PLANNING PROCESSING INSTALLATION

ACOUSTIC BOARDS

MIKROFORM / NUTFORM / LOCHFORM

trikustik

www.trikustik.at

Content

General information

- These assembly and installation instructions are intended as practice-oriented recommendations for specialized companies and therefore cannot represent a full reference to existing standards. It is the responsibility of the user to comply with project-related specifications and any applicable standards. Descriptions and details refer exclusively to acoustic boards. All contents have been elaborated to the best of our knowledge. However, Trikustik GesmbH does not take over any responsibility for the completeness, actuality and correctness of the provided information.

- Liability claims regarding damage caused by the use of provided information, including information which is incomplete or incorrect, will therefore be rejected. All graphics are schematic representations and are not to scale.

TRIKUSTIK acoustic boards are manufactured with many years of know-how in the field of room acoustics and the greatest care in production. With these processing and installation instructions we would like to offer you as a builder, planner or processor a practical advice on how to maintain the product quality during installation, assembly and maintenance.

BEFORE INSTALLATION

What you should pay attention to?

Area of application

TRIKUSTIK acoustic panels are suitable for dry interior use only.

Variations in natural wood products

Wood is a natural product and has variations in color and texture, therefore the differences can even occur within one trunk of a tree. Since this cannot be influenced in the production process, complaints are excluded. If the visual appearance is supposed to be very homogeneous, we recommend sorting the panels properly before installation.

Acceptance of goods / complaints

Any complaints about Trikustik products must be noted in the delivery documents immediately after receiving the goods and in any case before the start of installation and must be communicated to Trikustik in written form immediately. Any damage or defect resulting from inappropriate storage, further processing or overloading will exclude any liability on behalf of Trikustik.

Storage

Keep acoustic panels away from moisture at any time and store them protected from all sides, lying flat on dry timber beams or pallets. Perforation or grooving increases the surface area to volume ratio of the panel which also means increased exposure to the environment. As a result, it exhibits increased swelling and shrinkage behavior (material dilation). Installation should therefore be carried out under similar indoor environmental conditions to those to be expected for the future use. The panels should be stored in the same room for acclimatization for at least 3 days before installation. Keep in mind that especially new buildings are often prone to increased air and floor moisture, and the acoustic panels should be installed only after the room is completely dry. In this way, deformations and changes of the joint widths can be avoided.

Swell-Shrink behavior

For wood-based panels, the air humidity in the room should be between 50% - 65%, and the room temperature should be between 18° C - 28° C. Under these conditions, the material dilation can reach 1.5 - 2.0 mm per 1000 mm. Therefore, it is recommended to install the elements with an expansion joint of at least 2.0 mm per linear meter. If the expansion joints or the substructure grid spacing are too small, it may cause undesired deformation (warping) of the acoustic elements in case of increased humidity. Acoustic panels that can be removed (e.g. access panels)must be reinforced on the rear side to ensure an even surface.

Handling

To ensure the quality of the surfaces, the TRIKUSTIK acoustic panels are stacked face to face on the pallets. We recommend that this is also maintained in the course of any re-sorting. Scratches can be avoided by not moving the parts towards each other more than necessary when removing them. Light-coloured or unpainted surfaces should be moved and assembled with white gloves.

Trikustik manufactures all products to order and in close coordination with the customer. We are also happy to take on material provided by the customer that is to be acoustically activated, thus helping to ensure a homogeneous surface in the room. By considering formats and finishes in a timely manner, costs and time can be optimised for the implementation of the overall work.

Format options

TRIKUSTIK acoustic boards are supplied in 2 basic formats:

- Format PANEEL
- Format LAMELLE

The exact sizes available may vary depending on the perforation chosen and the type of board used.

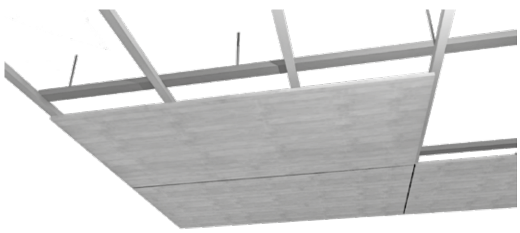
When planning, please note that the choice of board-dimensions can have a considerable influence on the price and implementation of the entire project. Many different sizes or dimensions with a high level of offcut have an effect on the total costs via the material price, the manufacturing costs of the acoustic activation and the increased effort in the manufacture of the substructure and the installation time. In order to make these effects assessable for you, we offer the format options PANEEL and LAMELLE each in 3 calculative alternatives:

- ECO: Optimised dimensions for material consumption and production
- FLEX: Variable dimensions within the standard values of material and manufacturing
- MAX: Special sizes of material, production at the technical limits

You can find an up-to-date overview of this at any time via the QR code or this link: www.trikustik.at/sortimentsuebersicht/

Format PANEEL

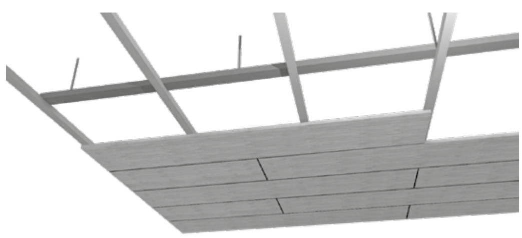
- The PANEEL format offers variable dimensions and is manufactured for each order according to a parts list prepared by the customer.
- NUTFORM and LOCHFORM with larger perforations can usually be mounted from the visible side.
- LOCHFORM with smaller perforation and MIKROFORM usually require a solution for invisible mounting.



