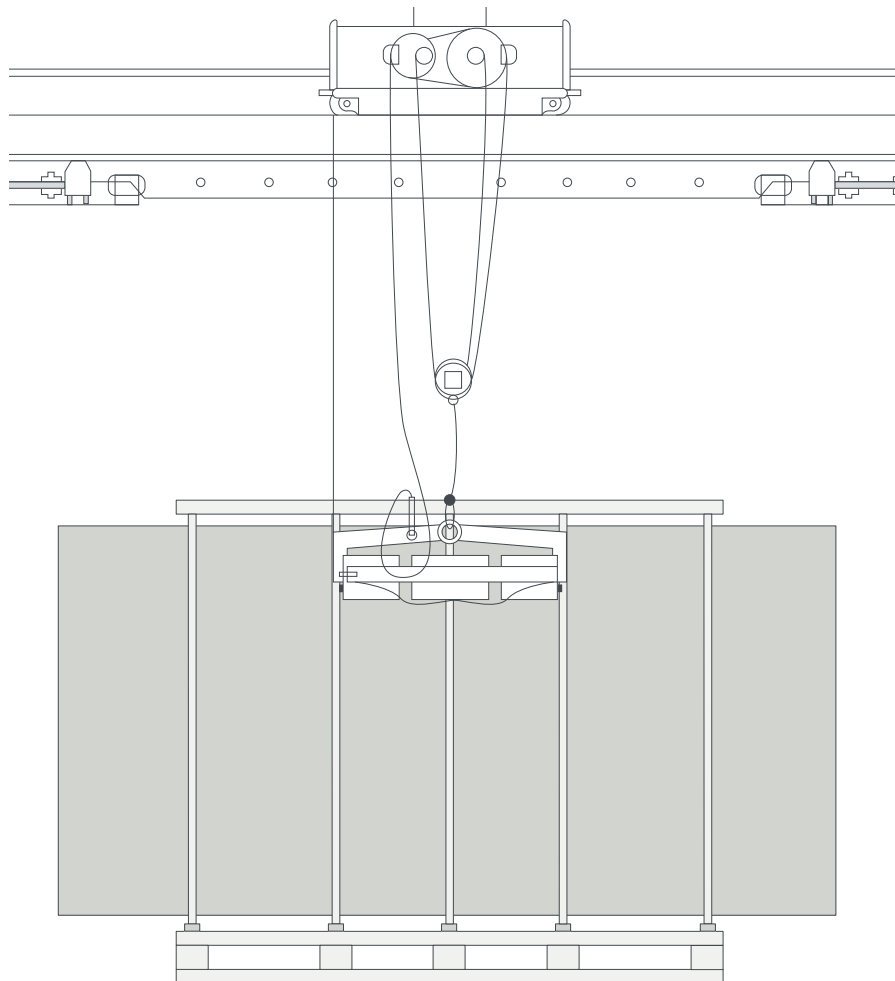
When unpacking the slabs, for safety reasons, it is necessary to alternate sides when removing the slabs from the trestle: first one side, then from the other. This will maintain the maximum symmetry of the load and ensure greater stability.

To move an individual Laminam 12+ slab and place it on a rack or machine for processing,

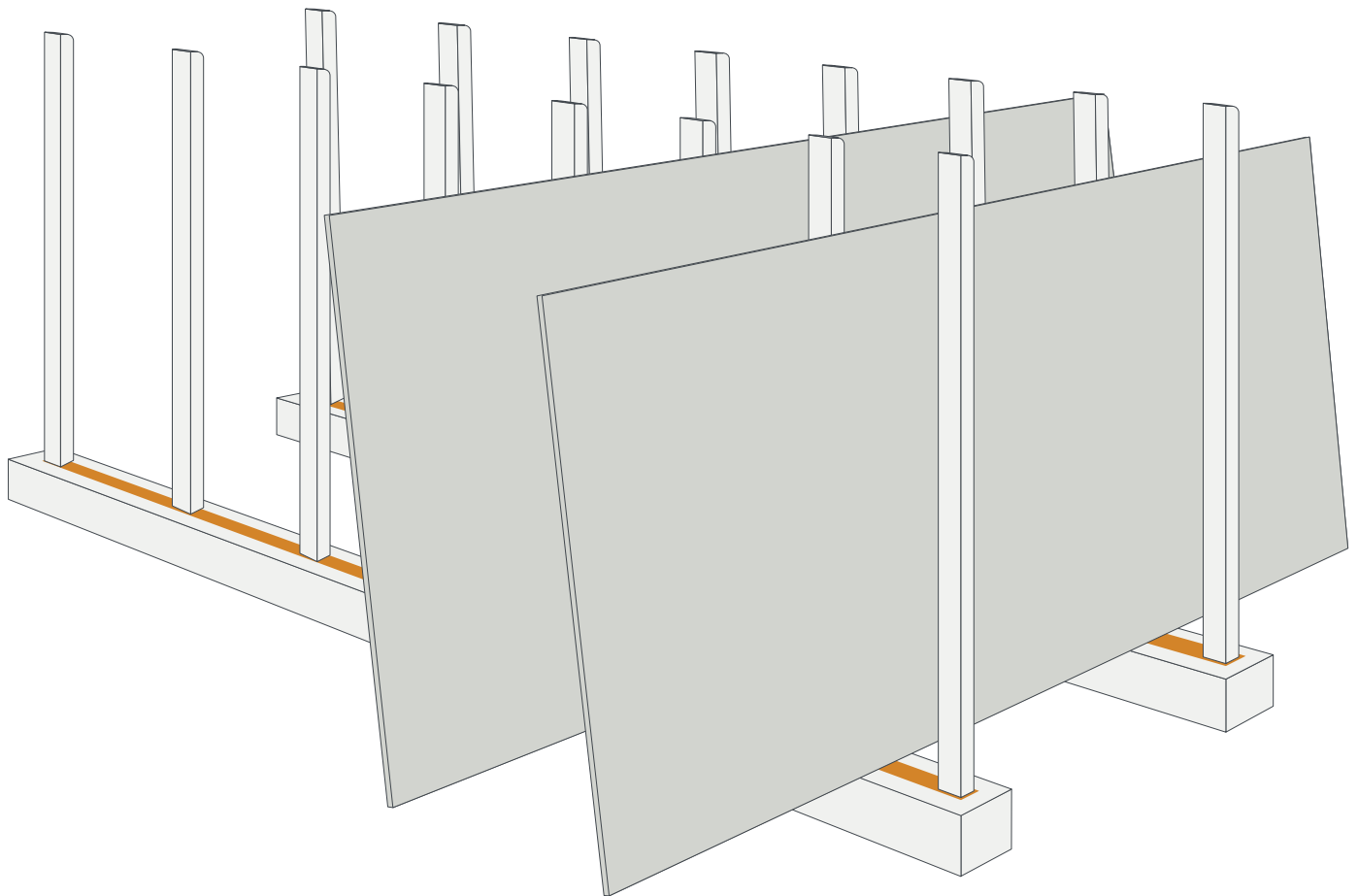
lifting devices with suction cups can be used, for example supported by an overhead crane or a jib crane, after checking that the maximum load capacity can handle the weight of the single slab.

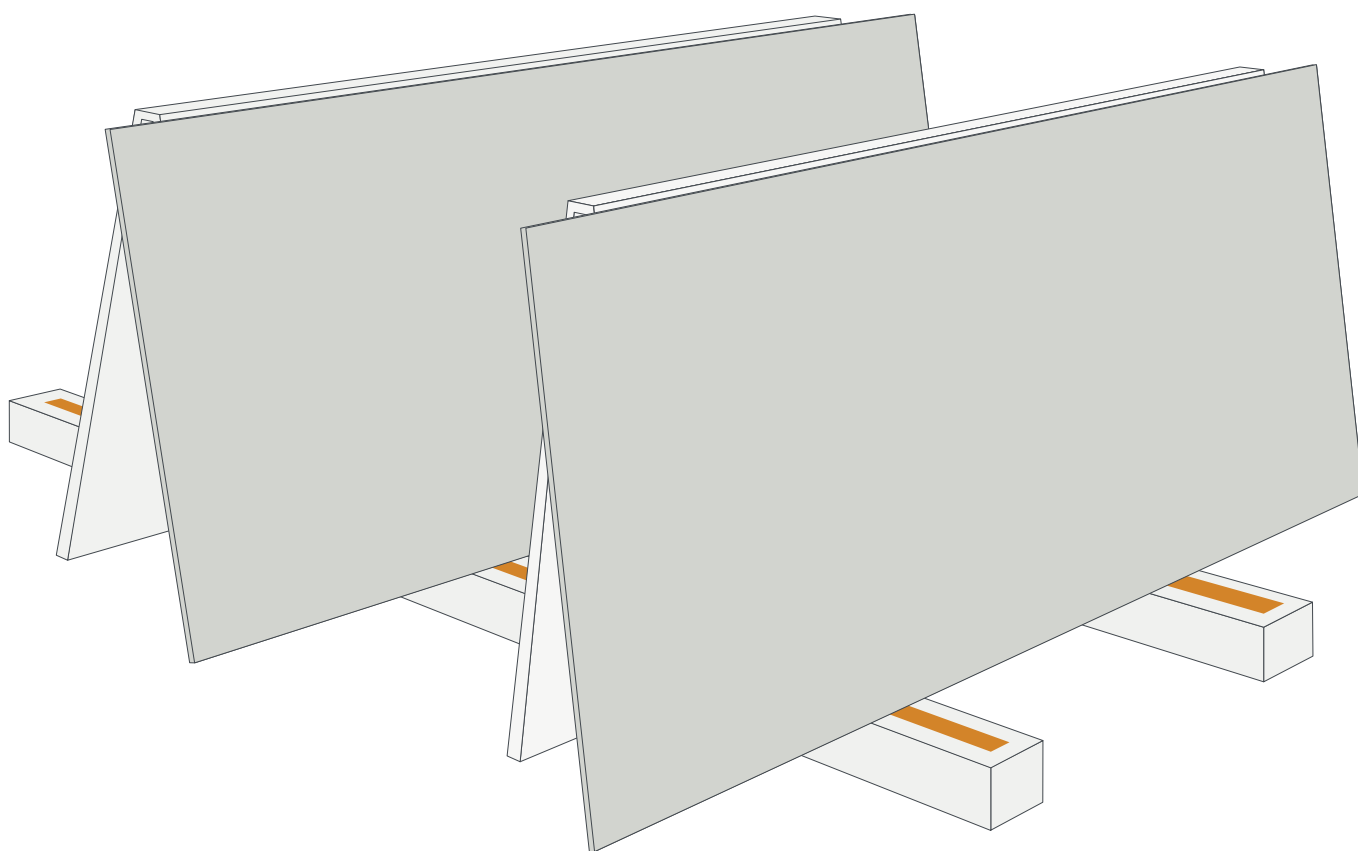
Individual slabs can also be moved using rubber-coated canvas straps; the use of chains or steel cables is not advisable as they could damage the material.

