PROLINE

multiONE

ONE ACOUSTIC BOARD FOR EVERY PROJECT

akustikplus

proline **ACOUSTIC BOARDS**

BENEFITS AT A GLANCE

The **proline** multiONE is an acoustic board tailored to post-press companies' needs. Hole-free webs ensure optimum stiffening of the board.

A circumferential hole-free edge offers the possibility of fitting holes for appropriate hinges.

This makes multiONE universally applicable and an ideal companion in high-quality interior finishing.

Use the innovative acoustic board, in the popular (micro-)perforations **finest** or **classic** for (further) processing for:

- **large-format ceiling sails**
- **ready-made wall and ceiling panels**
- **individual furniture construction.**

We look forward to receiving your project!

SUSTAINABLE MATERIALS

ACOUSTICALLY HIGHLY EFFECTIVE

ISO 354 CERTIFIED

MADE IN GERMANY

EASY (FURTHER) PROCESSING

WIDE RANGE OF SURFACES

SINGLE SIDED

finest & classic **deco** structure

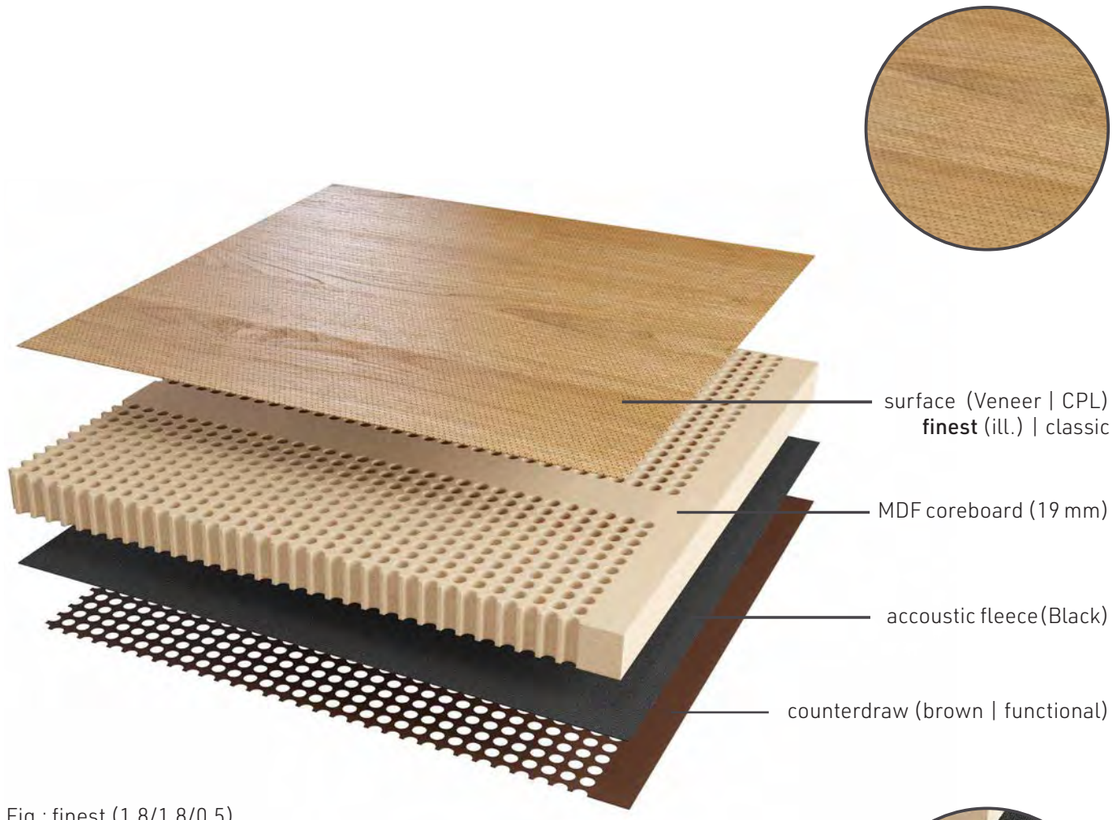


Fig.: finest (1,8/1,8/0,5)

Description

The **proline** multiONE as a one-sided decorative acoustic panel is particularly suitable for further processing into

- individual wall and ceiling cladding
- and large-format ceiling panels.

On the reverse side, there is a technical counterpart with functional requirements. This is drilled in the same way as the carrier plate.
The design is available in both finest and classic.

DOUBLE SIDED

finest & classic **deco** structure

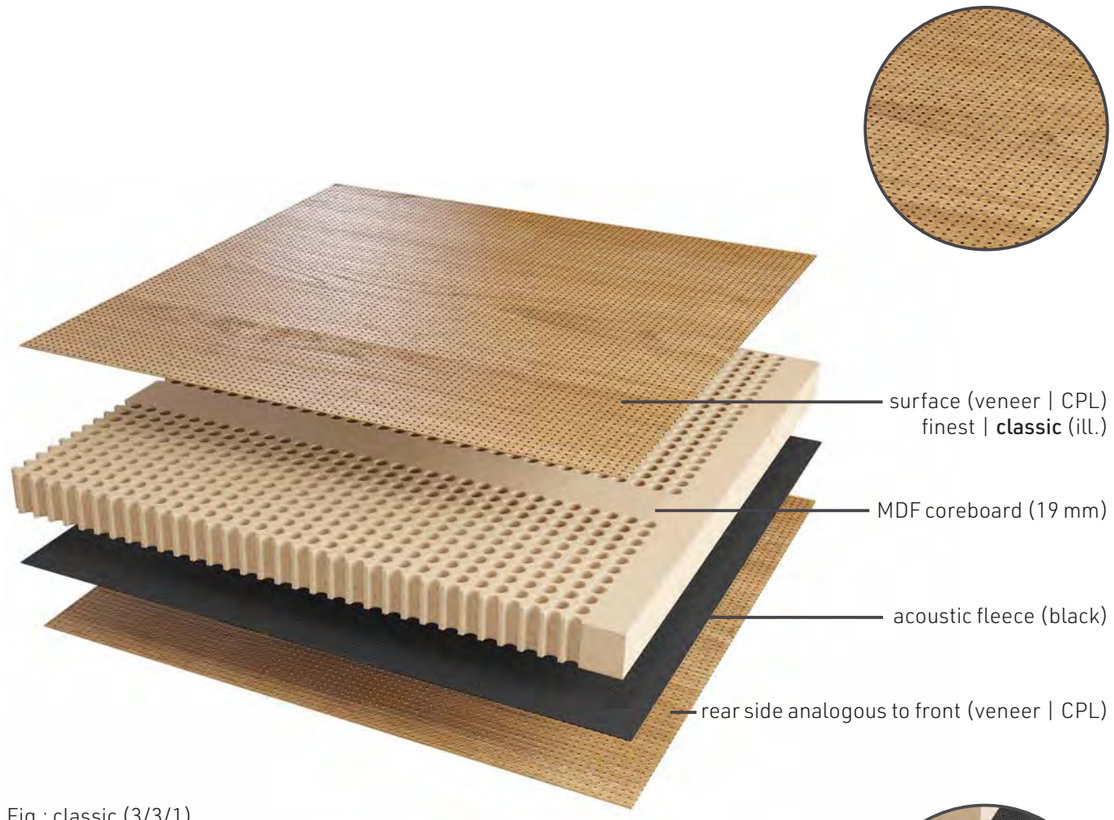
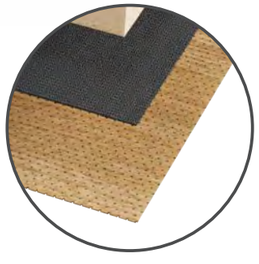


Fig.: classic (3/3/1)



Description

The double-sided decorative version of the **proline** multiONE is specially designed for furniture construction. The reverse side is pressed with a veneer or CPL surface in finest or classic, similar to the visible side. The structure has low warpage and is resistant to mechanical stress.

The double-sided design is particularly suitable for

- cabinet fronts
- hinged doors
- and drawers.

THE multiONE core board

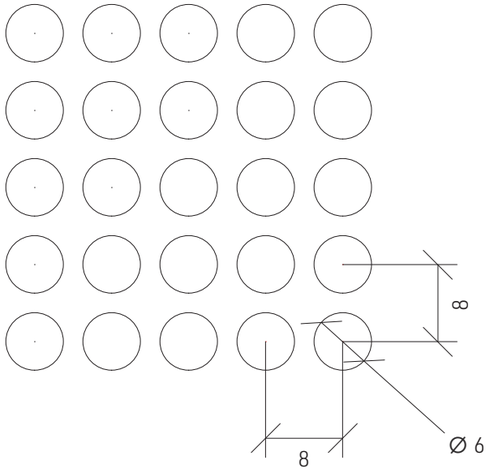
(raw) panel dimension:	2.800 x 1.320 mm	**perforation:**	finest (1,8/1,8/0,5)
usable dimension:	2.768 x 1.290 mm		classic (3/3/1)
Thickness:	19 mm	**hole-free area*:**	100 mm (circumferential)
core baord:	MDF B2 E1	**surface:**	CPL | real wood veneer
drilling:	acoustically effective	**edge:**	unedged | press cut
	Ø 6 mm (see drawing)		industrial saw cut
weight:	10,8 kg/m²		

The carrier plate of the proline multiONE is specially designed to meet the needs of finishing operations. A circumferential perforation-free edge (100 mm) allows easy drilling of pot hinge holes for commercially available door fittings.