Details on mounting can be found on the following pages.

Format LAMELLE

- The LAMELLE format is very easy to install thanks to its fixed width and tongue and groove connection.
- Planning is very easy and flexible.
- The amount of offcut is minimised with the LAMELLE.



Details on mounting can be found on the following pages.

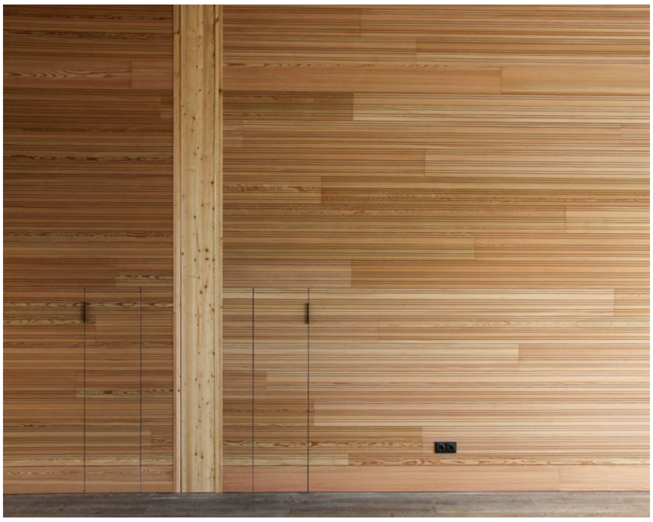
The choice of installation method for acoustic boards significantly determines the visual effect of the wall or ceiling. The selected perforation, the avoidance or accentuation of butt joints and the format size can be deliberately used as a design element in the room. The absorbing effect of the acoustic boards is not influenced by the choice of installation type.

Laying patterns

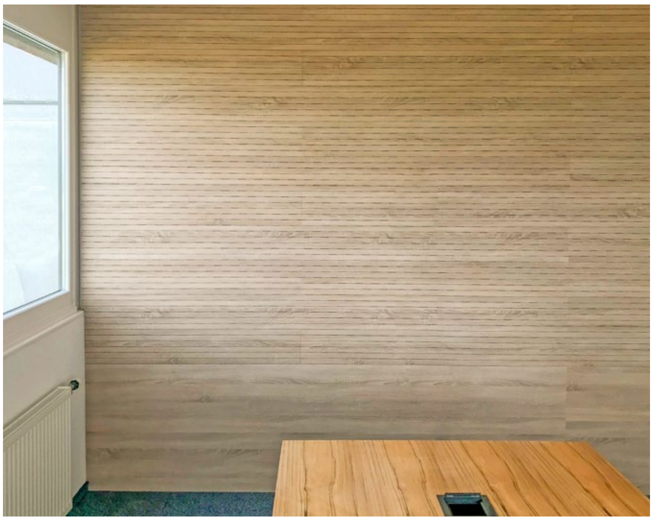
Parallel bond is the most common installation method for vertically or horizontally oriented large-format boards of the PANEEL format option. The joint design can be selected according to visual preference and installation type. Joints with foreign tongue in board colour create a homogeneous appearance. Solutions with wide and, if necessary, coloured joints result in a deliberately chosen clear structure.

English bond or masonry bond enables a largely homogeneous surface effect. This is the preferred installation method for the LAMELLE format option with the installation-friendly longitudinal tongue and groove connection. Please note the recommendations for the formation of longitudinal joints.

Installation without butt joints and thus a completely homogeneous appearance is possible with NUTFORM LAMELLE in MDF if the required dimension in groove direction is <2800mm (ECO) long. This is very often the case between floor and ceiling. Longer dimensions are also feasible on request (FLEX).