> Example of handling with overhead crane and suction cups



Laminam 12+ slabs can be stored in the warehouse on appropriate supports and metal structures such as trestles or racks, provided the surface where the material will rest in a vertical position is protected with wood, rubber or plastic. The Laminam trestle can also be used for storage.





3 / Quality control

Laminam 12+ slabs, composed of natural raw materials, are carefully produced and selected, following scrupulously the high quality standards that Laminam S.p.A. sets as its objective.

Before processing Laminam the manufacturer must clean accurately the slab and carry out a visual inspection on it.

Any non-compliance found must be reported prior to processing.

Laminex NZ will not accept reports or complaints once the product has been processed and/or installed.

3.1 Size

The term 'Full Size' indicates the slab that has completed its unground production cycle. This size is intended for processing, as the manufacturer has the opportunity to optimise the possible cutting patterns according to the project at his own discretion.

From each slab you can obtain a size of 1620x3240 mm, corresponding to the useful and invoicing surface.



3.2 Thickness

Laminam 12+

Nominal thickness Laminam 12+	12 mm
Tolerance	+/- 0.5 mm

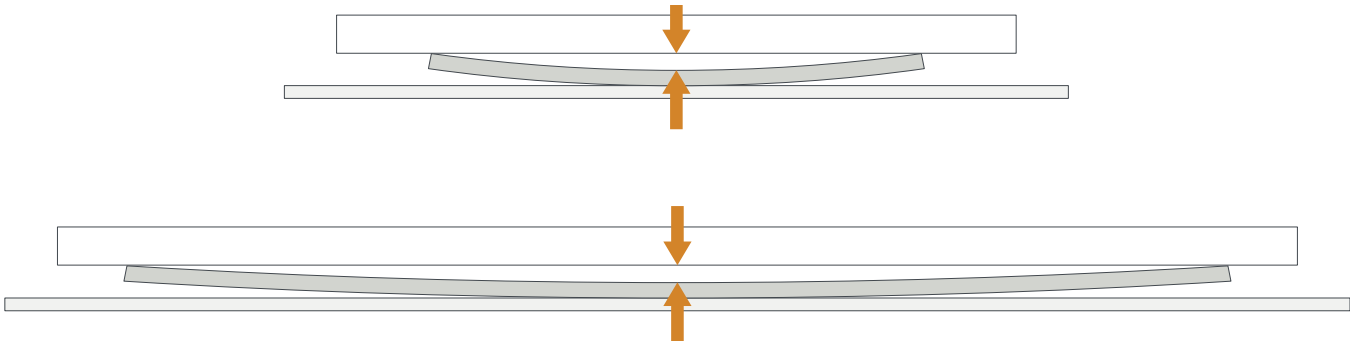
3.3 Flatness

To check the flatness correctly, position the single Laminam 12+ slab, with the decorated face facing upwards, on a perfectly horizontal and stable bench surface, for example in metal. Do not perform this check with the slab in the vertical position.

The flatness is measured with an aluminium rod and 2 mm thickness gauges, evaluating the portion of the slab in which a possible deflection is present.

Laminam 12+

side 1620 mm	+/- 2 mm
side 3240 mm	+/- 2 mm



3.4 Shade

Laminam 12+ slabs are produced from natural raw materials and manufactured using an industrial process. Although they are not subject to major aesthetic variations, as is the case with natural stones, they can be subject to normal, minimal colour variations.

Laminam S.p.A's production process includes a careful selection phase to divide and mark the different shades, ensuring that the product always falls within the quality thresholds that the Company has set itself.

These variations are to be considered a natural characteristic of Laminam slabs.

Slabs with the same finish but different size and thickness will always have different shades, but they will still fall within the range set by the company.

When manufacturing products, we suggest avoiding the combination of slabs of the same finish in different thicknesses and shades on the same plane.

There may be more than one shade of the same finish in a single package, as marked on the label on each slab. It is therefore necessary to check the uniformity of the shade for projects that involve the use of more than one slab.

Each shade cannot be repeated; if the finish is still in production, on request Laminam S.p.A. can search for and supply the material available in the warehouse that has the shade closest to that of the slabs previously purchased.

3.5 Surface Quality

Laminam slabs are obtained through the use of only natural raw materials, fired at high temperatures (> 1200°C). Such conditions may give rise to the formation of irregularities.

Laminam S.p.A classifies Laminam 12+ slabs into three distinct surface quality categories: Q1, first choice, Q2, second choice, QT, technical support.

According to the ceramic standards of the sector, the aesthetic conformity of the surface of Laminam materials must be carried out visually by placing the slabs in a horizontal position, under natural or artificial light, placed perpendicular to the surface to be observed (no backlit) and at a distance of not less than 1 m.

The presence of these irregularities on the first choice (Q1), although controlled within parameters of selection, is a characteristic of the naturalness of the material.

Q1 – first choice*

This category includes the Laminam 12+ slabs meeting the following surface tolerances:

Irregularity* similar colourRadius : ≤ 3 mm

Irregularities* different colour

Radius : 1 mm

* Irregularities are: dots, roughness, holes/hollows.

Q2 – second choice

Everything that exceeds the parameters from the choice Q1 and / or has cracks / fractures of angles less than 20 cm is intended for the second choice (Q2).

QY – technical support

Everything else not expressly stated above.

Inside the Technical Support we do not guarantee graphic pattern or structure of Laminam products as per list. The slabs belonging to the Technical Support are not divided by type of product.

Note: the company accepts orders for Q2 and technical support (QT) only after verification of the actual availability of the material in stock, at the time of request.

3.6 Material Graphic pattern Variations

The position of the Laminam surface decoration may vary between the slabs, reminiscent of the natural variety of natural materials. This characteristic may be more evident in graphic patterns with veining.

3.7 Label

Each Laminam slab is provided with an identification label that contains sensitive information regarding the product code, shade, size, date and time of production, quality and finish.

The label refers to the website www.laminam.it where technical product information can be accessed.

Cutting/Fabrication Instructions

We recommend wet cutting/fabrication

Do not cut/fabricate dry

Improper cutting/fabrication techniques could expose the fabricator/installer to harmful silica dust

MADE IN ITALY



TIME :
08:17:00



B10000180615000

CODICE
PRODOTTO

CODE : **F008270**

QUALITY : **Q1**

SHADE : **015_B**

QUALITA'

TONO

OSSIDO NERO 1620X3240 XL LAMINAM12+

FINITURA

FORMATO

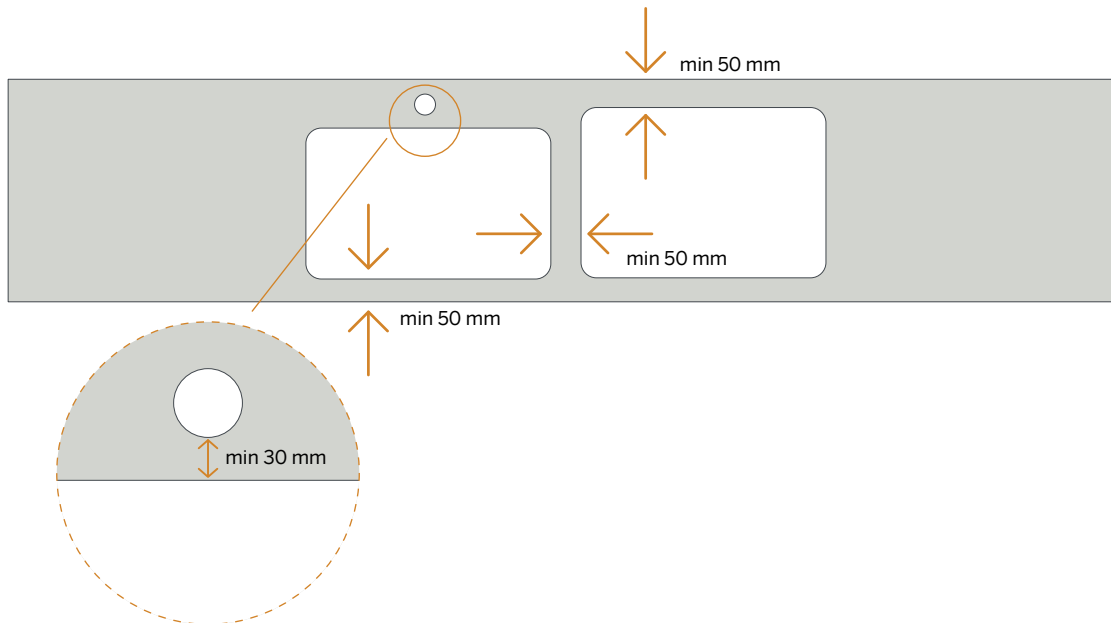
SIZE : **1620X3240**

LAMINAM®

4 / Design

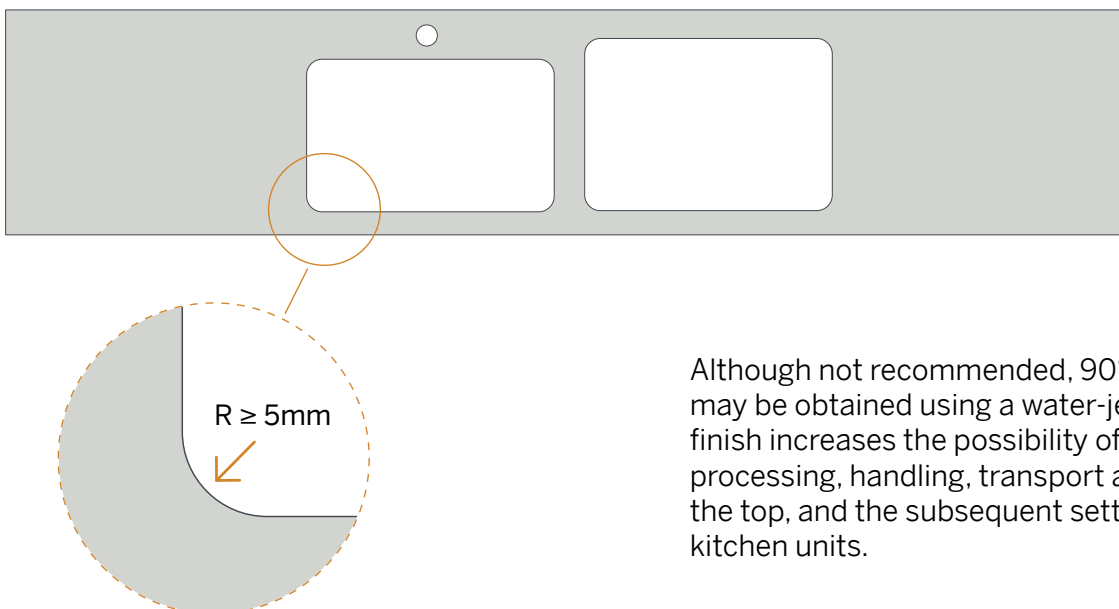
4.1 Minimum distances from the edges

In the design of a kitchen top, maintain a minimum distance of 50 mm from the outer edge with holes and grooves. The same minimum distance must be maintained between adjacent openings. The minimum distance between a cutout and the edge of the slab must be at least 30mm.