This makes it easy to fabricate the acoustic panel for furniture fronts.

The hole-free webs ensure optimum stiffening of the panel. This makes the multiONE acoustic panel ideal for wall and ceiling cladding and large-format ceiling panels.

ACOUSTIC DRILLING

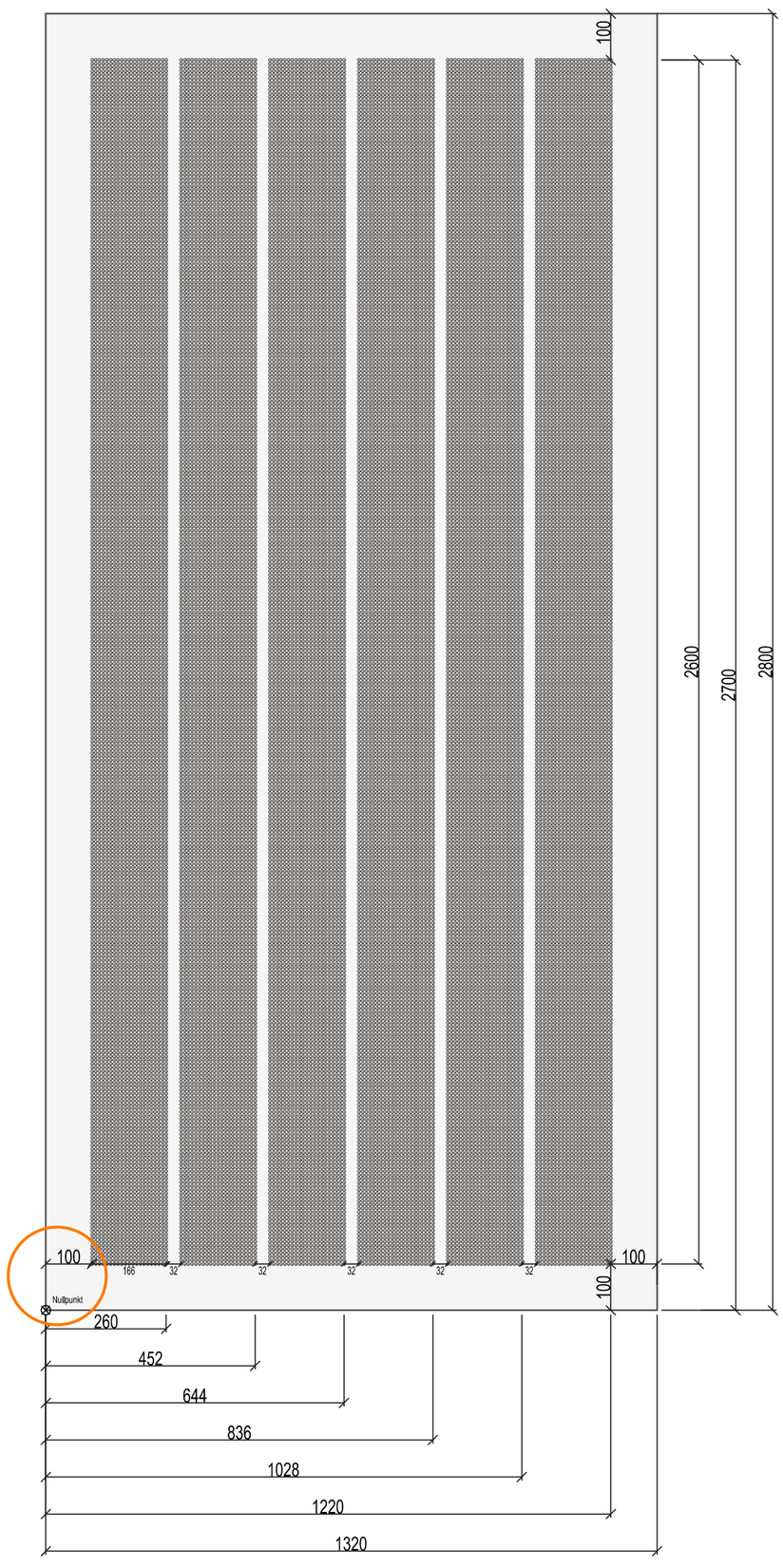


The proline multiONE is designed with acoustic holes in the carrier plate to improve the room's sound effects. The sound energy passes through the perforated surface into the panel's interior and is absorbed with PET fleece/mineral wool, depending on the installation situation.

The drilling diameter of Ø 6 mm is perfectly adapted to the specification of the carrier and provides sufficient stability despite the resulting open area.

* The edges and webs are slightly drilled in some designs due to the material

DRAWING



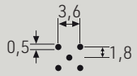
MICRO **PERFORATION**

finest 1,8/1,8/0,5

Scale 1:1

HOLE PATTERN

Scale : 2:1



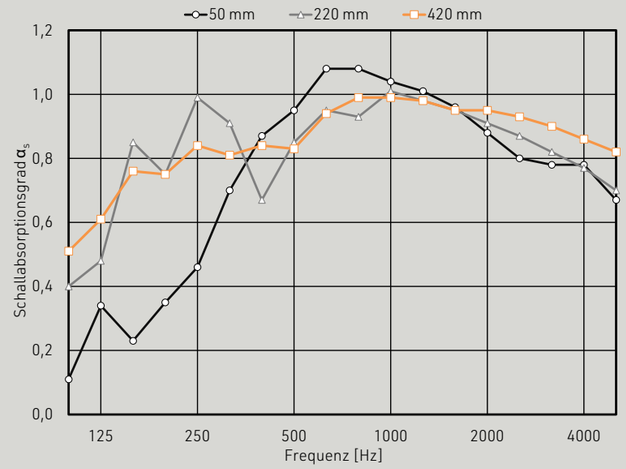
Hole diameter:	0,5 mm
Hole center↔ Hole center:	3,6 | 1,8 mm
	45° offset
Open area:	6,1 %

Description

The finest micro-perforation can be used to optimize room acoustics discreetly. The almost invisible surface perforation can only be seen from a very short distance. The finest is our most minor perforation with a hole diameter of just 0.5 mm. This version has 308,642 pin-sized holes per 1 m². This represents an open surface area of 6.1 %.

SOUND ABSORPTION

Overall structure	50 mm	220 mm	420 mm
Hollow (open)	none	150 mm	350 mm
Mineral wool	30 mm	50 mm	50 mm
Panel thickness	20 mm	20 mm	20 mm
Frequency [Hz]	**α_s**	**α_s**	**α_s**
100	0,11	0,40	0,51
125	0,34	0,48	0,61
160	0,23	0,85	0,76
200	0,35	0,75	0,75
250	0,46	0,99	0,84
315	0,70	0,91	0,81
400	0,87	0,67	0,84
500	0,95	0,85	0,83
630	1,08	0,95	0,94
800	1,08	0,93	0,99
1000	1,04	1,01	0,99
1250	1,01	0,98	0,98
1600	0,96	0,95	0,95
2000	0,88	0,91	0,95
2500	0,80	0,87	0,93
3150	0,78	0,82	0,90
4000	0,78	0,77	0,86
5000	0,67	0,70	0,82
NRC	**0,85**	**0,95**	**0,90**
SAA	**0,85**	**0,95**	**0,90**
α_w	**0,80**	**0,90**	**0,95**
Absorber class	**B**	**A**	**A**



Tested quality

Official test of sound absorption coefficient α_s in third-octave bands according to DIN EN ISO 354 (measurement of sound absorption in reverberation chambers).
Assessed sound absorption coefficient α_w in accordance with ISO 11654. NRC and SAA assessed in accordance with ASTM. C423