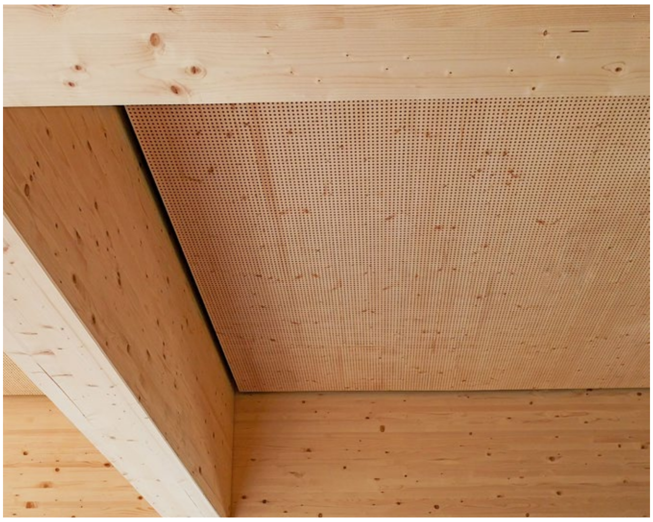


NUTFORM LAMELLE pattern: „wild bond“

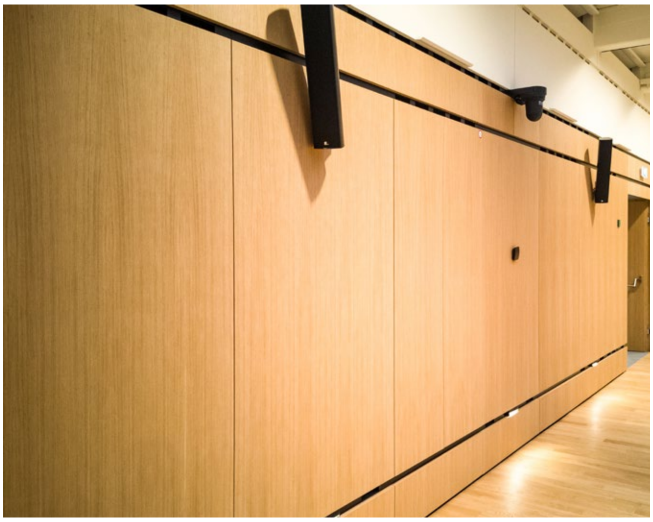


NUTFORM LAMELLE pattern english bond

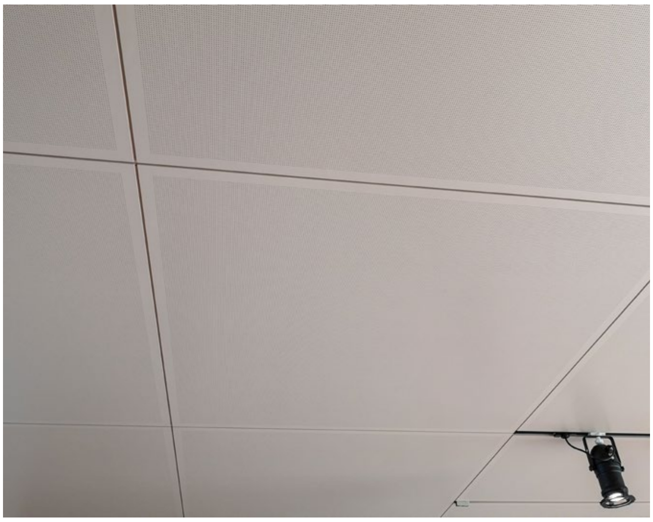
NUTFORM LAMELLE pattern: jointless vertical



LOCHFORM PANEEL without hole-free edges



MIKROFORM PANEEL pattern: parallel bond

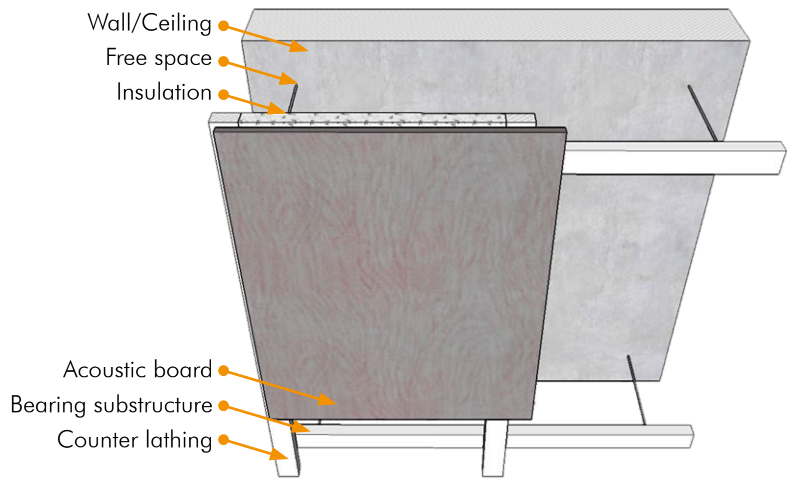


MIKROFORM PANEEL with visible hole-free edges

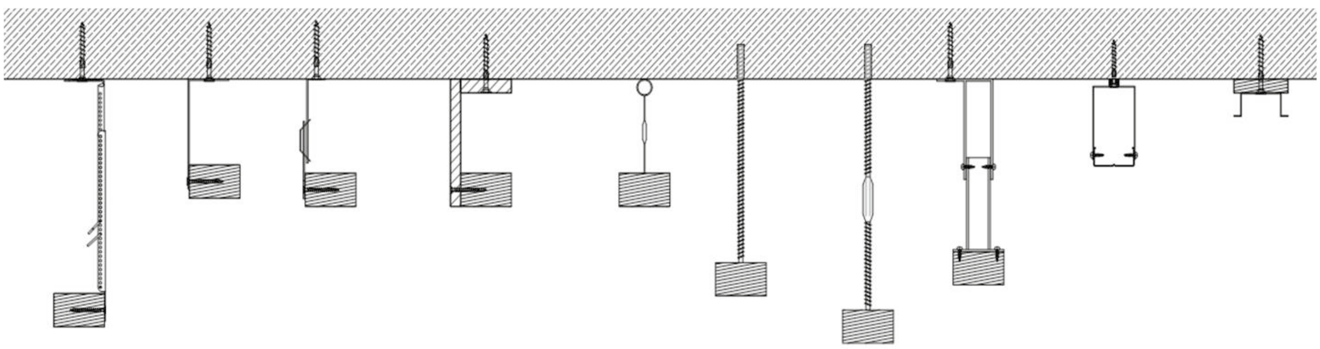
INSTALLATION DETAILS

Assembly of substructures

Substructures for acoustic boards are constructed very similarly for use on walls or ceilings. TRIKUSTIK would like to offer its customers a structure with components that are as open and freely accessible as possible. Therefore, all solutions suggested below consist of parts that are common and available in specialised trade. We ask for your understanding that the descriptions can never cover all situations and that the concrete planning of the substructure is always the responsibility of the person carrying out the work.