4.2 Inside corners

To create internal corners and openings, create a joint of at least 5 mm in the angle to distribute the stresses, as is generally done when working stone, marble and bonded materials.



Although not recommended, 90° internal angles may be obtained using a water-jet process. This finish increases the possibility of cracking during processing, handling, transport and installation of the top, and the subsequent settling of the various kitchen units.

4.3 Installation of sinks and hobs

Laminam 12+ can be processed to obtain a range of configurations for sinks and hobs.



- **Top-standing installation:**

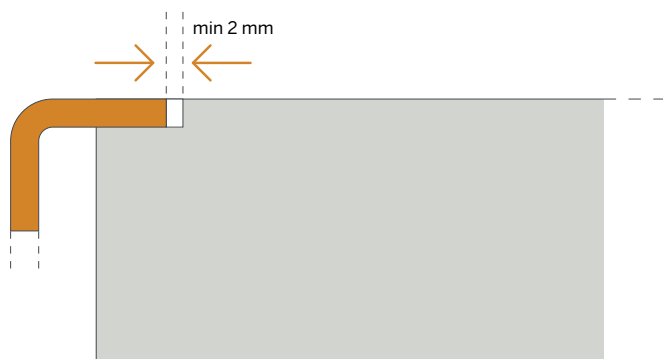
Corresponding to flush-mounting of the most conventional and simple kind of processing, with a protruding edge of a few millimetres, above the work top.

- **Top-flush installation:**

Top flush installation leaves no overlapping edges and the hob is fitted into a groove a couple of millimetres deep made in the top, depending on the thickness of the edge of the sink or hob to be fitted into the kitchen top. It is a more practical solution for cleaning but is trickier to fit.

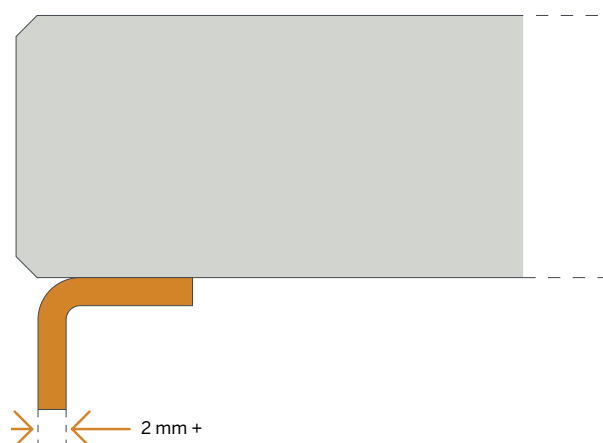
A minimum gap of 2mm between the edge of sink or hob and rebate. This can be filled with a suitable silicone filler/adhesive.

Removing more than 6mm from the surface is not recommended.



- **Under-top installation:**

Used for sinks, this solution ensures the uniformity of the work top surface as it has no edges. Cleaning and hygiene are also quicker and simpler as there are no protrusions to capture dust and dirt.



4.4 Installation of sinks and hobs

Laminam 12+ slabs must be processed to obtain openings having scrupulously checked the processing measurements given in the technical sheet of the specific product to be installed, depending on the chosen installation method.

Leave a minimum distance of 2 mm between the sink or hob and the Laminam top, to allow for thermal expansion.

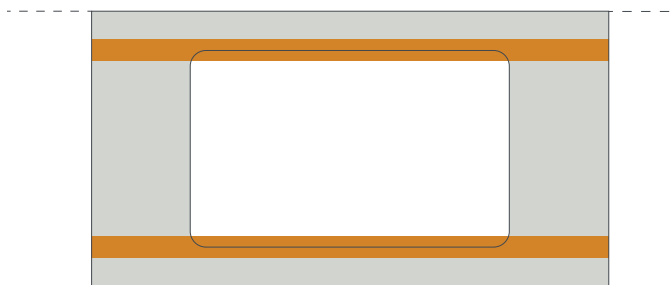
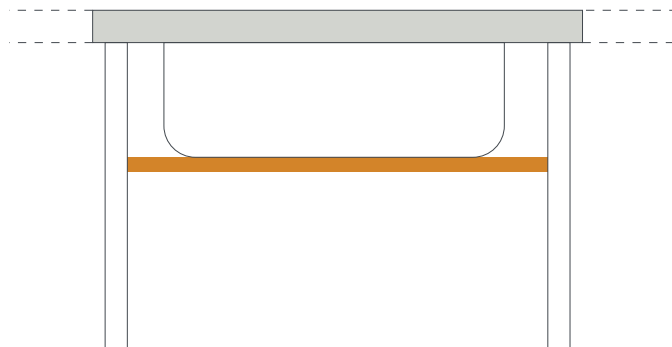
When fitting a prefabricated sink below the top, chamfer the edge of the Laminam 12+ slab around the hole. When fitting the prefabricated sink and/or hob seal the edges with silicone, adhesive seal or an equivalent product.

A Laminam fabricated sink is possible. Consultation with the fabricator is required on a case by case basis. Not all fabricators would attempt to incorporate.

Use one or two support bars to support sinks, fixed to the unit frame, in order to avoid stresses to the countertop.

4.5 Wall joint

Install the top at a distance of 2-3 mm from the wall.

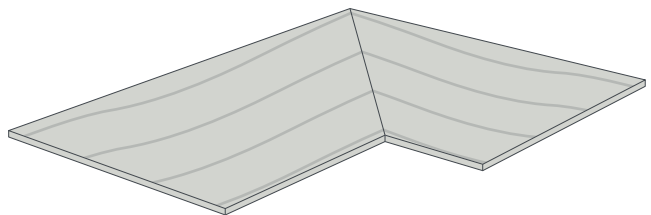
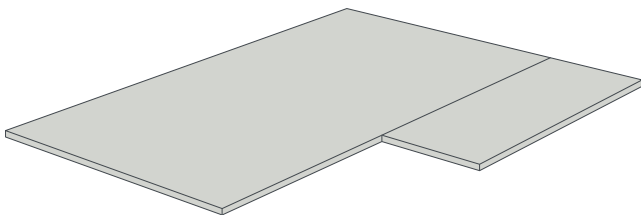
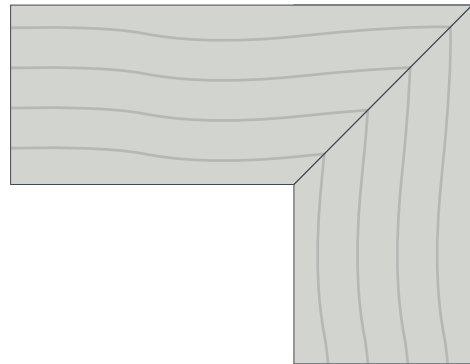


4.6 “L” top and joint

When creating “L” shaped tops, it is advisable to fit the slabs using a straight pattern. When installing the top, fill the joint between the two slabs with silicone.

A diagonal joint is advised for directional pattern.

In case of finishes that have a non-uniform and / or with a direction pattern, perform a preliminary check on the parts to be joined to make them compatible as much as possible.



4.7 Reinforcements and Fixings

In order to give more strength to the top, it is important to observe the following guidelines:

- in the case of countertops with edges made of 12mm thick (without front edge), supports are to be guaranteed in correspondence on the whole perimeter of the cabinets and across each cabinet of the kitchen, with particular attention to areas next to sinks and hobs.
- countertops made directly with front edge and miter cut may be reinforced by the insertion of

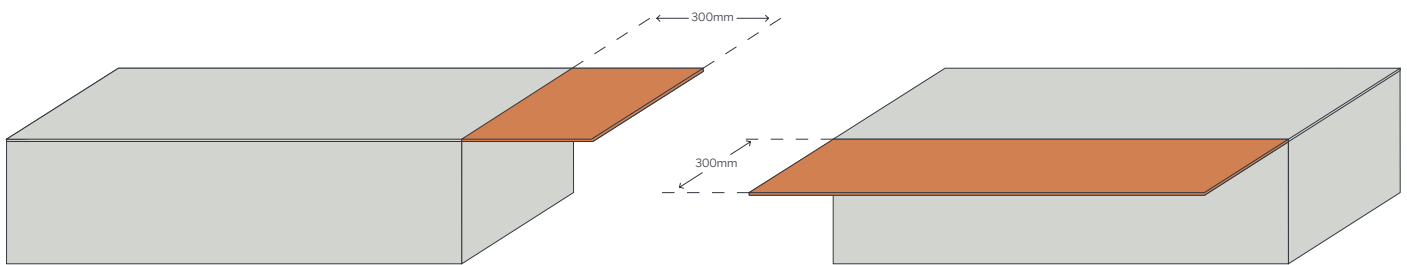
bars (for example in Laminam 12+, aluminum or other types of panel) taking care to use sufficiently elastic adhesives.

Tables

To fix the Laminam 12+ slab to the tables frame it is possible to use glass accessories, such as recessing anchoring, with an indicative maximum depth of 6mm.

Alternatively, depending on the table frame and the use, e.g. indoor or outdoor, it is also possible to use Velcro or adhesives.

4.8 Overhangs and table extensions



300mm unsupported overhang. Fiberglass backing may be removed 100mm back from the exposed edge of the horizontal surface. Remove as necessary on vertical edges e.g. waterfall ends.