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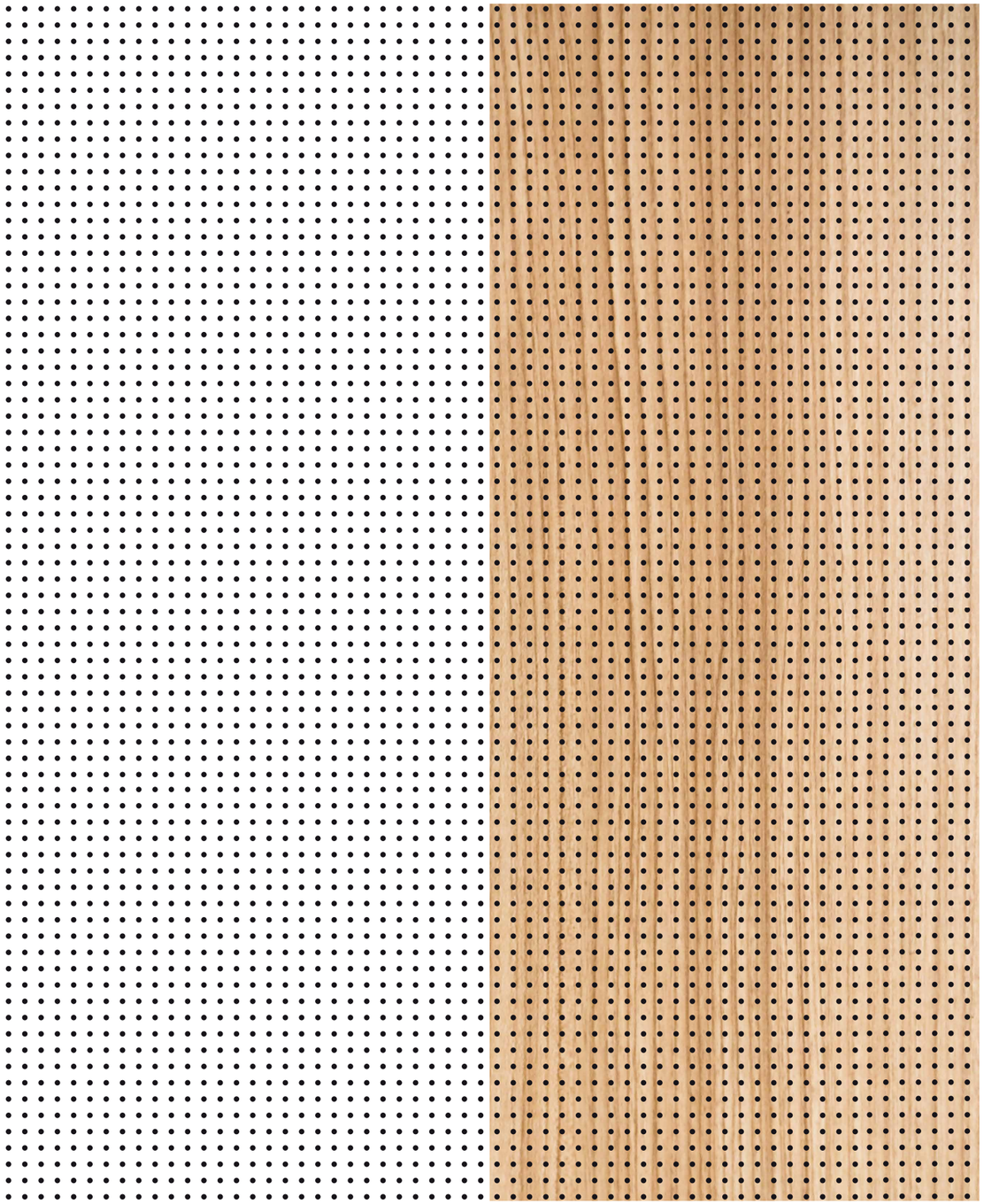
ABSORBER CLASS

A-B

MICRO **PERFORATION**

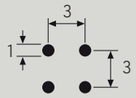
classic 3/3/1



Scale 1:1

HOLE PATTERN

Scale : 2:1



Hole diameter:	1 mm
Hole center ↔ Hole center:	3 mm
Open surface:	8,7 %
Holes/m²:	111.111

Description

For years, the classic micro-perforation has been one of the most popular designs for our proline acoustic panels. A hole diameter of 1 mm has a discreet and homogeneous effect. On 1 m² there are 111,111 holes, which corresponds to an open surface of 8.7 %. The hole pattern 3/3/1 ideally suits wall and ceiling cladding and individual furniture design.

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SOUND ABSORPTION

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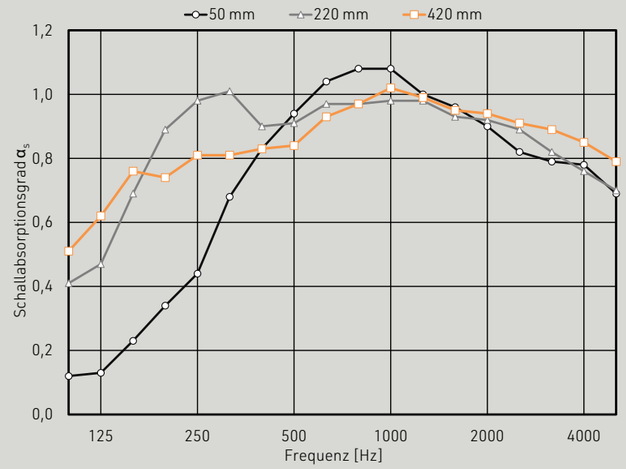
Cavity (open)	none	150 mm	350 mm
Mineral wool	30 mm	50 mm	50 mm
Panel thickness	20 mm	20 mm	20 mm
Frequency [Hz]	**α_s**	**α_s**	**α_s**
100	0,12	0,41	0,51
125	0,13	0,47	0,62
160	0,23	0,69	0,76
200	0,34	0,89	0,74
250	0,44	0,98	0,81
315	0,68	1,01	0,81
400	0,83	0,90	0,83
500	0,94	0,91	0,84
630	1,04	0,97	0,93
800	1,08	0,97	0,97
1000	1,08	0,98	1,02
1250	1,00	0,98	0,99
1600	0,96	0,93	0,95
2000	0,90	0,92	0,94
2500	0,82	0,89	0,91
3150	0,79	0,82	0,89
4000	0,78	0,76	0,85
5000	0,69	0,70	0,79
NRC	**0,85**	**0,95**	**0,90**
SAA	**0,84**	**0,94**	**0,90**
α_w	**0,80**	**0,90**	**0,95**
Absorber class	**B**	**A**	**A**



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.

ABSORBER CLASS

A-B

OUR **FINISHES SELECTION** VENEER & CPL

REAL WOOD VENEER

European Oak

American walnut

Canadian maple

As a standard, you will receive all veneer variants in the joining technique board style.
This emphasizes the material's naturalness.

In the standard version, you receive the veneer finishes raw sanded.

***Alternatively, we also offer a veneer finish with UV-cured roller varnish (colorless | dull matt). This protects the veneer from external stress and ensures that there are fewer light reflections on the real wood surface**.*

CPL WOOD IMITATION

H1115 ST12
Bamenda gray

H1145 ST10
Bardolino natural oak

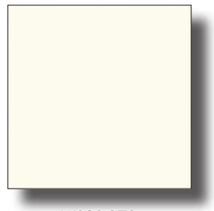
H1277 ST9
Lakeland Acacia light

H1334 ST9
Sorano natural light oak

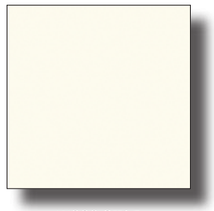
H3860 ST9
Hard Maple Champagne

The decors shown here are high quality wood reproductions.

CPL WHITE



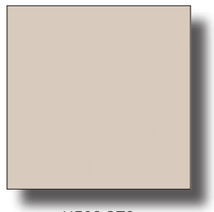
W980 ST2
Platinum white



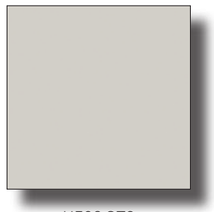
W980 ST15
Platinum white

W1000 ST9
Premium white

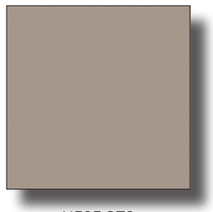
CPL COLOR TINT



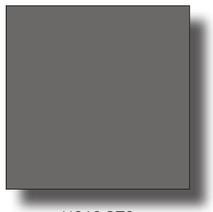
U702 ST9
Cashmere gray



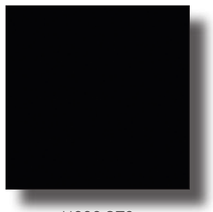
U708 ST9
Light gray



U727 ST9
Stone gray

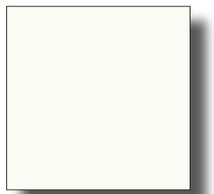


U960 ST9
Onyx gray



U999 ST2
Black

OTHER CPL FINISHES



P1000 W
Paintable SM

The CPL laminate used in the proline is 0.6 | 0.8 mm thick. All decors have a textured surface for a high-quality and natural feel.

additional information:

ST2:	Smoothtouch Pearl
ST9:	Smoothtouch Matt
ST10:	Deepskin Rough
ST12:	Omnipore Matt
ST15:	Smoothtouch Velvet