1_Free space The required distance to the ceiling or wall depends on the acoustic or structural planning specifications. It can be very small if only the unevenness of the surface has to be compensated or larger if, for example, building services are to be routed at this level. The options for creating the distance are manifold and differ according to the mounting position (ceiling, wall), material (wood, metal), load capacity and mounting comfort (adjustability).



2_ Bearing substructure The primary load-bearing substructure can be made of various materials. The most appealing solution for carpenters consists usually of solid wood battens (e.g.: 50x30mm, 45x75mm). A drywall-oriented construction can be implemented by using metal stud systems (CW or UA profiles via various manufacturers) or by combining both materials (wooden batten inserted into U-profile). The mounting distance between the wall or ceiling surface and the primary substructure should be assumed to be e.g. approx. 800 - 1000mm, depending on the requirements. In special rooms, such as sports halls or gymnasiums, the mounting distances differ according to the underlying system tests (ÖISS, ball impact resistance, etc.).

3_Counter- or suspended battens

As a rule, the counter battens are aligned perpendicularly to the primary frame with intervals of 400-600mm. These battens either represent a part of the panel fastening system (suspension battens made of wood or wood-based material) or serve as a base for various mounting fittings (twist-on clips, joint clips, top hat profiles, etc).

4_Mounting brackets

The options for fixing the acoustic panels are varied and depend on the type of perforation (through hole, stepped hole, grooving), type of mounting (invisible or not, concealed, visible, frontal), the format as well as the experience, equipment and preference of the processor. Depending on the choice of fastener, additional installation-related processing of the panels may be required. We will be happy to coordinate these with you on a project-specific basis. In the following detailed descriptions for the installation of PANEEL and LAMELLE formats, we have listed a few tried-and-tested options that are available from specialist dealers.

5_Further components

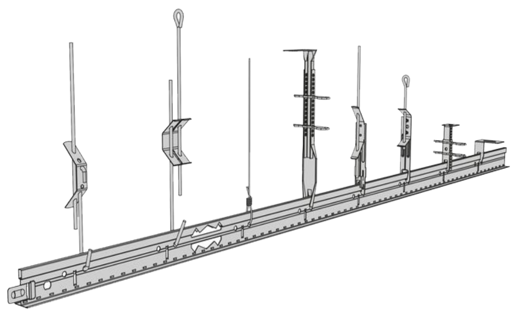
In most cases, a thin black fleece, which is acoustically transparent, is laminated onto the back of the TRIKUSTIK boards in advance. Furthermore, a backside layer of mineral wool or a comparable porous material is foreseen in most of the product designs. Both components are an effective part of the complete tested construction. Deviations in the application of these materials can lead to a reduced sound absorption effect.

6_Weight and additional loads

The weight of the acoustic boards depends on the material and the perforated area and ranges from 8 to 10 kg/m². The additional loads, such as lighting, technical building equipment or similar, built-in or attached, are not included in the solutions described here. Any additional loads must be mounted to the structure separately. The substructure and the front layer must not be stepped on.

Installation tips for drywall approach

Although the materials in drywall and wood interior building techniques differ in application, there are great similarities in the construction principles of the substructure and fixation of the boards.



Substructure

The primary supporting structure can be built up entirely with the well-proven suspension and profile systems used in drywall construction. In individual applications, this may also apply to the counter-battens. For the assembly with CD profiles, the insertion of a wooden lath in the profile as a screw base has shown its effectiveness.

Mounting fittings

The mounting fittings and accessories described here can generally be used in combination with drywall metal sub-structures as well. The system screws or rivets are suitable for direct fastening in metal profiles.

Varying material thicknesses

Care must be taken when planning the substructure to compensate for the different material thicknesses, especially where there are transitions from plasterboard to wood. The use of the appropriate cover or compensation profiles is recommended to ensure a clean finish of the edges.

Preparation of the room and assembly sequence

The tips described below, which are based on the example of a ceiling installation, come from practical experience and have proven their effectiveness in various real-life applications. However, they do not claim to be fully complete and may only be applicable to a limited extent or not at all in other room situations.

1 Check the room for straightness and right angles in advance. Are the walls aligned in parallel or is the room conically/trapezoidally shaped?

2 Find the axial symmetry lines, define the reference lines along the room surfaces (e.g. using a cross-line laser) and mark them.

3 Use the horizontal line (or other suitable fixed points) to determine the final position at the ceiling or the wall.

4 We recommend to keep a minimum distance of 150mm to all installations or cables inside the cavity of the ceiling or the wall cladding.

5 To form shadow gaps, install edge bars or brackets along the perimeter.

6 Attach the primary framework to suitable suspension elements. To avoid twisting, the suspenders should be mounted stepwise alternating the left and right sides.