The production of overhangs using Laminam 12+ slabs has been tested to standard EN 1730:2012 "Furniture. Tables. Test methods for the determination of stability, strength and durability".

In a configuration of a 800 mm table top

Top width	Maximum span	Maximum deflection	Tests passed
800mm	350mm	6.5mm	• Load applied 50mm from the edge: 1000 N • Stress: 10000 cycles, applied load 300 N • Impact: 10 knocks, 25 kg weight, falling height 180mm

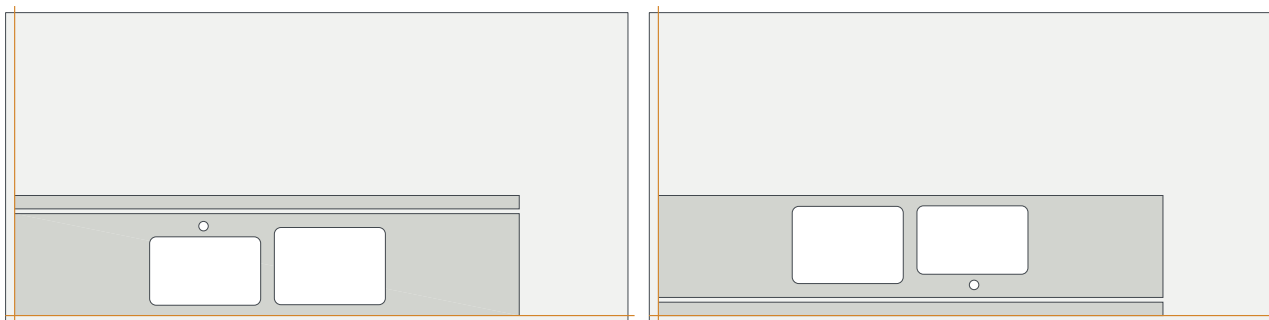
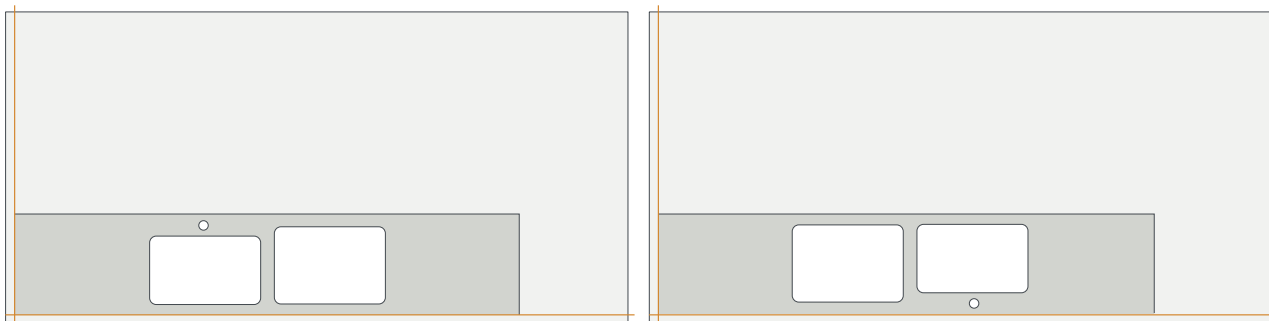
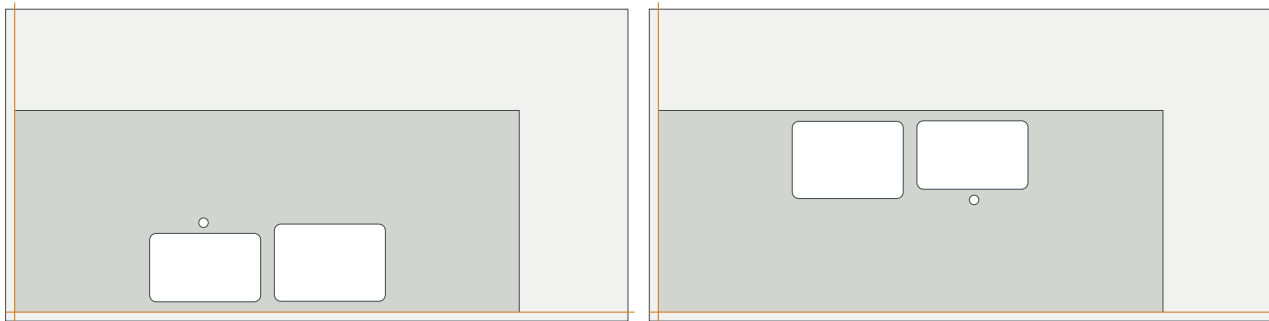
Any larger spans shall be tested by the producer.

If the table has extensions, use the same Laminam 12+ slab for both the table top and the extensions. This procedure ensures a uniform colour and thickness of the finished table. This also allows to create continuity in terms of flatness between top and extensions, in case of small deviations of the slab covered by the tolerance. If extensions are made from different plates, verify tone, graphics and flatness matching.

It is also advisable to obtain the extensions and top continuously from the same slab, above all if the finish has a preferential direction.

4.9 Piece positioning during processing

Position the Laminam 12+ slab during processing to create openings and grooves in the central part of the slab.



5 / Laminam 12+ processing

Process Laminam 12+ slabs using water-based machinery for processing natural stones, marbles and bonded materials.

Before cutting check the state of maintenance of the operating machine, in particular:

- The work top must be solid, resistant, clean and intact.
- The work top must be perfectly flat and level.
- The work top must be free of any previous processing waste and must have no irregularities in the surface.
- The router bit must be suited to working porcelain stoneware and must be in good condition.

The operating parameters, in the ranges indicated in this guide, are those recommended by the manufacturers of the machinery and utensils and by specialist technicians, following processing tests, but are in any case purely indicative and must be checked by the user according to the available equipment, his experience and the type of finish to be obtained.

It is therefore recommended that all operators

perform preliminary practical tests on a sample before cutting and processing, to test and suitably programme the machine and bits used.

If the cutting finish is unsatisfactory or the operation leads to breakage of the slab, the reasons for this must be sought in the incorrect feed speed, operating pressure or bits rotational speed, the incorrect flatness of the support surface, movements or vibrations caused to the slab during the operations, the incorrect choice of disk or bits.

IMPORTANT: It is recommended to work in compliance with local laws and provisions concerning safety at work. Consult the product safety data sheet.

End Processing / Important note:

After finishing the processing with any type of machine, pay particular attention to the handling of the slab, in particular if openings or inner holes are present. Use suckers only if equipped with a sufficient number of outlets, to avoid any bending of the processed countertop.

Alternatively, manually move the vertical piece, taking care to avoid twisting.

5.1 Disc cutting operations

For cutting, use good condition diamond discs suited for machining porcelain stoneware, on water-operated machinery.

Both segmented and continuous rim discs can be used.

The slab must be fed in the same direction as the disc rotation.

The cut is obtained by erosion of a width proportional to the width of the disc.

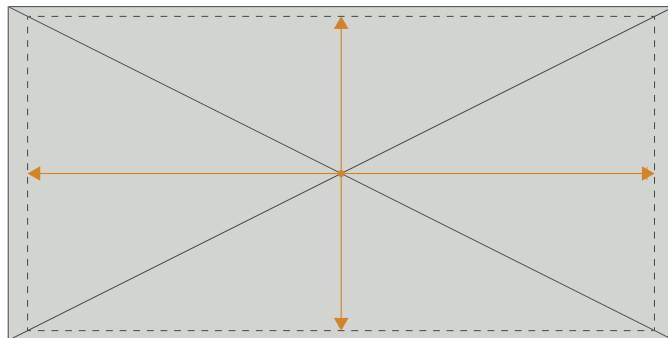
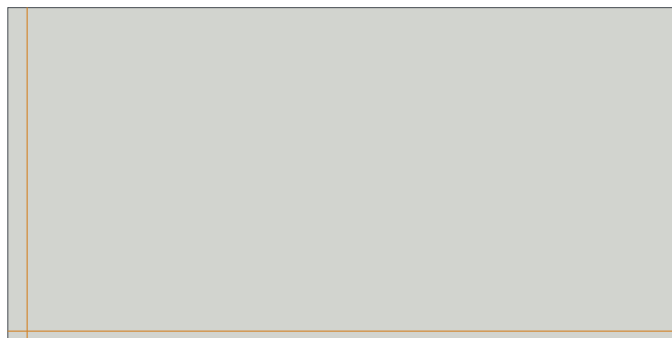
Before machining, check that the work top is flat, level, in good condition and free of any processing waste.

Cutting diagram

Laminam 12+ in size “Full Size” external edges are square.

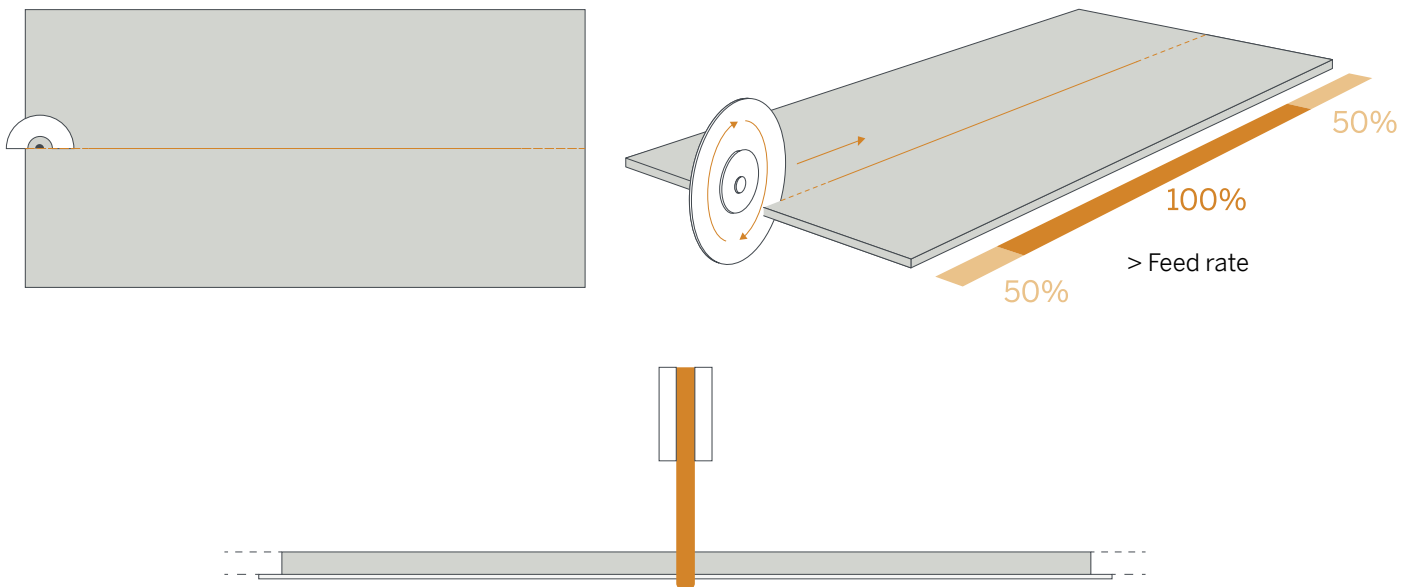
Start the machining by squaring off the two sides.

