Outdoor Flooring Installation

09, 2021

LAMINAM
SUPERIOR NATURAL SURFACES

Contents

Laminam Spa produces and provides porcelain stoneware slabs for the construction of flooring. The Project Engineer of Laminam SpA provides technical assistance for a correct installation.

For more information, refer to the Technical Guide for cladding & flooring which can be downloaded from the website www.laminam.com

1. The product

Laminam slabs are made with advanced technologies that combine reduced thicknesses and large dimensions with high resistance to mechanical stress, chemicals, wear, scratches and deep abrasions. By nature, the material is hygienic and resistant to frost, mildew and the effects of UV rays. All characteristics and chromatic properties of our slabs are inalterable. They do not change over time or under any weather conditions. These revolutionary slabs are also environmentally friendly: natural raw materials, sustainable technology, and entirely recyclable products are the foundation of Laminam's green philosophy.

Laminam 5

Features: Laminam 5 is the basic slab.
Processing surface:
1000x3000mm (39.4"x118.1") / 1000x1000mm (39.4"x 39.4")
Nominal thickness: 5,6mm (¼")

Laminam 5+

Features: Laminam 5+ is the basic slab reinforced structurally with a fiberglass blanket bonded on the back with a specific adhesive.
Processing surface:
1200x3000mm (47.2"x 118.1") / 1620x 1620mm (63.7"x 63.7") / 1620x3240mm (63.7"x 127.5")
Nominal thickness: 6mm (¼")

Laminam 12+

Features: Laminam 12+ is the basic slab reinforced structurally with a fiberglass blanket bonded on the back with a specific adhesive.
Processing surface: 1620x3240mm (63.7"x 127.5")
Nominal thickness: 12,5mm (½")

Laminam 20+

Features: Laminam 20+ is the basic slab reinforced structurally with a fiberglass blanket bonded on the back with a specific adhesive.
Processing surface: 1620x3240mm (63.7”x 127.5”)
Nominal thickness: 20,5mm (¾”)

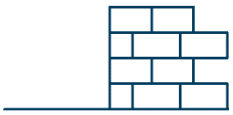
Laminam slab thicknesses 5, 5+, 12+, and 20+ are suitable for creating outdoor floors installed on cementitious screeds.
Generally, we suggest using 5 and 5+ slabs only for floors on terraces, porticos which are not subjected to heavy loads or drive-over areas. For other destinations, both high foot traffic walkways and drive-over surfaces, we suggest using Laminam 12+ and 20+.

Laminam 12+/20+ products are available in the price list in “Full Size”, which is an untrimmed slab. They can be used in the construction industry after processing by a manufacturer, who can cut them into nonstandards sizes. For quantities over 100sqm in a single size and finish, ask Laminam S.p.A. to provide a direct shipment of material that has already been processed.

The designer or the Project Management team is responsible for identifying the product with the best friction coefficient to use, based on the intended use.

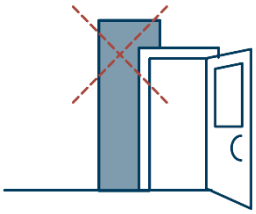
2. Design and installation guidelines

For correct design and subsequent installation, we suggest considering the following aspects:



Installation scheme: due to their planarity, Laminam slabs can be installed following any scheme, even if they are offset by 50%;

It is necessary to prepare gaps and expansion joints to fit the installation, as indicated in later chapters;



We suggest avoiding “L” shaped cuts, if possible, and cladding those portions with regular non-standard sizes of slab. In these points, in fact, the screeds and plaster transmit stresses and settling of the building over time that can cause crazing to form in the material, which would already be weakened by the irregular cut. Crazing cannot be considered as defect in the material;

Order of the material: since these are large-sized slabs, check the installation scheme to see the quantity of material necessary for the wall cladding or the floor. Plan to have extra material on hand in case of breakage during processing or for future needs.