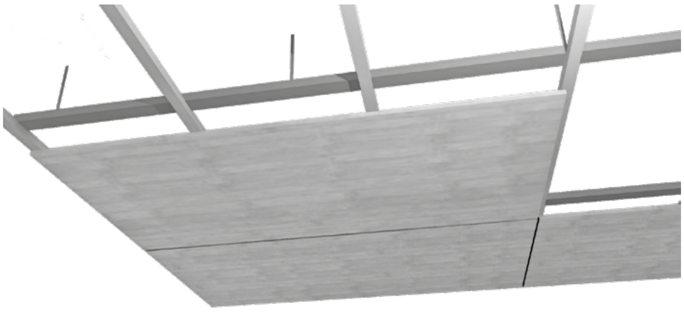
7 Install counter-battens or suspended battens perpendicularly to the primary battens.

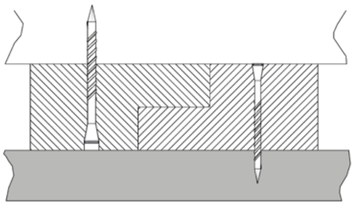
8 Attach the acoustic insulation material to the substructure or to the back of the acoustic panels in a way that prevents it from sliding and sagging (e.g. by using insulation anchors or clamping at the sides).

9 Install acoustic boards beginning from the center of the room (axis of symmetry) using suitable mounting equipment.

Mounting on subconstruction

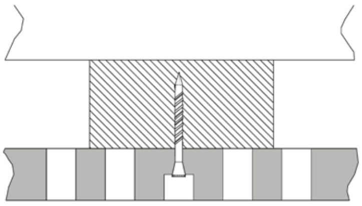
Format PANEEL





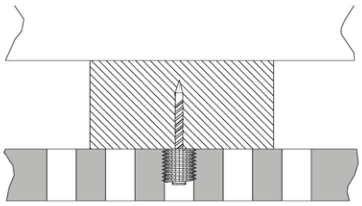
Suspending battens made of wood or wood-based material can be easily applied as a counter lathing. Common dimensions: 15/80, 24/80, 32/80mm. Mounting distances: 400-600mm. We recommend to screw hanging battens into the perforation-free area. Alternatively, suspending metal rails can be used.

Additional assembly-related processing: none



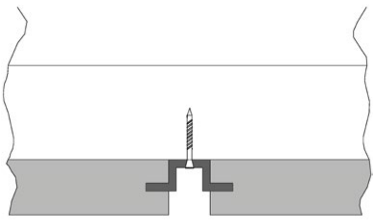
Blind holes can be used for frontal mounting with perforation diameters >3mm. The rows of blind holes have to be aligned lengthwise to the panel and crosswise to the battens with a maximum distance of 500mm.

Additional assembly-related processing: blind holes



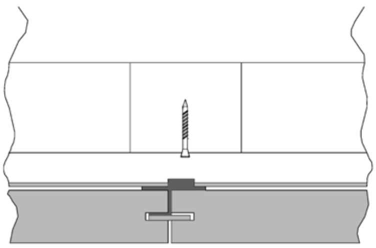
Screw sockets are suitable for frontal mounting for larger perforation diameters. The sockets are placed lengthwise to the panel and crosswise to the battens with a maximum distance of 500mm..

Additional assembly-related processing: none



Hat profiles of an appropriate dimension can be used for the assembly of all large-format panels. Optionally, a black or colored strip can be inserted to cover the profile.

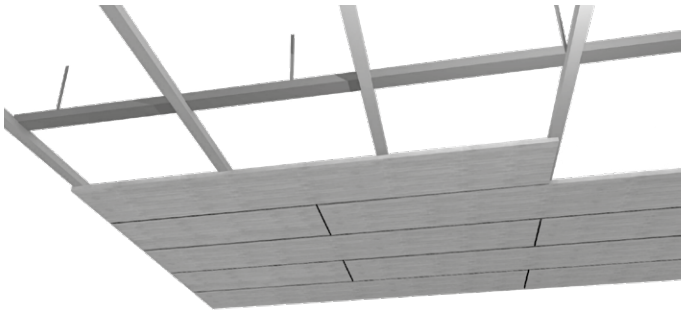
Additional assembly-related processing: side groove



Hat profile + Twist clips represent an easy-to-install, fast and accurate system fastening for both wood and drywall substructures.

Additional assembly-related processing: side groove

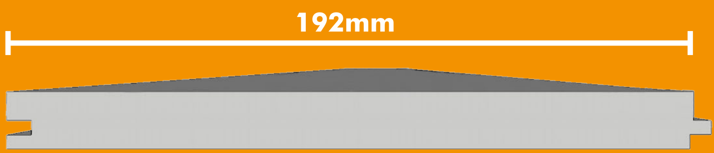
Mounting on subconstruction
Format LAMELLE

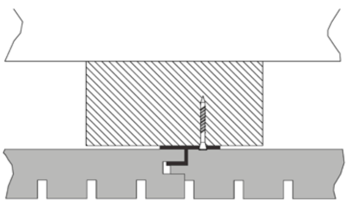


The TRIKUSTIK LAMELLE are supplied with a groove and tongue connection milled on the long side and have a fixed width of 192 mm (= cover size). The length depends on the format of the selected raw panel and can also be supplied shorter depending on the project.

The groove cheek is 4mm thick and should not be damaged during installation.