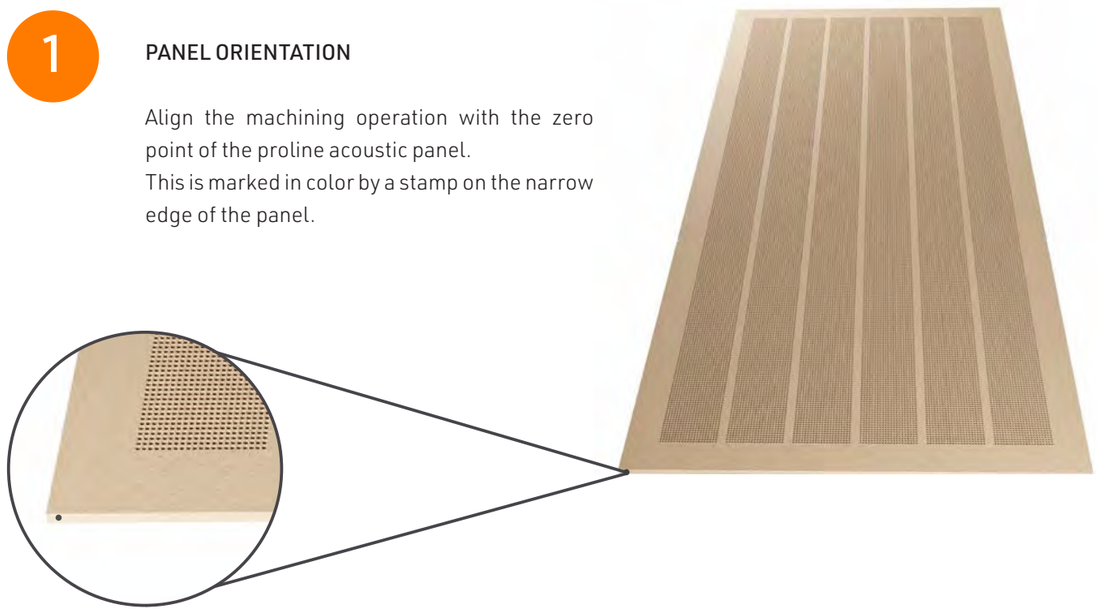
THE PROCESSING FURNITURE MAKING

For furniture making, it is recommended to use the double-sided decorative version of the proline multiONE. By opening and closing cabinet doors, guarantees a consistently high-quality appearance, both from the inside and the outside.
The countermove used in the one-sided decorative variant is purely functional (not visually appealing).

Using the technical drawing of the proline multiONE, you can carry out further processing of the acoustic panel without any problems.
Before starting processing, make sure that the panel is correctly aligned at the zero point (see step 1).

1 PANEL ORIENTATION

Align the machining operation with the zero point of the proline acoustic panel.
This is marked in color by a stamp on the narrow edge of the panel.

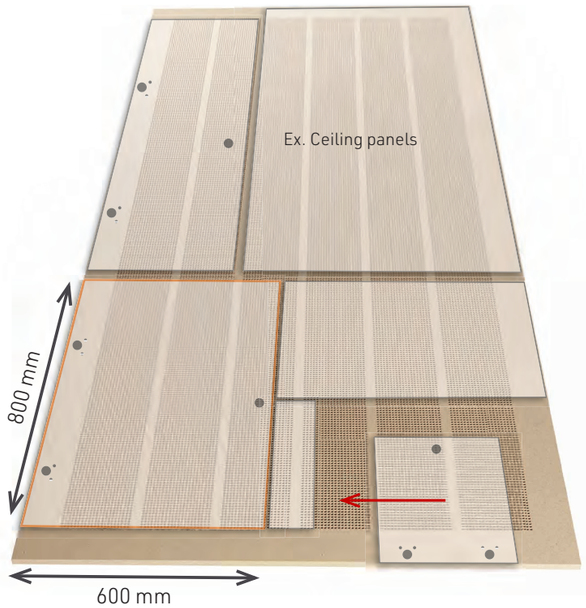


2 PANEL CUT

You will receive the proline multiONE unedged (press-fitted) in an industrial saw cut.
In order to ensure precise processing, the panel should therefore be trimmed 15 mm all around.
This gives you a clean edge finish.

3 MARKING OF THE ELEMENTS

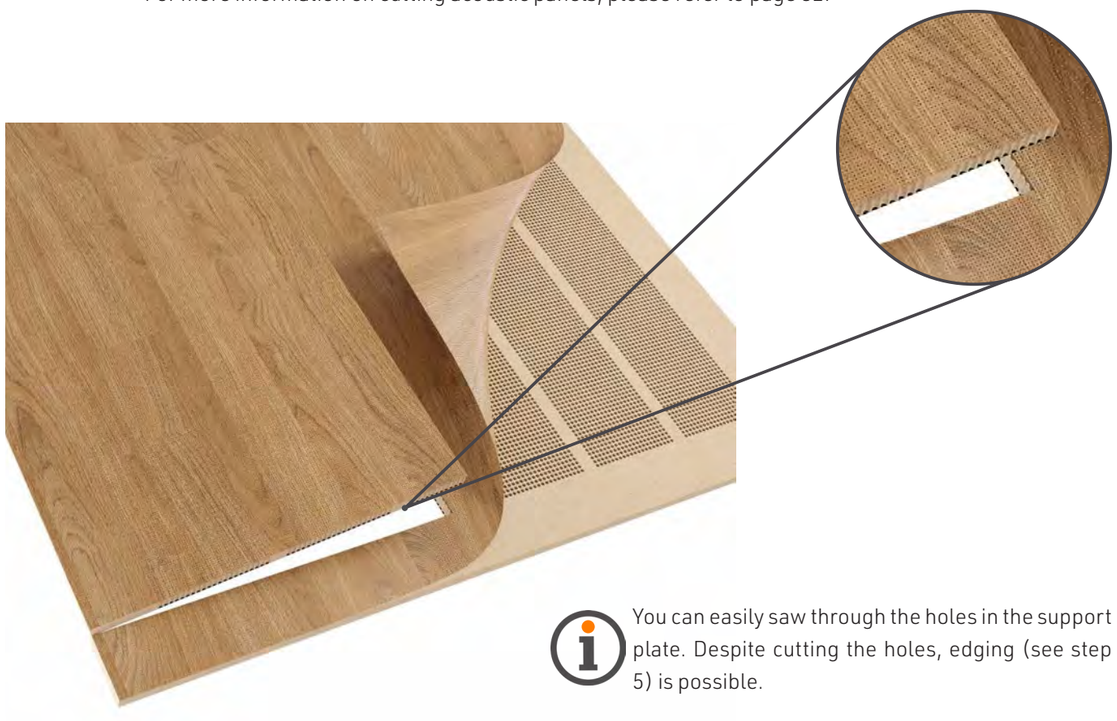
Several acoustic elements can be produced from one multiONE.
Make sure that pot hinge holes are always drilled in the hole-free areas of the panel. Mark the cutouts you need for your project with a wipeable pen. In the illustration of a furniture door with (example) dimensions of 800 x 600 mm shown here, the lower hole-free edge of the panel has been left out because it is not acoustically effective.



Work in a way that minimizes offcuts!

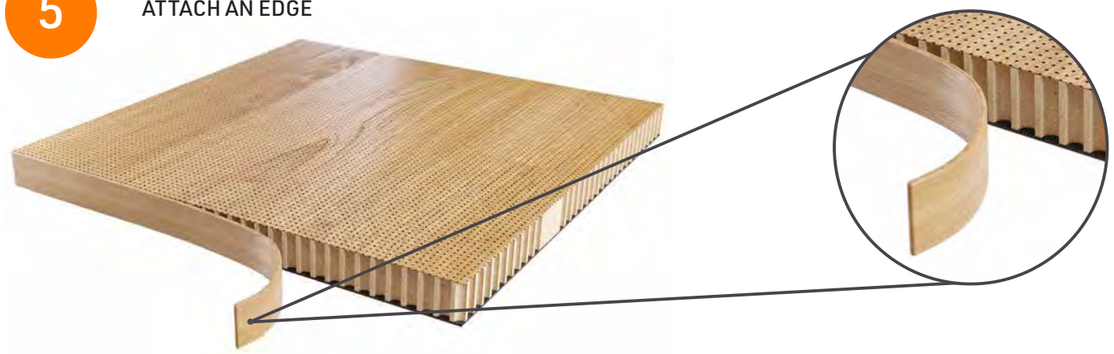
4 CUTTING FROM THE DOOR ELEMENT

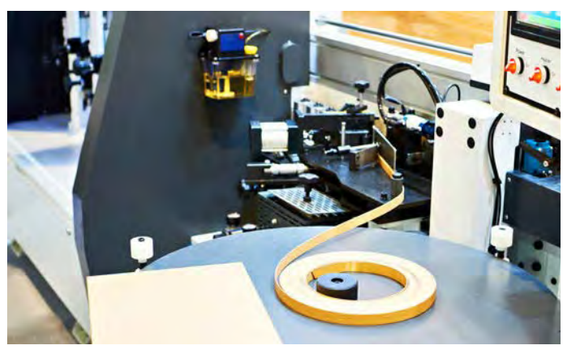
Use a sliding table saw to cut the door element out of the proline acoustic panel. Make sure to use the appropriate saw blade.
For more information on cutting acoustic panels, please refer to page 32.



You can easily saw through the holes in the support plate. Despite cutting the holes, edging (see step 5) is possible.