To obtain size 1620x3240mm, set the disc path to obtain the size from the centre of the “Full Size” slab.



Parameters

- The smaller the disc diameter, the greater the spindle rotation speed.
- The lower the feed speed, the greater the cutting quality.
- A lower feed speed ensures finishing with reduced chamfer on the edge.
- The infeed and outfeed speed must always be 50% less than nominal working speed.
- Correct positioning and amount of water.
- As little of the disc as possible must be exposed, considering at least 1 mm passing beyond the thickness of the slab.
- Successful machining will be ensured if the vibrations emitted by the cutting operations are reduced to a minimum. To limit the vibrations, place a disposable wooden or rubber-based (e.g. vulcanised) panel beneath the slab.



Below are the recommended parameters for processing.

	Disc Diameter Mm	Rpm	Feed rate Mm / min	Infeed/outfeed speed
Straight cut	300	2'800	1'500-2'000	50%
	400	1'800-2'200	1'000-1'200	
	500	1'400-1'900	1'000-1'200	
45° cut	300	2'800	800-1'000	50%
	400	1'800-2'200	500-600	
	500	1'400-1'900	500-600	

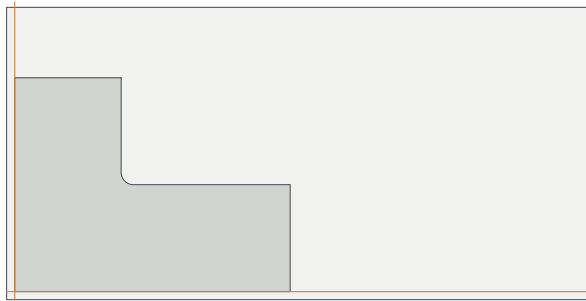
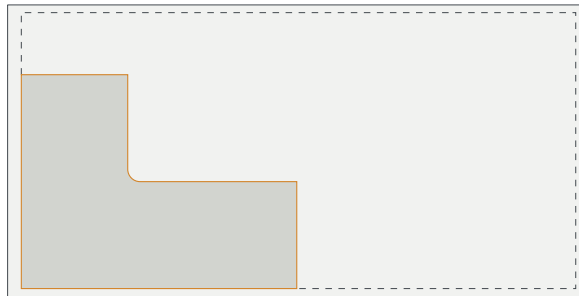
By appropriately setting the machine it is possible to cut the slab on the bias. When cutting at 45° to join two Laminam slabs, the new edge must be chamfered.

In 45° cuts it is possible to use extra-thick disks to

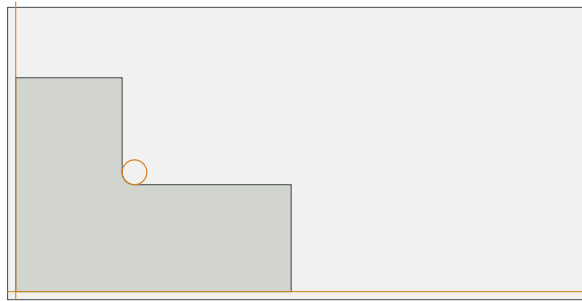
limit the vibrations and reduce the possibility of breaking the slab during machining.

For "L" cuts, first of all make a hole at the angle, and then make the straight cuts. The last part near the hole must be cut by hand using a grinder.

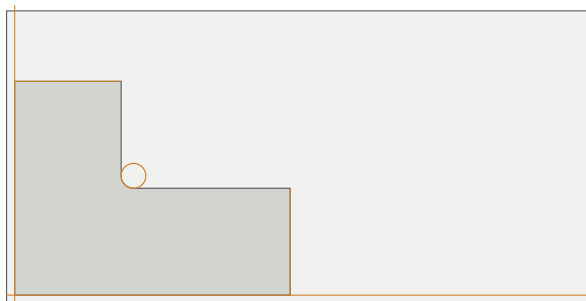
> "L" cut: processing sequence.



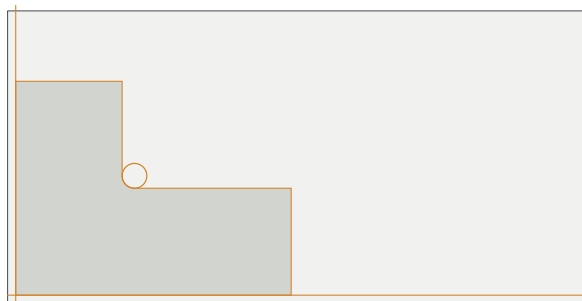
1



2



3



4

At the end of each processing phase and before the piece has dried, clean the surface with clean water. To restore the disc after a number of cuts, use an alumina or quartz block.

5.2 Cutting bench machining

Straight cuts on Laminam 12+ can also be done on cutting benches used for solid glass slabs, on a solid top with a diamond wheel.

Laminam 12+ Type	Feed speed	Feed speed Mm / min	Wheel angle
Pale colour	5 bar	10.000	135-140°
Dark colour	4 bar	15.000	135-140°

The cut is then opened using glass grippers.

The special type of machining requires that a strip of at least 40mm be cut to guarantee the opening of the cut. This type of straight cut cannot be used to obtain internal openings.

The obtained cut is straight, but not smooth or with a uniform thickness, and must therefore be finished.

The operation can be done on a CNC work station with diamond router bits, to remove the burrs and for the following smoothing and polishing of the irregularities caused by the cut.

It is advisable to consider any subsequent abrasion of the material in the cutting sizes.

5.3 Numeric control machining

Laminam 12+ can be machined with numeric control machinery (CNC).

The most complex CNC stations offer the possibility to angle the head to create many different types of shapes and outlines. This machine is used mainly to obtain recesses for hobs and sinks, edge finishing for flush-mounted tops, holes, edges and curved cuts.

Tools

The tool must be diamond finished and suitable for processing porcelain stoneware. The choice of router bit is linked to the specific processing in question.

Do not make any cuts or holes with router bit oscillation.

During machining, use plenty of well-aimed water, both inside and outside the drill or router bit.

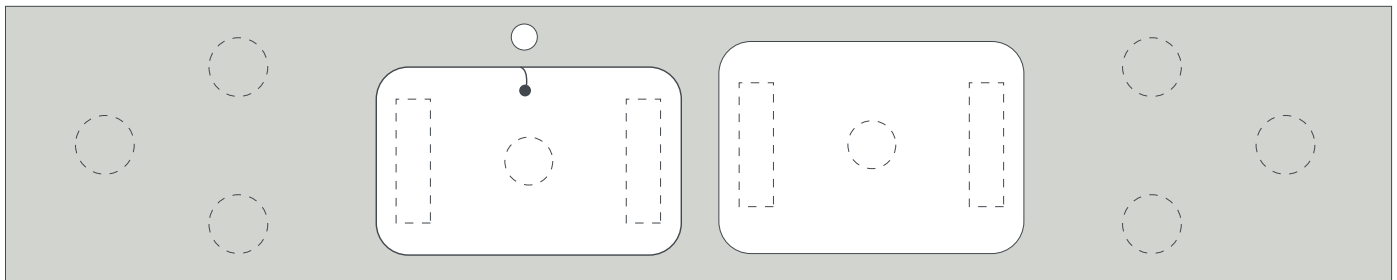
Positioning the suction cups

Before starting machining, check the correct grip of the suction cups on the back of the slab. If unsatisfactory, use softer seals of a more suitable thickness. If the slab is not perfectly fixed it may move, consequently making the piece unusable.

The correct positioning of the suction cups supporting the slab is a fundamental aspect for successful cutting. For this reason, distribute the suction cups evenly to support the slab particularly near the cut and below the part to be removed after cutting.

With the cutting feed, it is important to avoid any bending between the part to be removed and the part machined as this may cause cracks and/or breakages.

As an alternative to the suction cups, special clamps can be used: in this case, bear in mind that the part the clamp is positioned on cannot be machined.



Top-flush machining

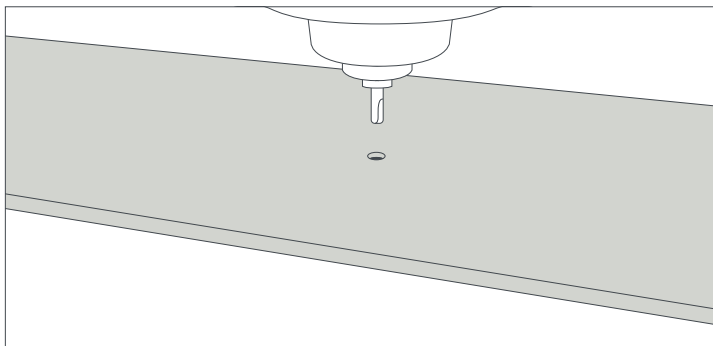
It is recommended to proceed by machining the top-flush before making the hole.

Make the cut to the size and depth required, following the instructions in the technical data

sheet provided with the sink or appliance to be installed.

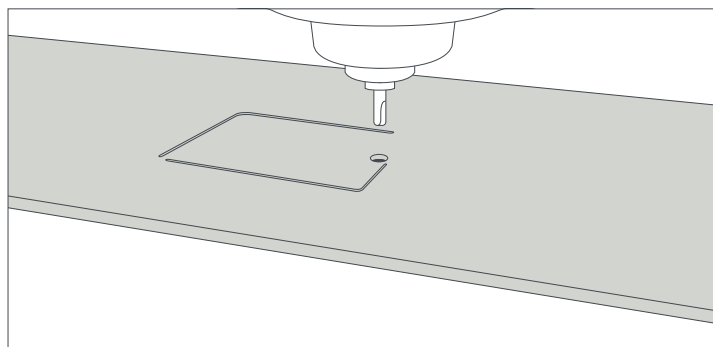
Consider the appropriate size of the appliance or sink in order to assess the width of the top-flush recess.