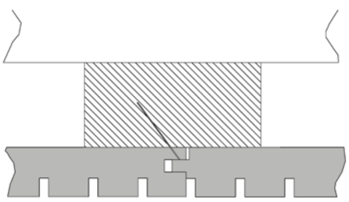
Please observe the instructions for dry storage and the formation of longitudinal joints.





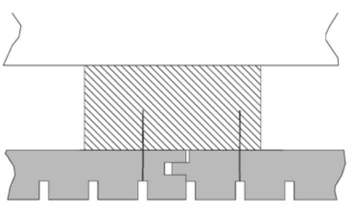
Joint claws (approx. 3 pcs./running metre) are fastened either by means of screws or blind rivets, depending on the material of the substructure.

Additional assembly-related processing: none



Staples in groove cheek (approx. 3 pcs/rm) must be applied with the correct pressure. Squeezing the groove cheek or not fully countersinking the staple will make it difficult to insert the tongue.

Additional assembly-related processing: none

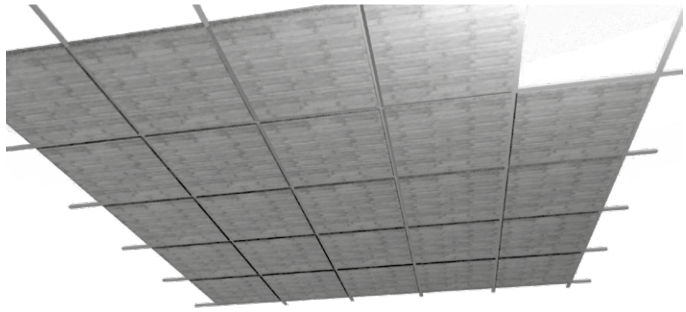


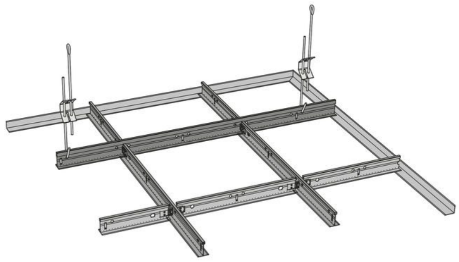
Staples applied in the visible grooves of NUTFORM LAMELLEN can be used with special staple hangers, which can be obtained on loan from TRIKUSTIK.

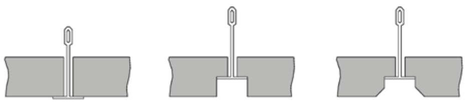
Additional assembly-related processing: none

Mounting on subconstruction

Inlay boards





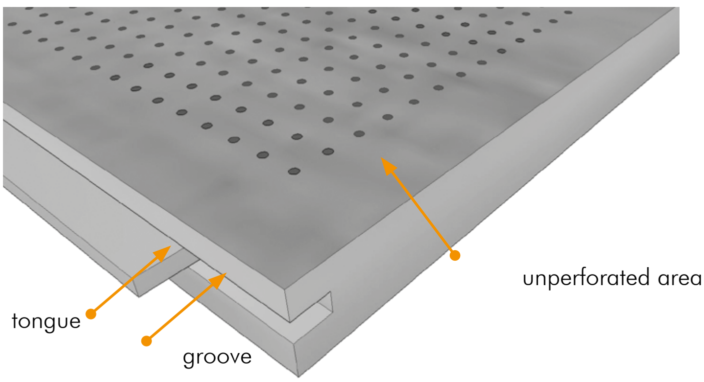


Acoustic boards as inlay elements for grid ceilings with the T-rail constructions can be manufactured with all types of perforations. The edge processing and the resulting joint pattern can either be raw-cut or finished with various types of stepped profiles. Likewise, a perforation-free margin can also be specified. Please coordinate this with us before launching the project. The formats of the insert panels are based on the standard widths commonly used in drywall construction, e.g. 600mm, 625mm.

Processing options / Reflectors

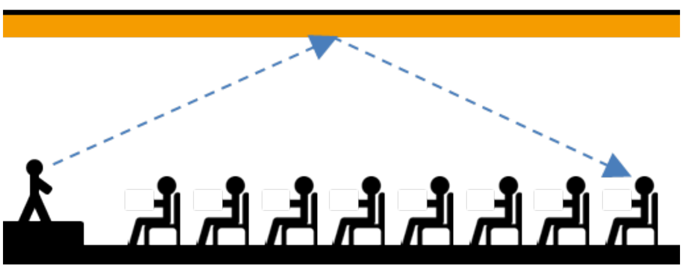
Installation-related processing

In order to make the installation process easier, TRIKUSTIK can include additional assembly-related processing on the boards according to the customer's specifications. These vary from side- or perimeter grooving at the edges to perforation-free areas, as well as the blind holes for mounting. If panels are cut to size on site, a reasonably wide perforation-free edge area should be specified. Upon agreement, the edges of perforated panels can also be inclined and curved.