5 ATTACH AN EDGE

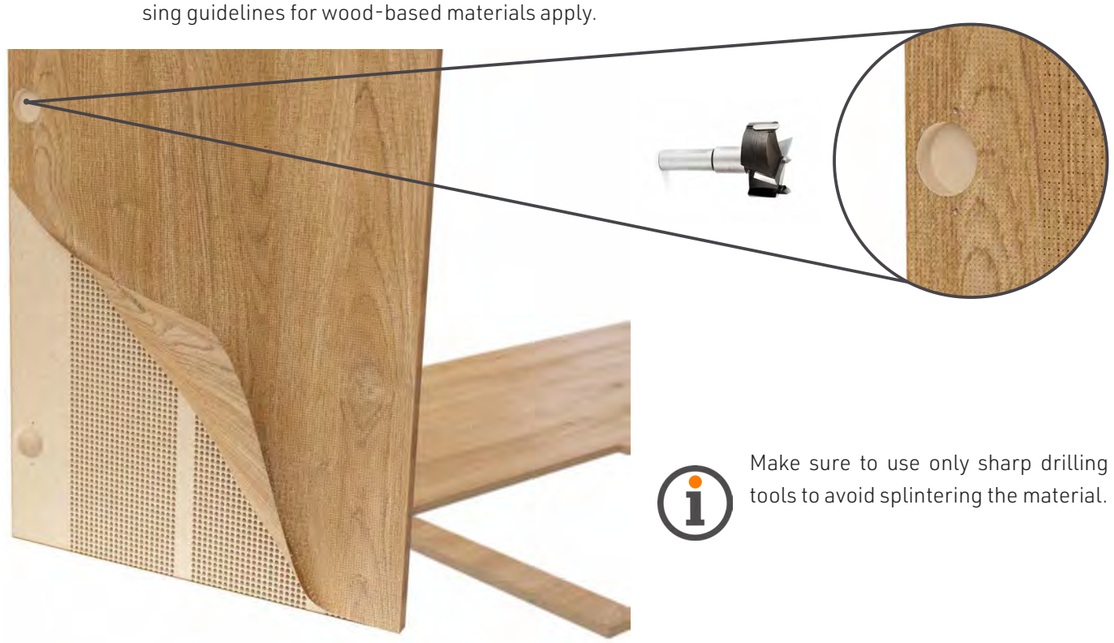




Due to the changing characteristics of the narrow surface of the carrier plate, only the use of ABS safety edges or veneer with a thickness of 2 mm is recommended.
Thinner edges should not be used due to their low overstretching properties.
Conventional types of adhesive can be used for edging the acoustic elements (e.g., EVA, polyolefin, or polyurethane).
Due to the surface perforations, we strongly recommend using transparent adhesives.

6 CUP BELT BORING

The cup hinge holes for attaching corresponding door hinges are drilled using commercially available Forster drills. As the drilling is carried out in the hole-free area of the acoustic panel, the usual processing guidelines for wood-based materials apply.



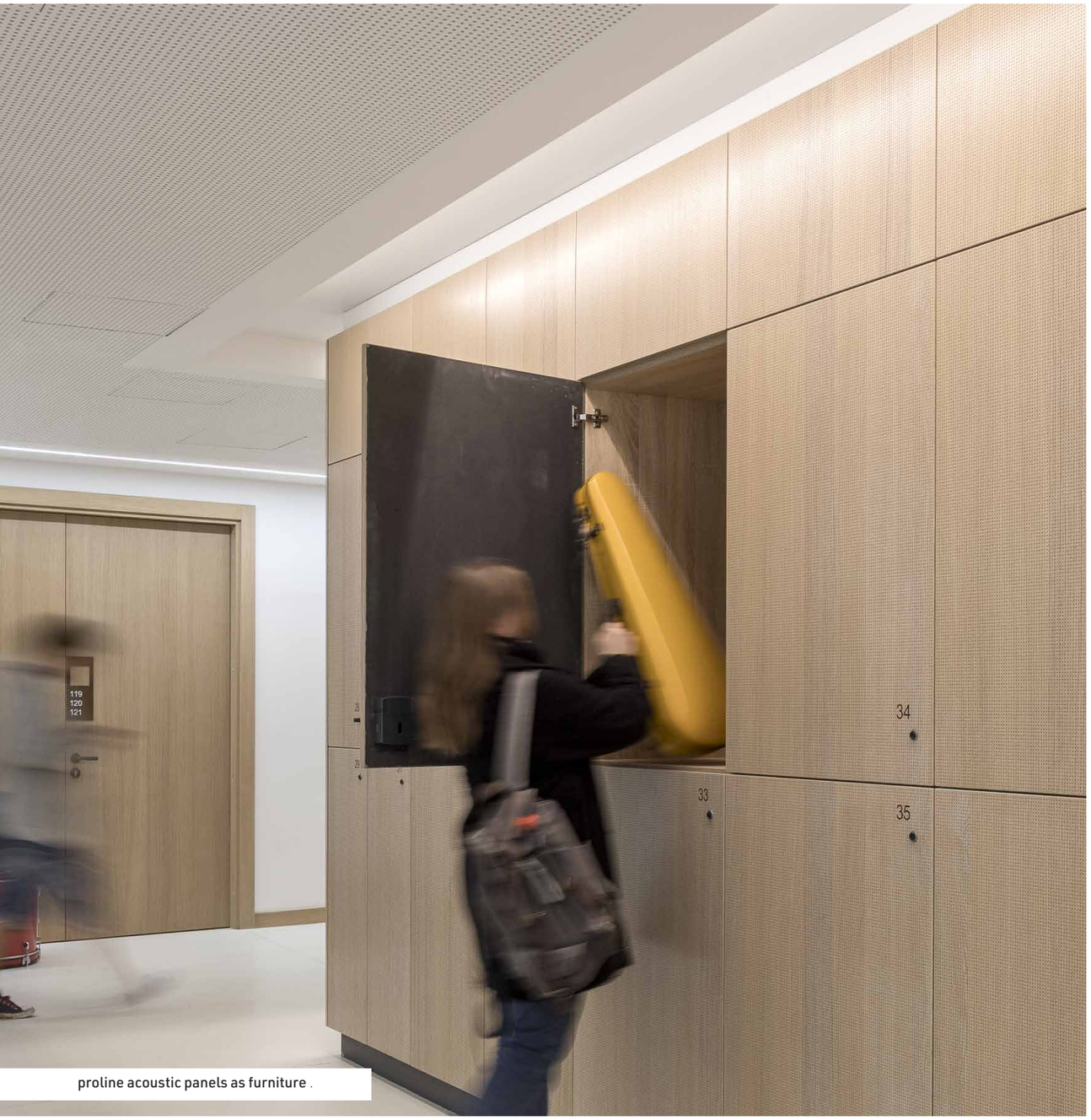
Make sure to use only sharp drilling tools to avoid splintering the material.

7

MOUNTING

The acoustically effective furniture door can now be inserted into the corresponding carcase. Sound-absorbing furniture fronts allow you to noticeably optimize room acoustics without reducing the floor/usable space of the room. Especially in rooms with little free wall space, acoustic furniture is a popular way to improve room acoustics.

APPLICATION: **EXAMPLES**

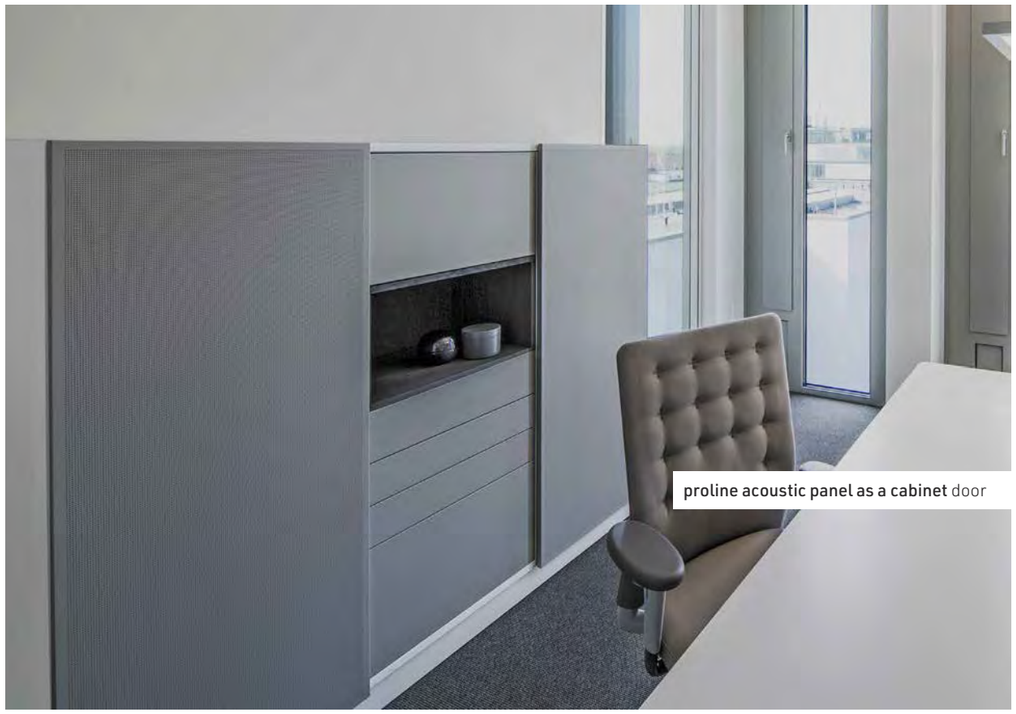


proline acoustic panels as furniture .