1



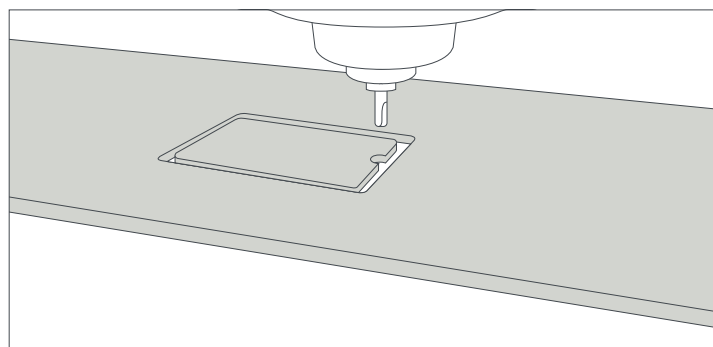
> Drilling

2



> Incremental cutting

3



> Cutting

	RPM	Feed speed mm/min	NOTES
Hole (diam. 35mm)	1.800-2.200	20-30 mm/min	Slow the feed to 10 mm/min at 1-2mm from the bottom, without water
Cutter	3.000-4.000	100-200	
Top-flush	5.000-7.000	150-250	
Chamfering	5.000-5.500	1.000-2.000	
Edge polishing (Matt finishing with metal grinder sequence)	3.000-5.500	1.000-3.000	
Edge polishing (Polished finishing with resin grinder sequence, after metal grinder sequence)	3.000-5.500	1.500-3.000	

At the end of each processing phase and before the piece has dried, rinse the surface with clean water.

To restore the router bit after a number of cuts, use an alumina or quartz block.

5.4 Water jet machining

Laminam 12+ slabs can easily be cut with water-jet machines: this method is used for all cutting, shaping and drilling operations with a high degree of precision.

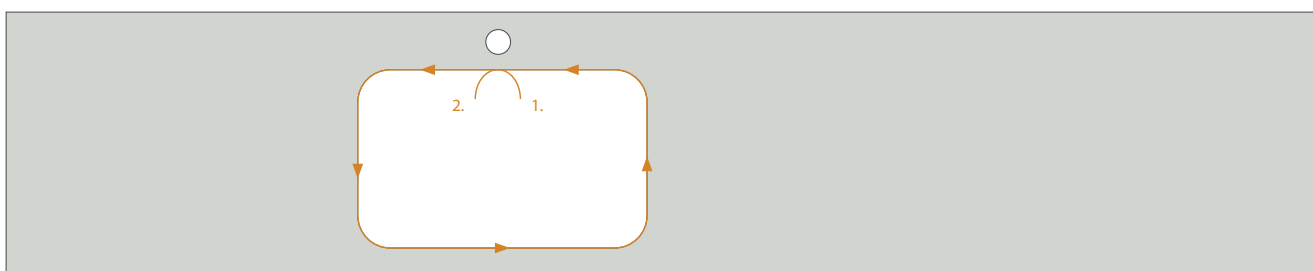
Check that the metal support grid is in a good condition and flat, and that the piece is appropriately fixed to prevent it from moving,

which could compromise the quality of the cut.

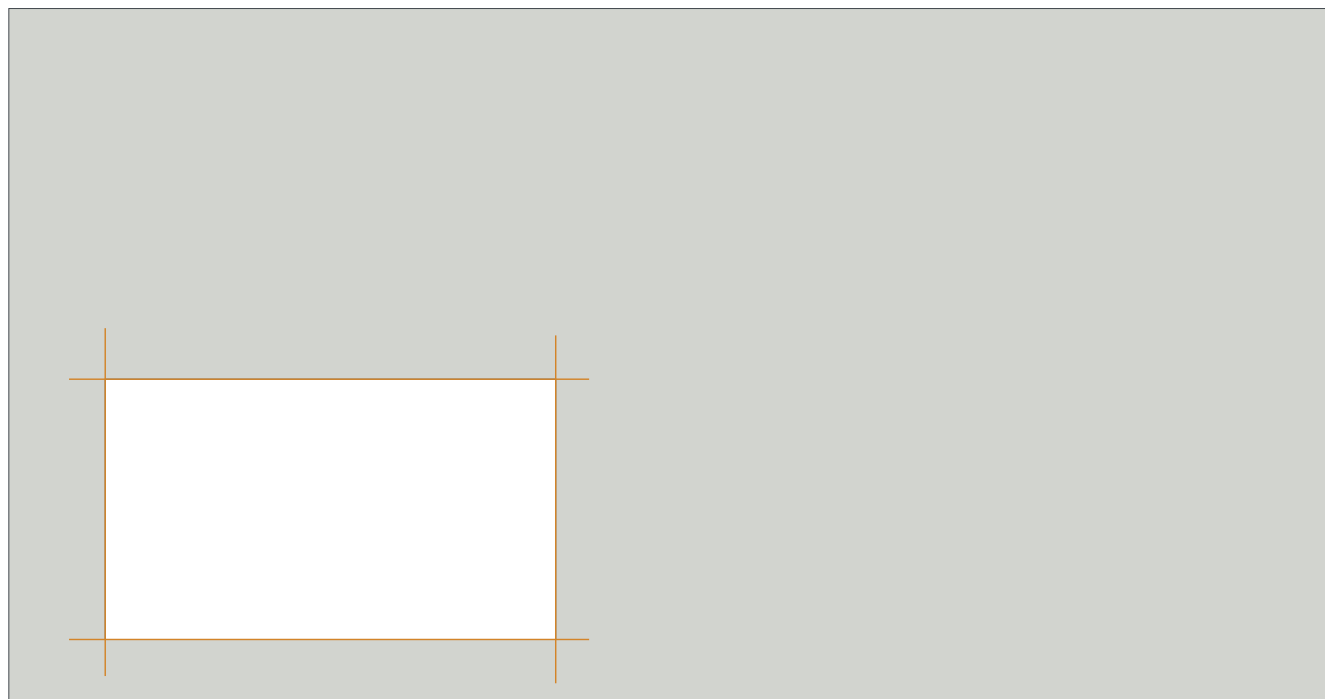
If the machine allows, it is also possible to cut at 45°. By adjusting the machining parameters, it is possible to obtain a sharper or rounder edge.

For openings in the slab, start cutting inside the hole and then proceed towards the perimeter of the cut. Keep a minimum radius of 5mm for internal angles.

A.



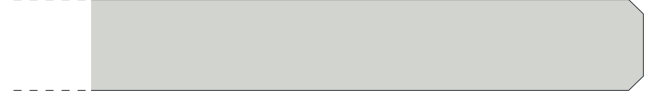
B.



At the end of each processing phase and before the piece has dried, rinse the surface with clean water.

Laminam 12+ Type	Feed speed (bar)	Feed speed mm / min	Cutting abrasive	Initial drilling pressure 4s	Drilling abrasive
Pale colour	3500-3800	400-500	80 mesh; 350 g/min	800 bar	80 mesh; 150 g/min
Dark colour	3500-3800	500-600	80 mesh; 350 g/min	800 bar	80 mesh; 150 g/min

6 / Edges



The edge can be finished using automatic machinery (e.g. edge polisher, numeric control) or by hand, depending on the visual effect desired.

6.1 Straight edge and chamfering

The straight edge is the finish that keeps the edge of the Laminam 12+ slab visible. It can be used as a perimeter edge for table tops and kitchen tops, or to finish the sink hole when the sink is fitted beneath the top.

Subsequently, where required, it is possible to polish the edge using a sequence of abrasive diamond grinders, with increasing grit size, on numeric control machines.

Laminex NZ recommend a minimum 2 mm radical or 2mm bevel with edge radius of .5mm to increase impact resistance. The greater the radius, the better it will bear any impacts.

Treat the edge like glass. Due to the hardness of the surface, it increases the brittleness of the edges. Impact with a hard, heavy object could result in chipping of the edge. Accidental damage is not covered under warranty.

Remember that the greater the bevel, the more base colour in the slab.

Generally only the upper corner must be chamfered, but in some cases it may be necessary to chamfer on both sides: in this case, use a utensil that can perform the operation in a single passage.

For chamfering curved cuts, use a CNC machine with a 5-axis grinder.

The final passages of polishing and chamfering may be completed by hand, using special diamond pads fitted on a grinder: in this case the precision of the result is linked to the skill of the operator.

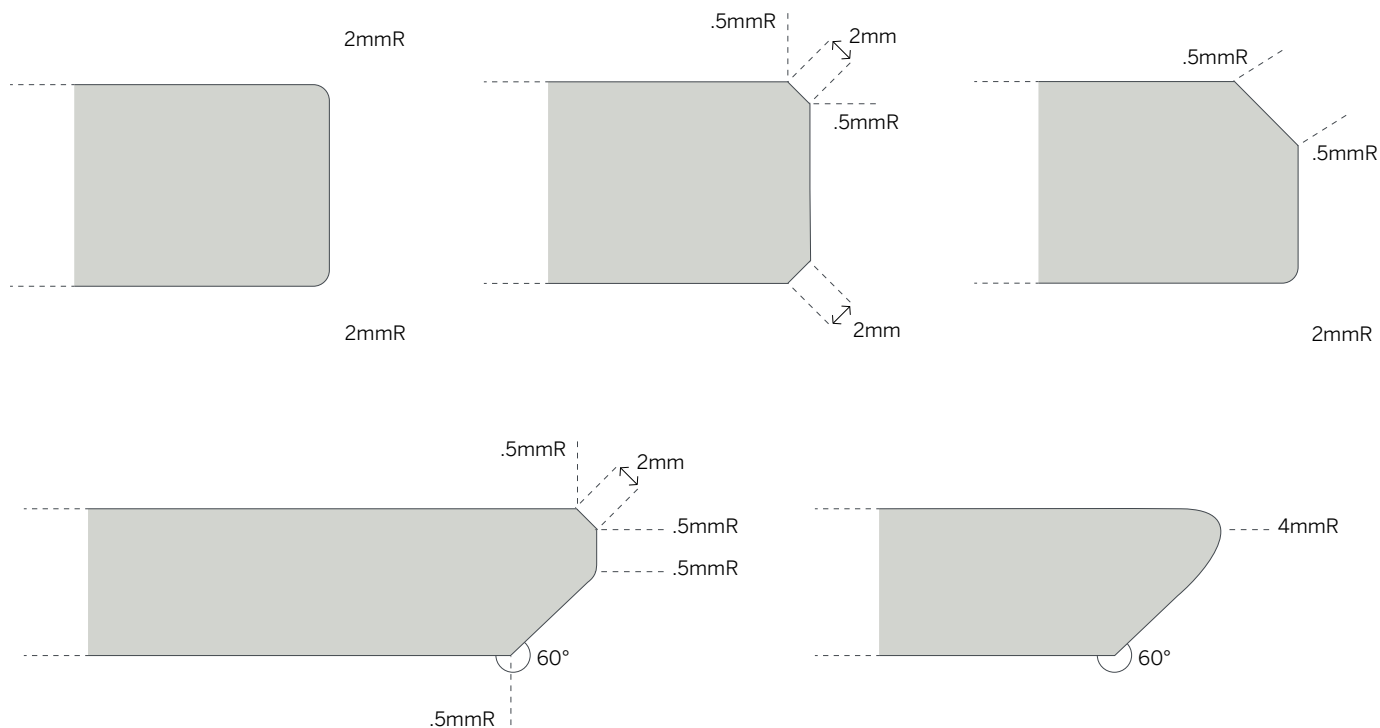
6.2 Other types of edges

Other types of edges (such as bullnose and half bullnose) can be obtained using special profiling grinders fitted on numeric control machines.