Reflector design

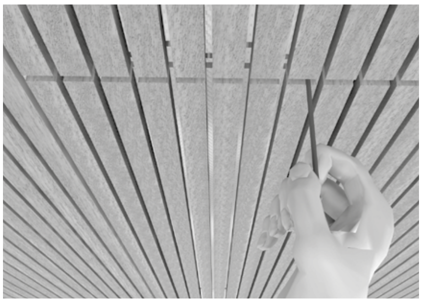
In general, an optically continuous pattern (perforation, grooving) is desired over the entire surface. Acoustically, it may be necessary to shape individual areas as non-absorbent acoustic reflectors. For many perforation types, this can be easily achieved without additional expense by not processing the back side of the perforation.

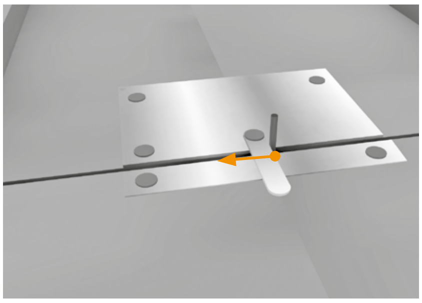


Revision flaps

1_Revision flap with locking function

- The revision flap can be made of Format LAMELLE or PANEEL
- Screw the rear side to the cross battens from behind. Ensure a sufficient overlap of the battens with the board surface to form the supporting base.
- Mount the locking and catching mechanism.





2_Frames for the revision flap

The revision flap consists of aluminum profiles, with or without acoustic board in 12.5mm, 15mm or 25mm and two snap locks. For sizes 300x300mm and larger, the revision flap must be equipped with a safety catch. The use of the in the wall as well as in the ceiling area is possible without any problems. The hidden snap locks open the revision flap when pressed.

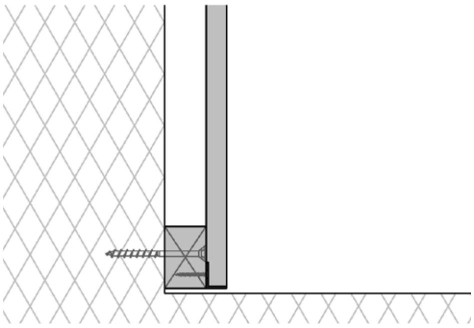
Standard sizes: 200 x 200mm, 300 x 300mm, 400 x 400mm, 500 x 500mm, 600 x 600mm

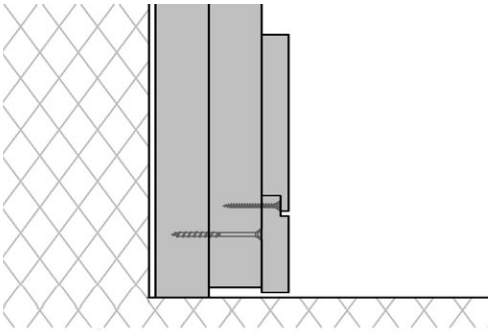
z.B.: Knauf Revo

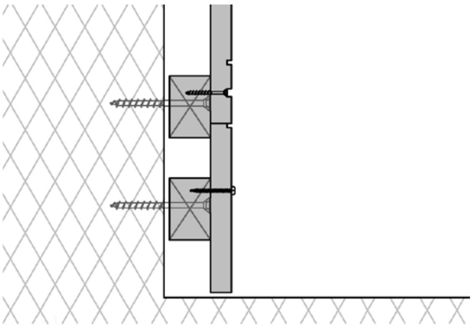
Jointing options

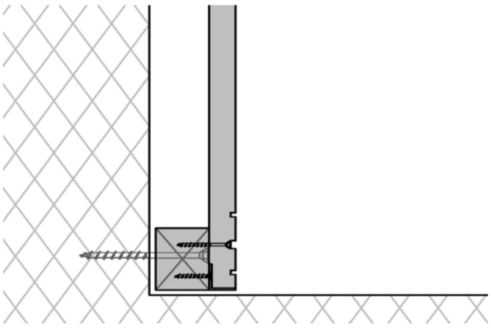
The design options for junction details are very diverse and usually depend on the conditions on site. Therefore, only a few possible options are shown here as a suggestion.

Base detail

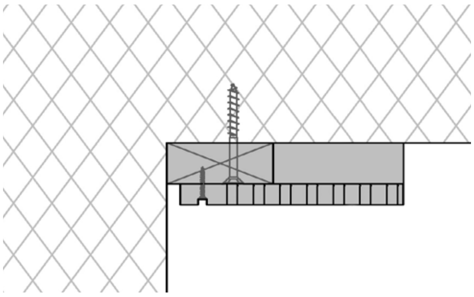


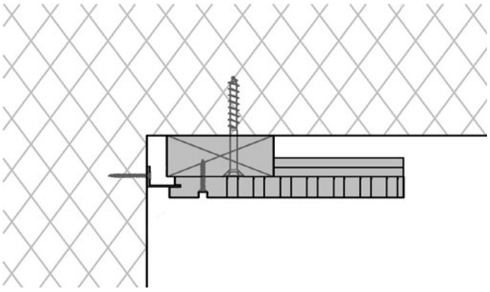




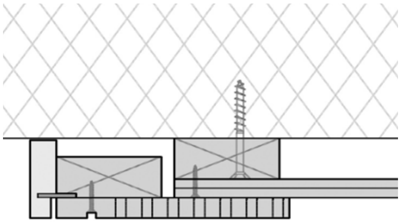
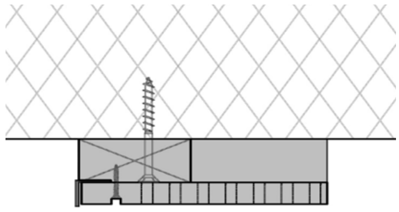
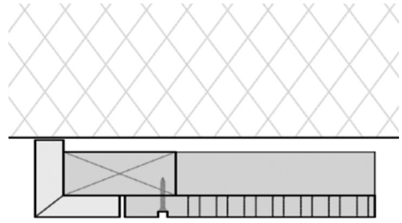