LATVIJA MUSIC SCHOOL

VENTSPILS | LATVIA

Adam Mørk



proline acoustic panel as a cabinet door

AEGI HOUSE

HANNOVER | GERMANY

akustik*plus*

Acoustically effective cabinet front at matching file height.

THE PROCESSING WALL AND CEILING

For easy installation of the proline multiONE acoustic panel as wall and ceiling cladding, we developed a galvanized steel rail system.

This consists of the following components:

Wall strip: WL 21/48 and
Panel strip: PL 16/48 (Mounting with spring) or
PL 32/48 (when mounted with backing)

The battens are supplied with a length of 4,000 mm. Both variants have slotted holes optimally matched to the mounting webs of the beams - both horizontally and vertically.
Compared to conventional mounting rails, a favorable load distribution is achieved by the specific folding of the wall strip. The flat panel strip also significantly reduces the pressure on the screws.
A maximum distance of 500 mm between the panel and wall strips should not be exceeded.
Invisible fastening using suspension allows easy revision and is more visually appealing than direct screw fastening.

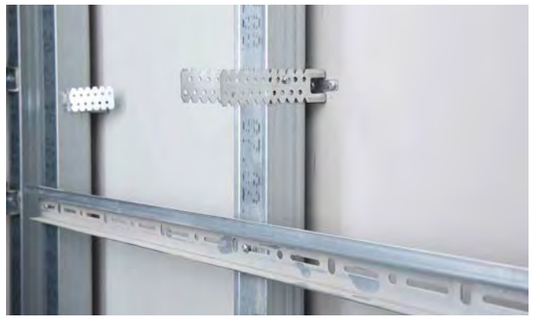
The elements can be removed quickly and easily, and lines and pipes running behind them are easily accessible. In addition, the system allows stress-free installation of the elements and their subsequent adjustment.
A stroke (min. 16 mm) is required for all fastening methods using suspension to enable lifting and lowering.
The stroke remains visible as a shadow gap.
The fastening system is statically tested. You can view a certification if you wish.

Joint design

When using the substructure, we recommend two alternative joint designs that give your wall cladding a different appearance.

- • With the use of tongues, the wall design appears homogeneous. The chosen surface determines the overall impression.
- If you opt for a striking joint inlay, the panel structure becomes an additional design element

The two types of installation are shown on the following pages both as a design detail and in the wall development for horizontal and vertical installation.



TECHNICAL SPECIFICATIONS

Substructure: Commercially available substructures can be used
Our recommendation: **akustikplus Wall system, non-visible, consisting of**:
- Panel strip PL16/48 or PL32/48 and
- Wall strip WL21/48

Hanging system: Metal stud wall system for the non-visible suspension of Wall panels using the elements described

Fastening the panel- using a simple screw connection to the panel

Panel strip: galvanized sheet steel profile PL 16/48 for fastening to the back of the panel and for hanging in wall strip WL 21/48
Recommendation: additional use of mounting adhesive
max. Distance between panel strips: 500 mm

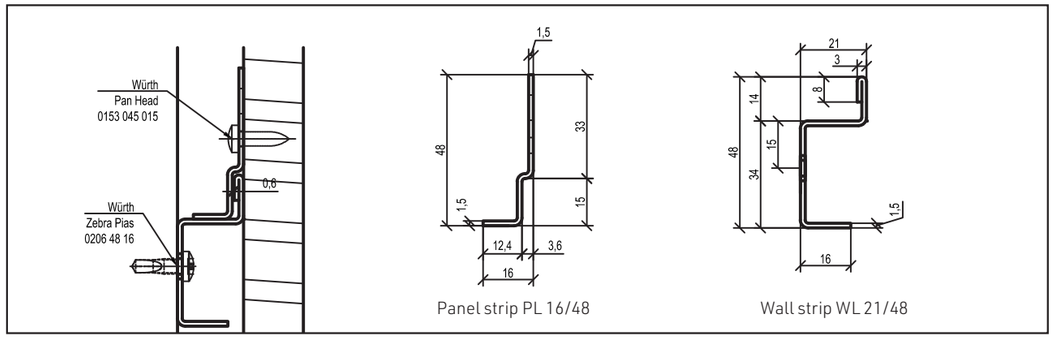
Wall strip: Galvanized sheet steel profile WL 21/48 for fastening to wall studs
max. distance between wall studs: 500 mm

Structural verification: mB Structural analysis S011 2013.021
According to DIN 1055: mB Structural analysis S730 2013.021

Panel strip PL 32/48

Panel strip PL 16/48

Wall strip WL 21/48



Panel strip PL 16/48 Wall strip WL 21/48

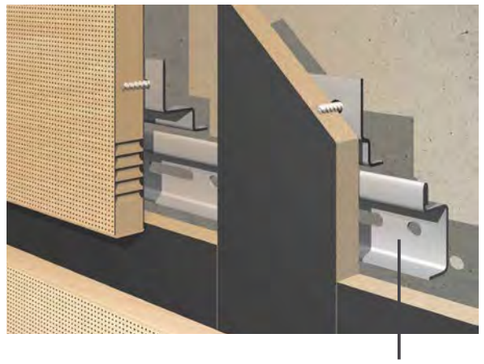
SUBSTRUCTURE WITH SHADOW GAP

Thanks to the assembly system with matching substructure and backed joint, all elements can also be easily dismantled at a later date. Especially with regard to technical building equipment, the revisability of wall and ceiling elements is of central importance. Time-delayed and subsequent installations can thus be carried out conveniently. To do this, you need at least 16 mm of upward travel per element (shadow gap) so that it can be removed.

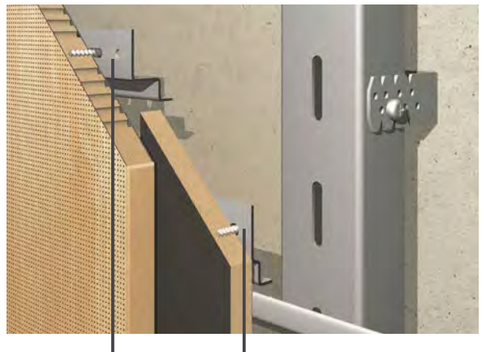
horizontal mounting with strips as joint backing (16mm thickness)

vertical mounting with backed joint

ACCESSORIES



Wall strip 21/48



Panel strip 32/48 Panel strip 16/48

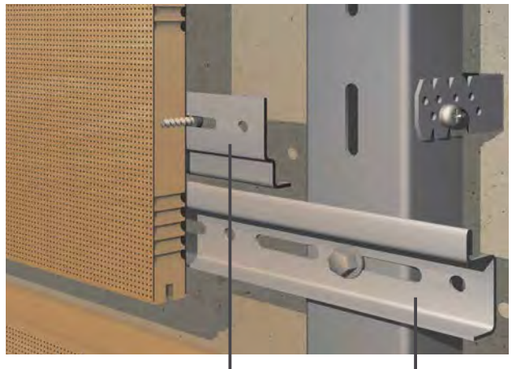
SUBSTRUCTURE WITH SPRING

For assembly with a tongue, the panel cut-outs must be machined in advance with a groove cutter/shaped tongue cutter. We strongly recommend alignment on a function table using a guide rail to create a precise groove. Ensure that the tongue and groove fit accurately.