Many edge finishes can therefore be obtained using different grinders.

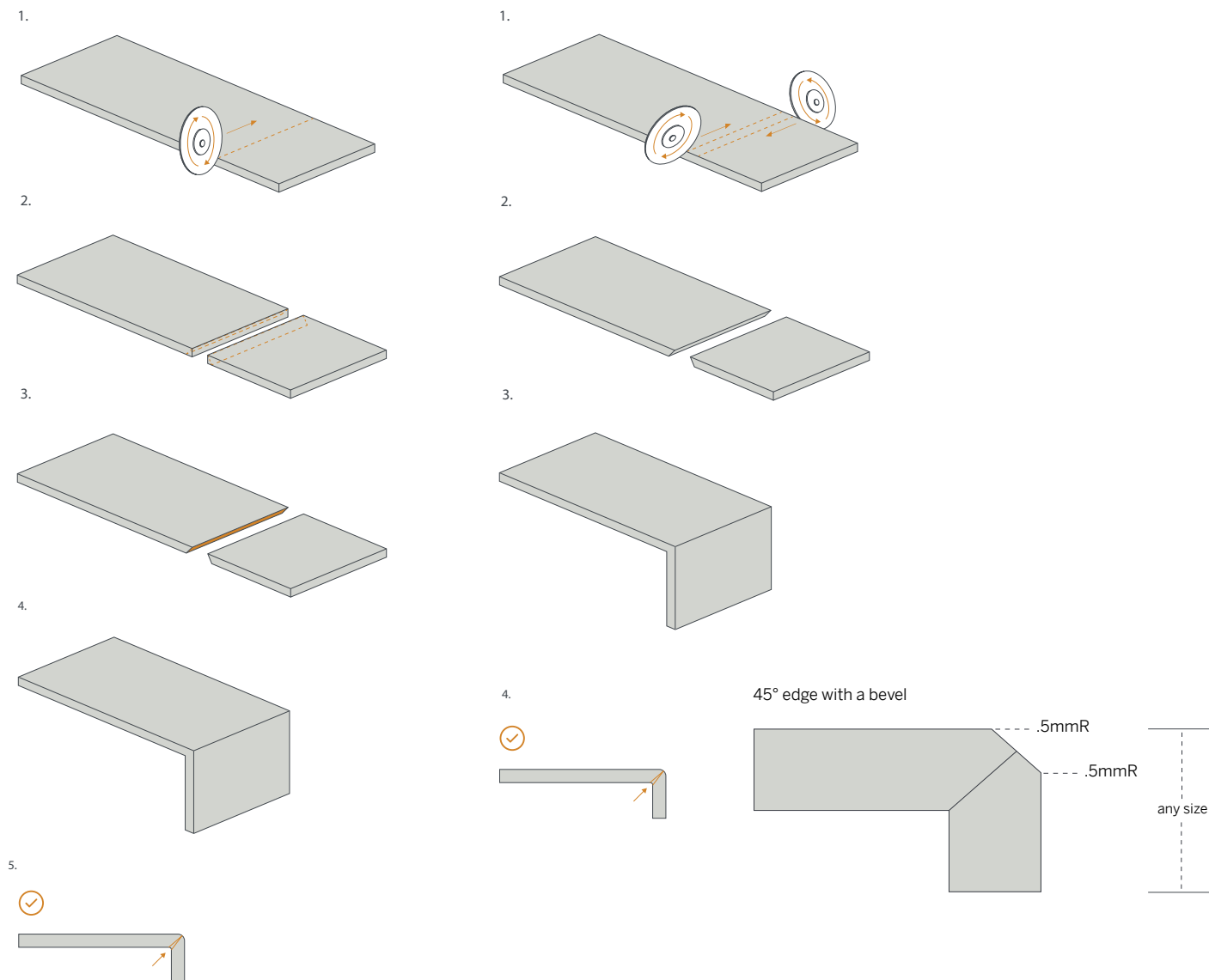
The operating speed must be checked in advance.

Recommended radius/bevel or combination of.



6.3 45° edges

Laminam 12+ can be machined to create continuous joints for baffles of a greater height than the thickness of the product, sinks and recesses.



6.4 Fibre sanding

To improve the appearance of visible edges, the reinforcing fibre can be removed along the perimeter of the slab by hand using a grinder with diamond pad.

This should be done for a maximum width of 100mm from the outer edge.

7 / Gluing

7.1 Laminam 12+ edge gluing

To couple Laminam 12+ slabs, on the edges of the slab or the portions use epoxy 2-component glue or equivalent.

For the optimal finish, it is advisable to use coloured glue in a shade that is as close as possible to the base colour or the surface finish of the slab used.

Pre-coloured glues or glues with special colouring agent additives are available on the market.

Perform the gluing operating and comply with the hardening times given in the manufacturer's technical data sheets.

Here below is a selection of products available on the market.

	Adhesive for gluing Laminam 12+ slabs	Correspondence between adhesive colours and Laminam finish and Adhesive Technical Sheet
Akemi	• Colour Bond (internal use) • Akepox 5010 (internal use) Coloured cartridges	www.akemi.de/en/
Tenax	Powerbond	On demand www.tenaxceramica.it
Integra Adhesives	• Integra Xi Coloured cartridges • Integra Ultra (for outdoor)	www.integra-adhesives.com

7.2 gluing Laminam 12+ on other materials

When gluing Laminam 12+ on different materials you must consider:

- the technical characteristics of the slab and the chosen material, including thermal expansion and humidity
- the use of the finished product, for example indoor or outdoor

We also recommend that a mock-up be prepared for the first gluing, testing the sample under the most severe conditions, according to the final application, to find out (and if required compensate) the behaviour of the material in advance and assess the stability of the support panel.

The products used may be epoxy or polyurethane 2-component glues, to ensure the full hardening of the glue in the centre of the panel.

Note

Remove any glue residues before hardening with acetone or solvent as indicated by the manufacturer.

2-component products (glues, grouts) are difficult to remove once hardened. Therefore, when gluing, prevent them from dirtying the slab surface, as it may be impossible to remove residues and smears once hardened.

8 / Treatments

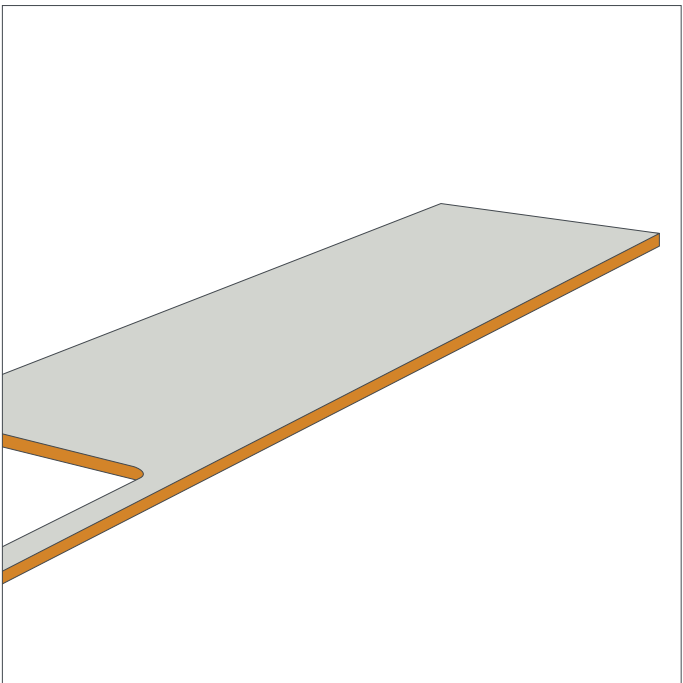
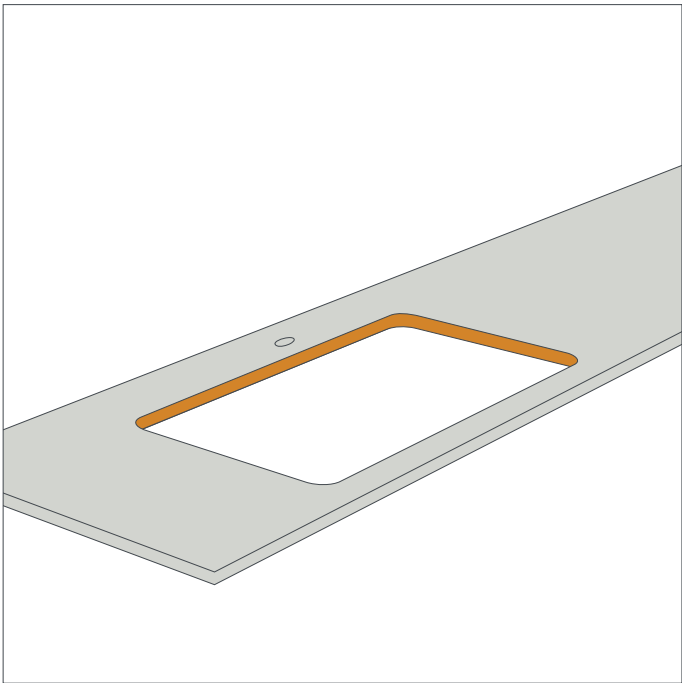
Once cut, the product no longer offers the same surface stain resistance through its full thickness.