Shadow joint





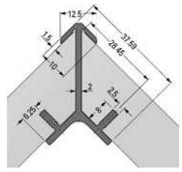
Reveal finish

Edging







Processing and Cutouts

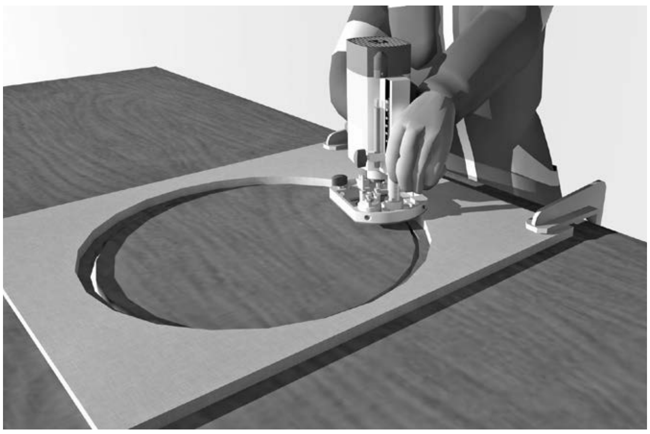
Acoustic boards can be processed, cut, milled and mounted using commercially available woodworking equipment. If the cutting of the boards is planned or expected on site, a corresponding perforation-free edge margin or trim section should be defined.

Assembly device

During assembly, we recommend setting the appropriate torque of the screwdriver or using a suitable torque adapter to avoid overtightening the fasteners or screws and damaging the board.

Mitre cuts / cutouts / drilled holes

Always process and cut boards with a template or limiter clamped on the board. For cutouts and drill holes on already installed acoustic cladding, fix the template in the perforations or grooves using holding pins. When cutting and milling acoustic elements with fine bars, carefully cover the bars on the visible side using tape in order to prevent them from breaking off during processing. To ensure clean cuts when milling and trimming to size, use properly sharpened tools, milling cutters and saw blades. We recommend producing a test piece in advance.



AFTER INSTALLATION

Care of coated surfaces

Melamine resin and laminate-coated boards do not require special care due to their resistant and hygienic top layer. The surfaces are usually easy to clean.

It should be noted that the surface is open due to holes or grooves:

- Spray water and the moisture penetration into the perforated surface must be prevented, as this may cause the panels to swell. It is important to avoid an overly wet cleaning of the panels.
- In case of a heavier contamination, use only a spray-moistened cloth. Then wipe the surface dry with a soft tissue.

Cleaning products which must not be used under any circumstances:

- Abrasive and scrubbing agents (scouring powder, cleaning sponges with rough surface, steel wool).
- Polishing agents, detergents, furniture cleaners, bleaching agents
- Cleaning agents with strong acids and strong acid salts
- Steam cleaner

Care of lacquired surfaces

The first cleaning of lacquered surfaces must not be carried out before a setting period of approx. 1 week.

It should be noted that the surface is open due to holes or grooves:

- Spray water and the moisture penetration into the perforated surface must be prevented, as this may cause the panels to swell. It is important to avoid an overly wet cleaning of the panels.
- In case of a heavier contamination, use only a spray-moistened cloth. Then wipe the surface dry with a soft tissue.
- The use of microfiber tissues, whose abrasive properties can attack the coating, is not recommended.

Cleaning products which must not be used under any circumstances:

- Abrasive and scrubbing agents (scouring powder, cleaning sponges with rough surface, steel wool).
- Polishing agents, detergents, furniture cleaners, bleaching agents
- Cleaning agents with strong acids and strong acid salts
- Steam cleaner
- Gloss-forming or silicone-based care and cleaning agents, since this treatment no longer guarantees future re-freshing and restoration of the lacquered surface.

REFERENCES

Lecture halls, auditoriums and universities

Österreichisches Parlament / BOKU Wien / JKU Linz / IST Austria / Uni Wien / FH Hagenberg /…

Schools and kindergartens

Bildungszentrum Reith / Tourismusschule St. Johann / KIGA Bad Sauerbrunn / VS Brunn /…

Concert and lecture halls

Stadthalle Wien / Landestheater Linz / Festspiele Bregenz /…

Music rehearsal rooms

Future Art Lab / Synchron Stage Vienna / Wiener Sängerknaben / Hofburg / Tonstudio ORF /…

Sports halls, gymnasiums and exercise rooms

Multiversum Schwechat / Sportpark Lissfeld / Turnsaal Michelhausen /…

Office and meeting areas

Europäisches Parlament_Strassburg / mysugr / KPMG / Engel GmbH / Erber Group /…

Gastronomy and commerce

The Eagle_Kreischberg / SCS / Kurhotel Bad Zell / Weingut Högl /…

More reference photos on www.trikustik.at

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