horizontal mounting with spring

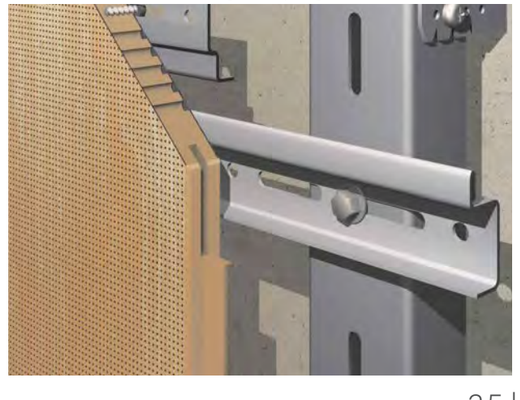
vertical mounting with spring

Detail view: horizontal mounting with spring

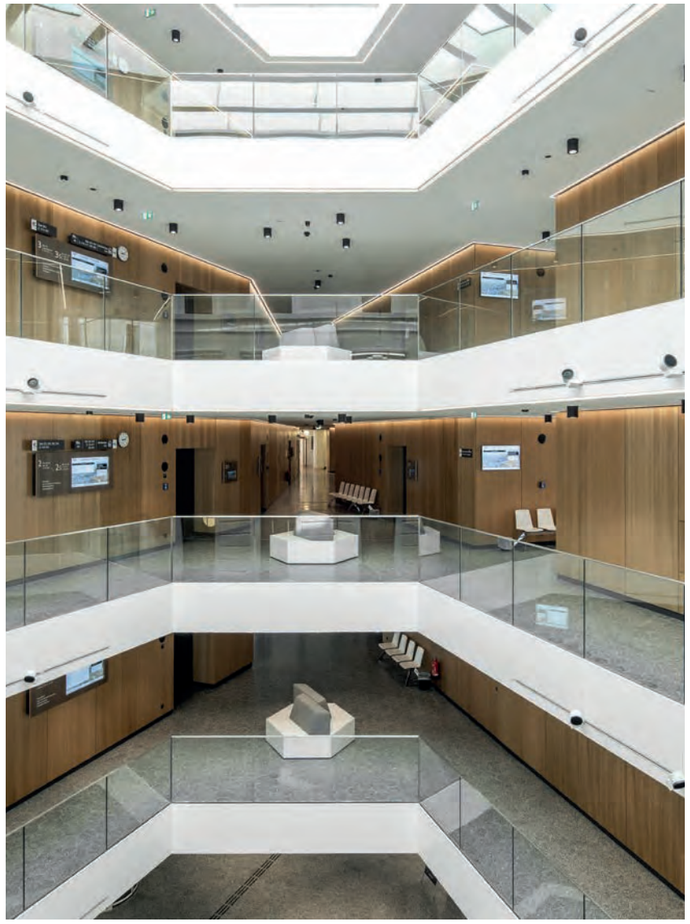


Panel strip PL 16/48 Wall strip WL 21/48

Detail view: vertical mounting with spring



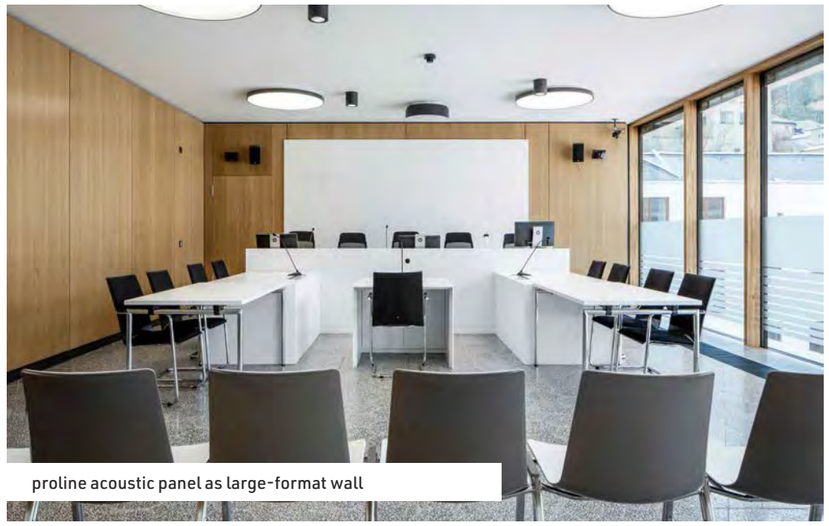
APPLICATION: **EXAMPLE**



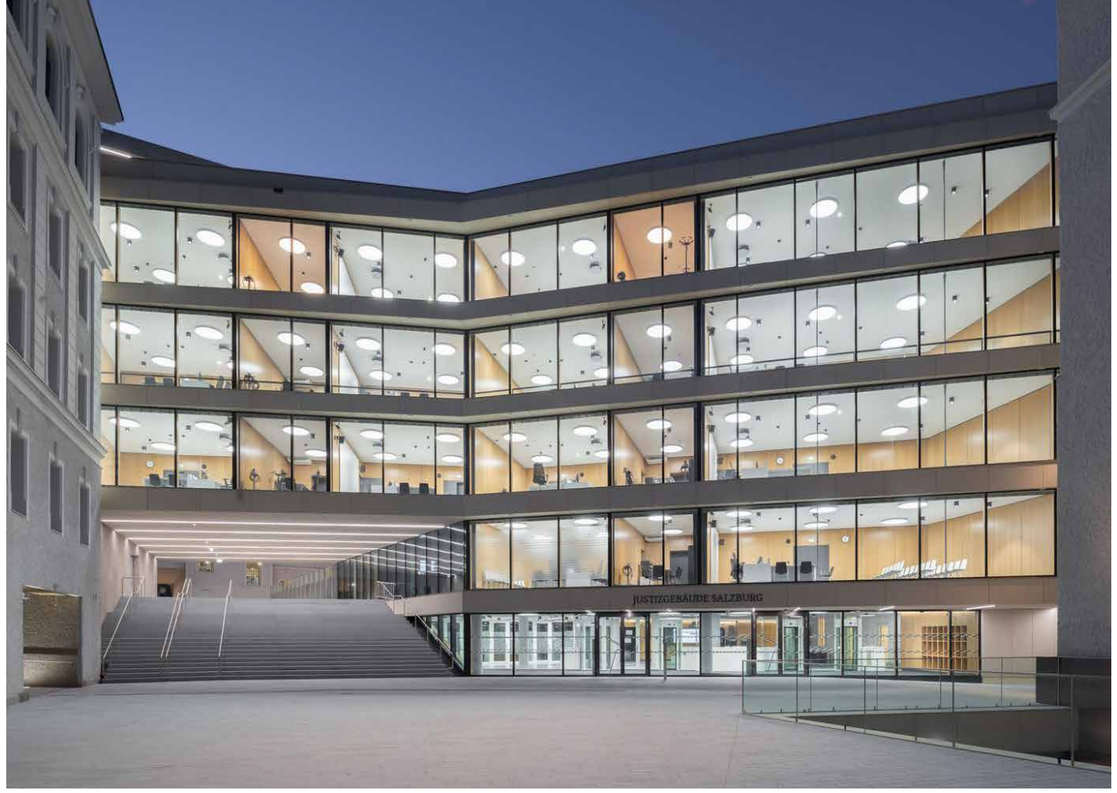
COURT HOUSE

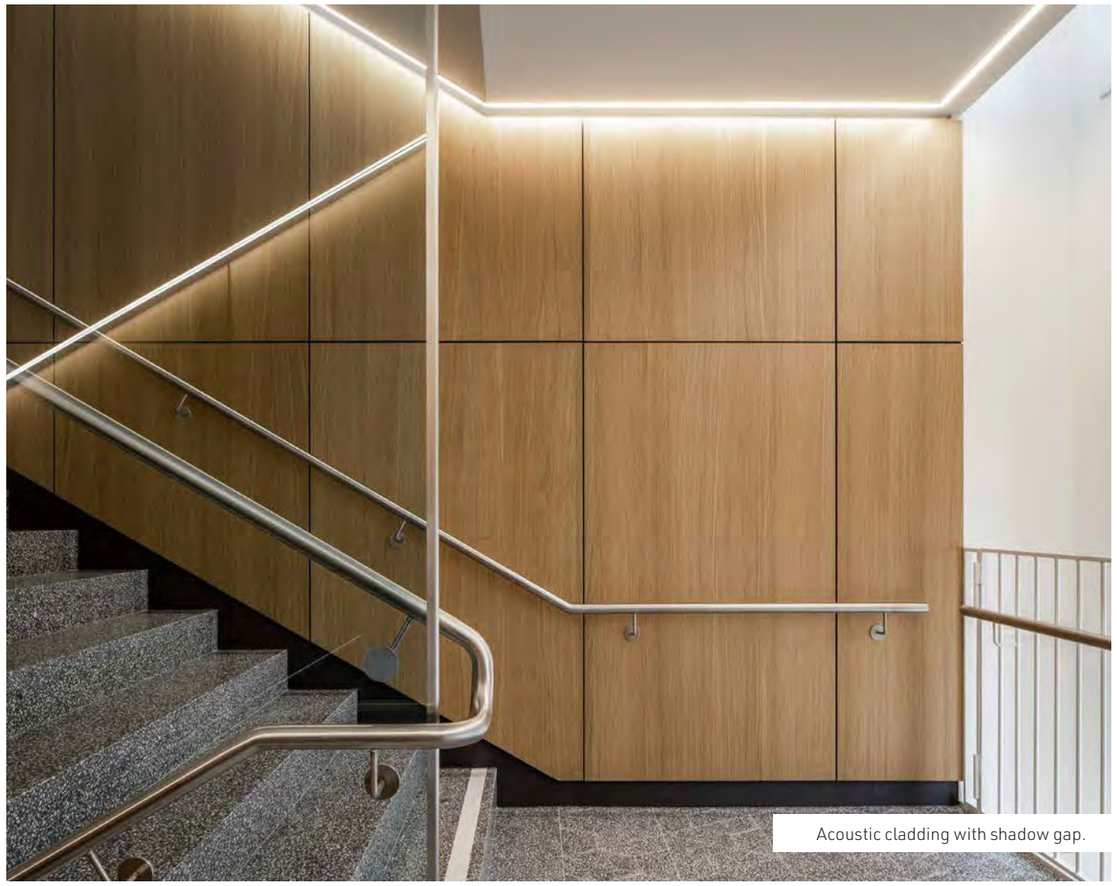
SALZBURG | AUSTRIA

Roland Halbe



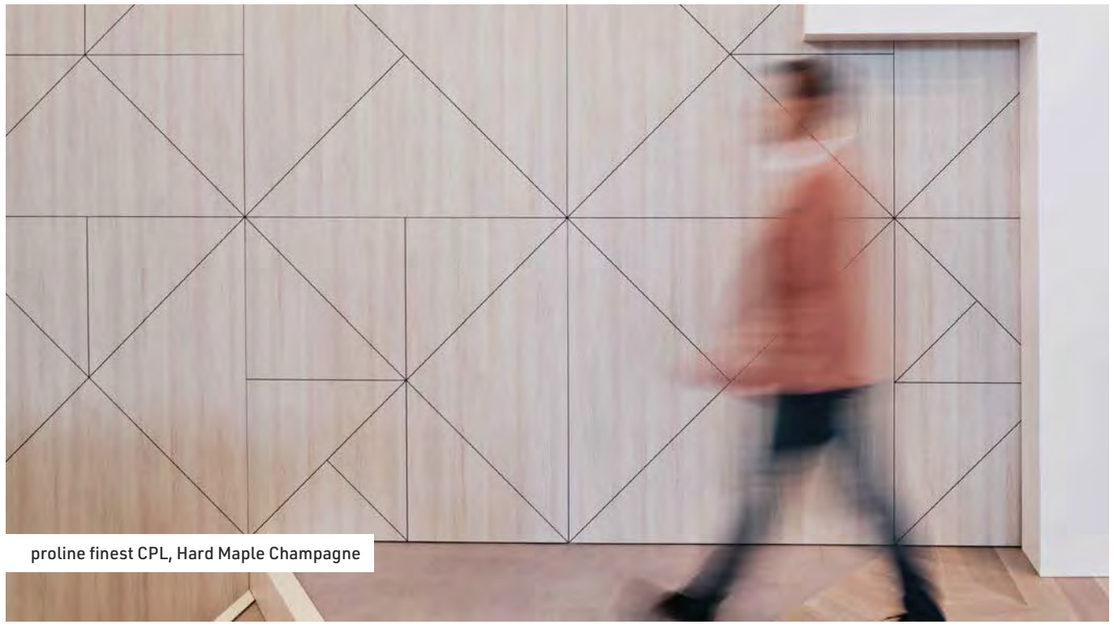
proline acoustic panel as large-format wall





Acoustic cladding with shadow gap.

APPLICATION: **EXAMPLE**



proline finest CPL, Hard Maple Champagne

HERENGRACHT KERK

LEIDEN | NETHERLANDS

Boudewijn Boer

KEY **NOTES**
proline multiONE

Installation instructions and fixing systems

The acoustic panels from akustikplus are based on wood materials coated with decorative surfaces. Like wood-based materials, they can be processed without problems, so the general safety rules and processing principles for wood-based materials must also be applied. The acoustic panels from akustikplus are only suitable for indoor use. Indoor applications are characterized by moisture content of the material corresponding to a temperature of 20 °C and relative humidity of the environment that exceeds 65 % only a few weeks a year

Wall Claddings

Wall cladding is a key application and requires an appropriate substructure to which the elements are visibly or invisibly attached. Please note the following points:

- Substructures and expansion joints must be adapted to suit the swelling and shrinkage behavior of the materials - from a length of one meter, a minimum of 2.5 mm expansion joint is recommended.
- The fastening of the acoustic elements to the substructure should have a maximum spacing of 500 mm.
- Sufficient rear ventilation of the acoustic elements for climatic compensation must be ensured.

The invisible fastening of acoustic elements by means of suspension enables easy disassembly and is more visually appealing than visible screw connections. The panels can be removed quickly and easily to access cables or pipes behind the elements. Depending on the fastening system selected, subsequent adjustment of the elements is possible. In addition, the elements can be installed stress-free.

Acoustic elements, it must be ensured that the premises are dry, i.e. the high humidity caused by screed or plaster work must be reduced to a minimum.
The perforation/slotting increases the board's surface area so that a change in humidity and climate can result in dimensional changes or warpage. This point is important because, in modern office buildings, the room temperature and the humidity can be drastically changed by „night condensation" - see also notes on „Conditioning".

For all fastening methods by means of suspension, a clearance (stroke) is necessary to allow lifting and lowering. This air gap or „hanging clearance" remains visible as a shadow gap.

Hanging by means of profile strips:
The horizontal substructure is grooved to accommodate the rebate strip attached to the wall element for this type of attachment. The rebate strip tongue should be thinner than the groove to facilitate the fit. The rebate strips on the acoustic elements should not extend over the entire width of the element but should be interrupted to allow vertical air circulation. For example, rebate strips made of plywood or metal Z-profiles can be used without any problems.
If a secure screw connection is impossible, gluing can also be used.

Hanging by means of metal fittings:
Systems with metal fittings are also offered for fastening wall elements (see illustration). The selected system must be used in accordance with the guidelines provided by the manufacturer to ensure secure fastening.

Wall cladding with acoustic elements must always be designed with sufficient rear ventilation. Different climatic conditions in the front and back side of the elements can cause them to warp.
Rear ventilation creates a temperature and humidity balance that prevents this. It is important that the supply air and exhaust air areas remain free so that the necessary air circulation is not hindered.