For this reason, we advise you to treat the thickness, for example visible edges along kitchen

tops or tables, or along the sink openings, with commercial transparent protective products.

Here below is a selection of products available on the market.

Edge protector		
Tenax	Progress – "faded effect" Ager – "wet" effect	www.cdkstone.co.nz
Lithofin - Nanotop	Stain stop	www.cdkstone.co.nz



9 / Transport and installation of the finished top

During handling, transport and installation of the finished top, pay the utmost attention to avoid any excessive bending, twisting or knocks, particularly on the edges.

9.1 Packaging and transport

Once the slabs have been machined, handle the finished top vertically, keeping any openings towards the top. To facilitate transport, package the top in wooden crates or special wooden frames.

If the finished top is transported on trestles or stands, make sure that these are of the right size to completely protect the top.

The edges can also be protected with foam rubber or polystyrene corner guards.

9.2 Installation

Check that the base supporting the top is perfectly flat and level, structurally solid and stable.

Do this to ensure that the top can be continuously supported by the kitchen units over time. Check the flatness of the kitchen units scrupulously if the top has been made of more than one Laminam 12+ slab joined together, to ensure that the pieces fit perfectly.

Any cracks in the top caused by an uneven supporting surface or the subsequent settling of the units will not be considered a defect of the product.

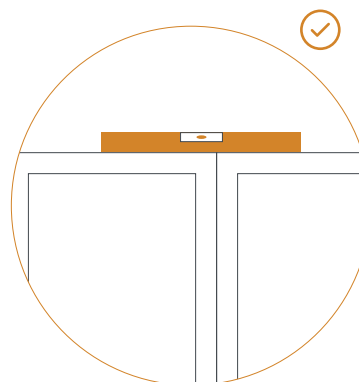
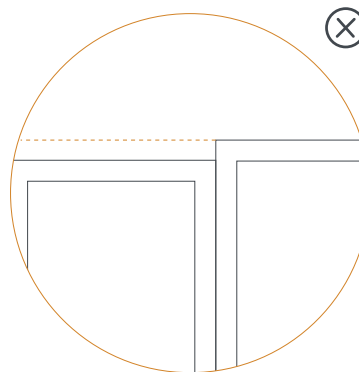
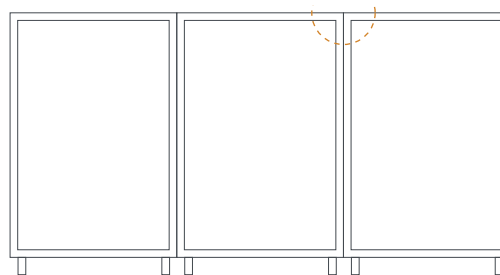
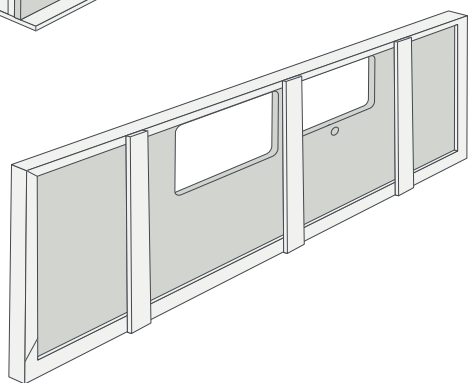
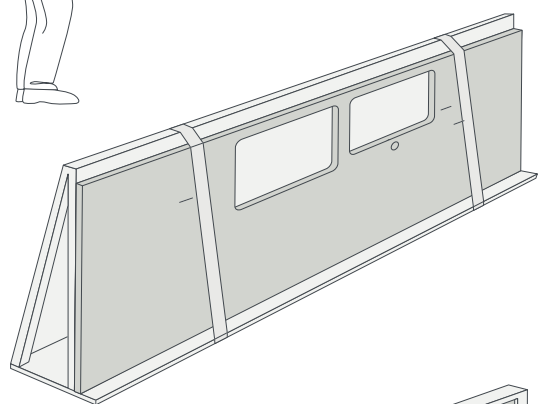
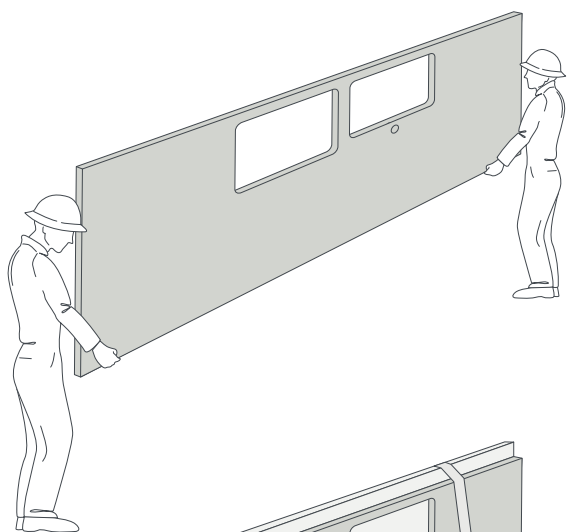
On site, always handle the finished top vertically, keeping any openings towards the top.

To reduce the risk of breakage during assembly, handle the top until it is resting on the supporting surface by supporting the underside on a wooden panel.

Fix the top to the base using silicone, taking care to spread this uniformly.

If the top is made of more than one piece of Laminam 12+, pay particular attention during laying to prevent any impact on the visible edges. This operation can be facilitated with the use of shims that must be removed once the slabs are in position.

The coupled edges may be chamfered beforehand by the operator to make it easier to couple the pieces without chipping. Finally, fill the joint with silicone.



10 / Slip Rating

Slip rating information pending as of 01/02/19.

11 / Cleaning and maintenance

Laminam 12+ slabs are cleaned extremely easily.

However, for best results follow the instructions given below.

For all the following cleaning operations, it is advisable to carry out tests in advance on a small portion of material using the foreseen cleaning product to make sure that this does not damage the surfaces.

Remember that, generally, it is easier to remove stains when done rapidly. Smears and stains on the surfaces are usually the result of incorrect, in-depth cleaning.

Under no circumstances use hydrofluoric acid or products containing hydrofluoric acid.

11.1 Cleaning after machining / installation

The instructions given in this paragraph are valid for all Laminam 12+ finishes.

It is fundamental to ensure correct cleaning after processing and/or installation as if this is done badly or incorrectly it may cause smears that would compromise everyday cleaning.

After each cutting operation on water-jet machines, disc cutters or numeric control machines, clean the slab surface with plenty of water to remove any processing residues, then

dry with a squeegee or glass wiper. Do not store any machine-processed material when wet. To eliminate any residues of dust after processing, we recommend washing the product using an acid-based detergent. After processing and gluing the material, clean the ceramic surface to remove any contaminants (patinas, glue residues...) that may be present.

Once catalysed, two-component products (adhesives, plasters etc.) and silicon-based products are hard to remove. During the gluing stage, it is thus important to prevent them from being spread over the surface of the slab, as the removal of residues and hardened smears is not always possible.

It is necessary to clean the slabs and remove any such residues before the glue has completely hardened. Clean the affected areas using a soft cloth dampened with acetone or solvent, as indicated by the glue manufacturer.

If necessary, we recommend protecting the surface of the slab before applying glue, with a plastic film or rubberised adhesive tape.

Moreover, clean the slab surface after installation with water and neutral detergent using a sponge or damp cloth. Do not use abrasive substances or equipment.

11.2 Cleaning and maintenance Laminam 12+

Routine

Generally, for everyday cleaning of Laminam 12+ use hot water and neutral detergents if required, with a soft cloth. Follow the instructions given on the detergent package.

Rinse with plenty of water and dry the surface with a soft cloth.

To prevent matt stains, do not use products containing wax.

Stains not promptly removed may leave more or less visible traces on the surface, in accordance with the tolerance of the specific type of finishing.

Intense

To remove stains or particularly resistant residues from the Laminam 12+ surface, clean first with hot water and neutral detergent.

If this is not sufficient, use increasingly incisive cleaning techniques and specific products, depending on the stain, including:

- Non-abrasive neutral pH detergents
- Slightly abrasive detergents
- Acid or alkali detergents
- Solvent-based detergents

It is fundamental to comply with the information given in the technical data sheets and product labels.

Staining agent	Type of detergent	Product
Olive oil	Clean with hot soapy water then rinse off with a clean cloth	-
Paraffin oil		
Coffee	Spray & Wipe	Ajax Baking Soda
Tea		
Tomato		
Balsamic Vinegar		
Lemon		
Coca cola		
Red wine		
Beer		
Milk		
Butter		
Fruit Juice		
Jam		
Cosmetics		
Grease and oily substances	Neutral detergent, degreasing agent	Degreaser
Wax		C.L.R
Rust		Cerapol
Metallic marks		
Limescale residues	Acid-based detergent	30 Seconds Water Spot Remover
		C.L.R
		Bar Keepers Friend Tile cleaner
Ink	Acid-based detergent	Acetone
Marker pen		White Spirits
Nail varnish		I.P.A
Finger marks & smudges	Glass cleaner	Ajax Spray & Wipe Glass

11.3 Recommended Cleaning Products



Bar Keepers Friend Tile cleaner



Cerapol



C.L.R



Acetone



IPA



30 Seconds Water Spot Remover



Ajax Baking Soda



Ajax Spray & Wipe Glass

12 / Surface restoring

If the surfaces become damaged or chipped during the use of the top, given the specific technical and mechanical characteristics of porcelain stoneware and ceramic materials generally it is not possible to make these defects completely disappear as can be done with other products.

While not advised, the slabs can be restored using epoxy 2-component glues in a similar colour to that of the Laminam 12+ slab, though with different properties and finishes from the original surface.

Note

The information and data given in this Technical Guide have been drafted according to our best experience, our best technical knowledge and that of our technical Partners based on the most frequent cases recorded during the processing of Laminam slabs.

Given the many and variable situations that may arise, this Technical Guide must be considered purely indicative and therefore, before proceeding with the applications preliminary machining tests should be carried out.

Consult the website www.laminam.it for the most updated versions of the document and the Technical Sheets.

Technical partners:

- **Machines**

1. INTERMAC – BIESSE SPA

- **Router Bits and discs**

1. ITALDIAMANT SPA

- **Adhesives and finishing products**

1. TENAX SPA
2. INTEGRA ADHESIVE INC

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