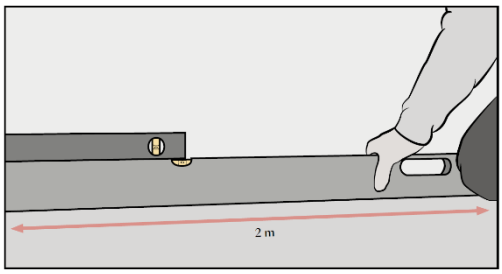
The indications provided in the following guide reflect provisions set forth by regulation UNI EN 11493 “Flooring and Wall Ceramic Tilings – Instruction for the design, installation and maintenance of ceramic tilings” and Laminam’s experience. The designer is responsible for verifying conformity and feasibility of the project, with regard to current laws and regulations in the country where the work will be performed.

3. Laying Laminam flooring

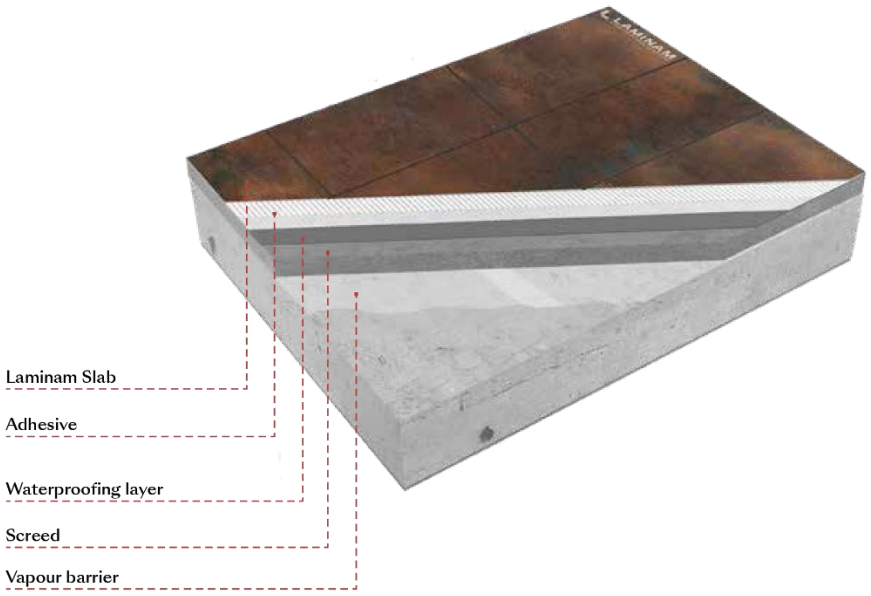
Laminam 5 | 5+, Laminam 12+ and Laminam 20+ are suitable for being installed on any screed or slab at any building site - whether new or existing - as long as it has the same mechanical strength characteristics and a suitable finish for installation.

3.1. Characteristics of the substrate

For correct installation of Laminam slabs, the substrate must comply with the following requirements at the time of installation, indicated in the reference standard UNI 11493-1. If these requirements are not satisfied, it is better to restore them.

Curing	The substrate must be stable and completely cured.
Integrity	The substrate must be complete, free from cracks at the time of installation and also from detached parts.
Strength	The substrate must have a surface resistance that prevents it from showing failures that could result in detachments of elements. At any rate, it is good to verify that the substrate is compact and, if subjected to loads and stress, resistant in the depth of its thickness to bending and compression.
Rigidity	The substrate must be rigid. Based on working loads, its bending deformation values must be within the reference limit.
Planarity	Regardless of the type of substrate, planarity is checked with a method defined in ISO 7976/1 1989, with 2 m long screed: setting the straight edge in all directions, the permissible tolerance is 3 mm. If the substrate is not planar on most of the surface where the slab is to be installed, it must be levelled off or rectified with suitable products. For isolated problems of planarity, correct the spaces by removing or abrading excess parts and filling valleys, also with the same adhesive that will be used at a later time for installing the slabs. 
Surface Finish	The surface finish of a substrate can affect the attachment of adhesive to the substrate. A smooth surface is not favourable. Abrade the surface mechanically to render it rough. In all cases, before performing any type of work on the substrate, it is necessary to carry out all the actions which will guarantee the adhesion of the materials used with the existing substrate.
Humidity	The surface of the substrate must be completely dry to prevent the risk of efflorescence.
Presence of Contaminants	Contaminants (such as cement residue, disarming oils, paints, etc.) must be eliminated with specific systems that will render the laying surface perfectly suited for applying the adhesive.

3.2. Outdoor flooring installation

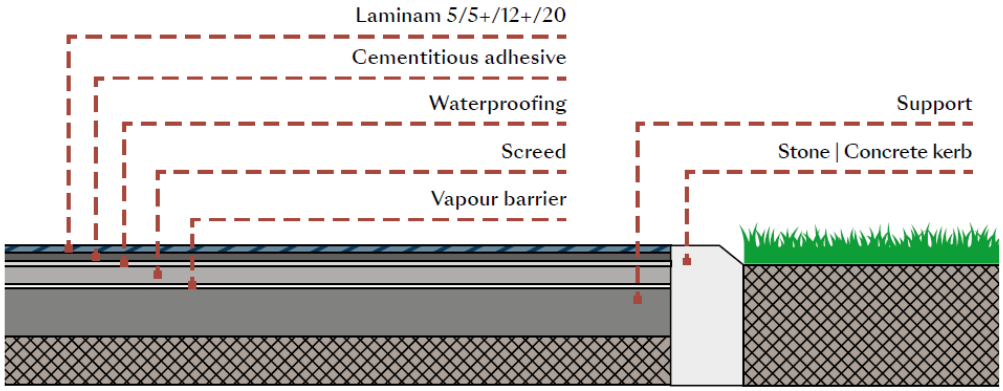


Generally, we suggest using 5 and 5+ slabs only for floors on terraces, porticos which are not subjected to heavy loads or drive-over areas. For other destinations, both high foot traffic walkways and drive-over surfaces, we suggest using Laminam 12+ and 20+. Outdoor flooring is subjected to important thermal variations due to the difference in temperature caused by sunlight during the day and nocturnal cooling.

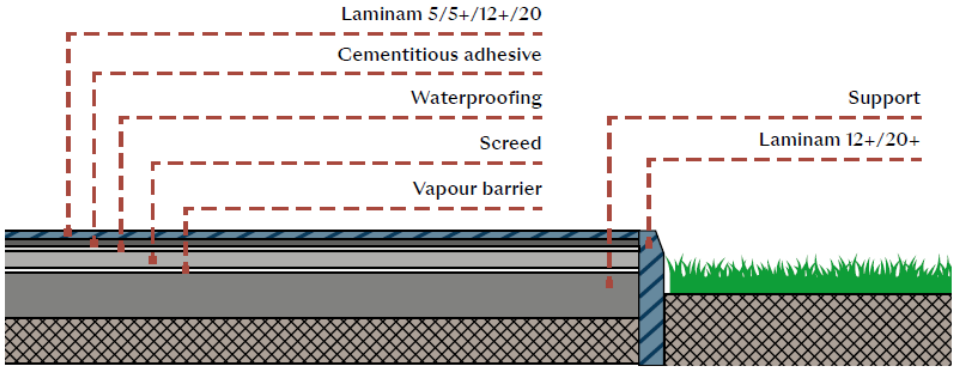
This creates a thermal excursion in the substrate, which generally has a more constant temperature, whether it is a pavement (sidewalk) or a terrace. This creates the conditions for possible condensation.
For this reason, we advise using smaller sizes (such as 500x1000mm, 1000x1000mm, 500x1500mm for Laminam 5 and 810x1620mm, 600x1500mm for Laminam 5+, 12+ and 20+) which allow the condensation to escape through the gaps while always complying with local regulations when using large sizes.

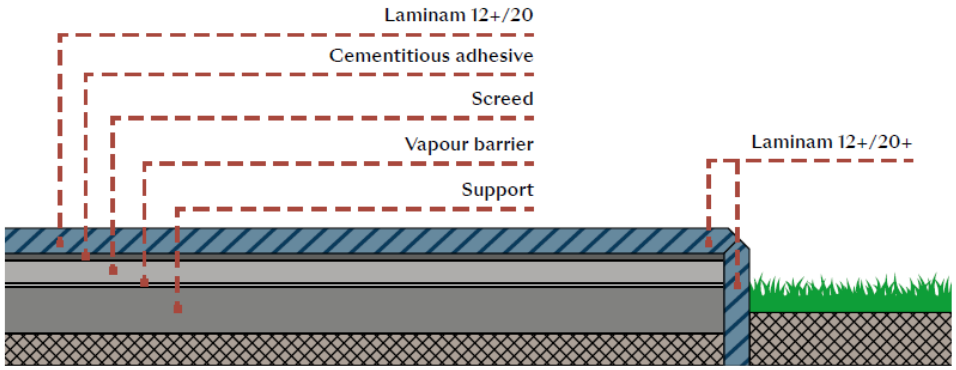
Outdoor screeds must be built with the same techniques used for indoor screeds, while taking care that the substrate of the flooring is correctly dimensioned to support the expected working loads in order to prevent settling that could affect the flooring. The screed must be built with the slope necessary to remove rainwater and this could influence the choice of the best size of Laminam slab to use. Also it is fundamental to always keep in mind to choose a Laminam product having a proper coefficient of friction.

Pay attention to external edges of pavements and walkways. These surfaces can be built with prefabricated curbing in reinforced concrete or natural stone, dimensioned to comply with the desired foot traffic or driveover destination of the area.

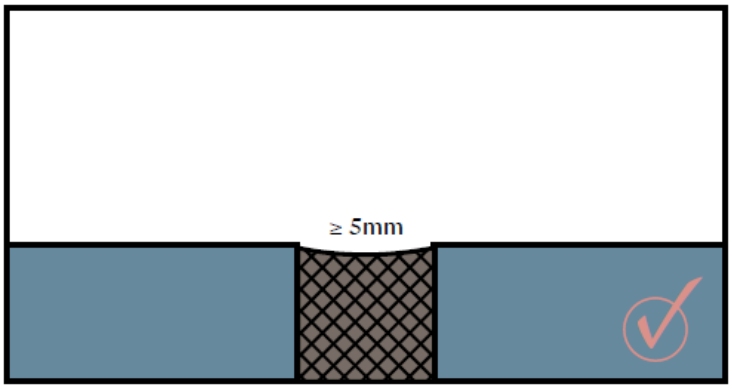


Terminal pieces can also be made with Laminam 12+/20+, which could require processing at a manufacturer.





The slabs must be installed using suitable adhesives.
Include a grout line of at least 5mm and fill it with cementitious or epoxy filler.



It is necessary to include expansion joints every 9 m2 (with longest side of 3 m). Fill these joints with elastic materials, such as silicones, which can second the expansions/contractions of the floor surface.

It is important that the substrate will not be affected by raising moisture or humidity be made. We suggest waterproofing the screed before installing the flooring to prevent it from being affected by infiltrations of rainwater from gaps. Waterproofing can be done by inserting a membrane (which can also help drain any water that enters from the gaps into specific channels) or the application of suitable materials on top of the screed. Waterproofing will also reduce the effect of possible efflorescence that could appear from gaps after the evaporation of water or humidity present in the layers underneath the ceramic flooring.

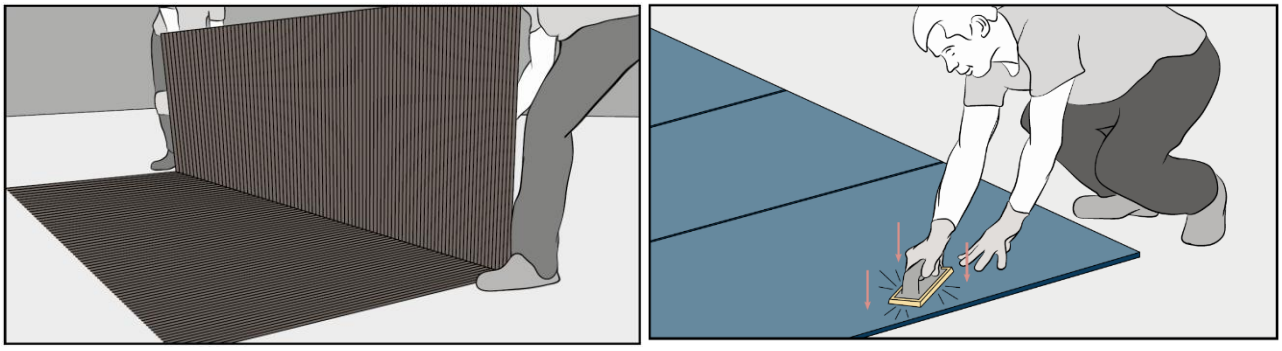
However, this phenomenon should be considered normal for the type of application with cementitious products and must be removed during ordinary cleaning operations with the use of acid-based products.

3.3. Adhesive and Laying

The type of adhesive is selected on the basis of the following project information:

- intended environment of use;
- type of substrate;
- slab size.

Generally speaking, when installing Laminam slabs as flooring, we suggest an adhesive of class C2S1 or C2S2, with a cementitious base (C), improved adhesive (2) and deformable (S1) or highly deformable (S2).
The adhesive must be applied so that it completely covers the surface (full spread), which can be done with a double coating technique. Choose a or spreader on the basis of the finish and planarity of the substrate.
To spread glue on Laminam slabs, we advise using a notched trowel with 6/8 mm inclined teeth for the substrate and a notched trowel with 3 mm inclined teeth for the back of the slab.
Apply a full spread of adhesive, first on the back of the slab and then on the substrate. Be careful to cover the corners and edges perfectly and avoid leaving empty air pockets between the substrate and the slab.
Spread the glue only on the surface that you are working on, each time, and then lay the slab, to prevent the formation of surface films that would compromise adhesion.
To facilitate air flow, it is crucial that the spreading direction of the glue is the same on the substrate and on the back of the slab, and always parallel with the short side.



Full Spread Double Coating

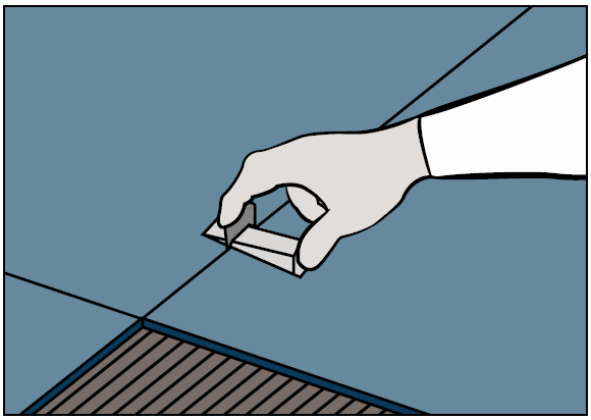
After laying the slab, hammer the surface energetically with a rubber spreader, starting on the opposite side of the applicator and being careful in eliminating empty spots and air bubbles.

Always verify perfect adhesion with corners and edges. Do not walk on the floor during the laying process and afterwards. Always comply with curing times for pedestrian traffic indicated by the glue manufacturer, which would be prolonged for installation on non-absorbent substrates (for example, floors laid on existing flooring). When possible, we advise using quick setting glue, especially with the 1620x3240 size, to reduce curing time for pedestrian traffic.

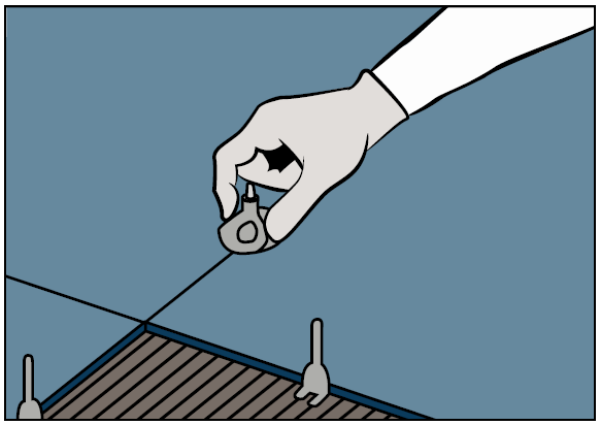
It is important to protect the polished surfaces during installation to prevent them from coming in contact with tools that could stain or scratch. We also advise cleaning the floor frequently and not walking on it with dirty shoes or in presence of debris. After installation is finished and the floor has been cleaned, protect the slabs with soft cloths until the building site is closed.

3.4. Levellers

To facilitate laying the slabs and obtain the desired planarity, tile levelling systems with spindles or wedges can be used. These devices are easily removed after the adhesive sets.



Wedge alignment devices



Alignment spindles

We are
designers
of our own
spaces,
seeking
uniqueness.

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