There are numerous options for horizontal and vertical joints or butt joints.
However, ensuring the elements have enough possibilities for expansion is essential.
The selection of the fastening system, element size, and design influence the later appearance.

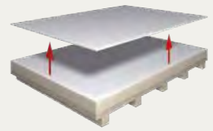
TRANSPORT & STORAGE

The transport and storage of acoustic elements must be carried out in the original packaging or on flat and stable pallets.
If the original packaging is removed, the acoustic elements must be stored on full-surface, horizontal, flat, stable protective plates; direct contact with the ground and/or sunlight must be avoided at all costs.

The top panel should be covered with a protective board of at least the same size. The acoustic elements must be stored in closed and dry storage rooms under normal climatic conditions (approx. 18 - 25 °C and 50 - 65 % relative humidity).

HANDLING

After removing the packaging and before processing, the acoustic elements must be checked for visible damage. Special care is required during handling, as the elements lose stability due to the perforation or slitting compared to homogeneous, conventional panel materials - depending on the component size.



In principle, persons transporting and handling acoustic panels should wear personal protective equipment such as gloves, safety shoes, and suitable work clothing. The panels must be lifted, and it must be avoided that the decorative sides are shifted against or pulled over each other (see illustration).

CONDITIONING

Conditioning requires special attention, especially for acoustic elements!
Conventional wood-based materials are already hygroscopic, i.e., they absorb and rerelease air humidity. The product reacts to this behavior with dimensional changes, referred to as shrinkage or swelling. The dimensional changes must be considered during installation and in the selection and number of fittings.

Due to their open surfaces, the elements react to climatic changes with more incredible dimensional changes.

Dimensional changes of up to 2.5 mm per meter must be expected.
In principle, the storage and processing conditions of the elements should correspond as closely as possible to the climate in which they will later be used. Before installing acoustic aspects, they should be conditioned for a few days in the later premises under the latter conditions of use. The recommendations for storage must also be observed on construction sites.

KEY **NOTES**

proline multiONE

CUTTING

Cutting with a sharp saw blade corresponding to the cover layer, with scoring unit for one-sided cover layer is recommended, for two-sided cover layer it is obligatory.

Before cutting, the element must be aligned over the first row of perforations. The elements are cut using panel saws or sliding table saws. The resulting cut quality depends on various factors.

In addition to the height setting of the saw blade, machine and saw parameters must be observed:
- Feed speed: 10 bis 20 m / min
- Rotational Speed: 3.000 bis 4.000 rpm
- Cutting Speed: 40 to 70 m / sec.
- Type of teeth (carbide tipped): Trapezoidal flat tooth, alternate tooth, or Duplovit roof tooth.

On machines without scoring unit, the tooth form combination roof tooth / hollow tooth (DZ / HZ) has proven to provide very good cutting quality, especially for cutting double-sided coated furniture panels.

EDGE FINISHING

Formatting on an edge banding machine using a DIA router is possible. However, the maximum blank allowance should be limited to 2 mm. Preferably, the design should be carried out by cutting. Due to the varying narrow surface characteristics of the carrier plate, only ABS safety edges with a thickness of 2 mm are recommended. Thinner edges should not be used due to their low overstretching properties.
Conventional types of adhesives such as EVA, polyolefin, or polyurethane adhesives can be used to edge the acoustic elements with safety edges.

Due to the special processing of the carrier plates and the surface perforations or slits, hot-melt adhesives may leak out. So, we recommend using transparent adhesives.
When gluing the edge, care must be taken not to apply too much glue, as otherwise, the glue will be pressed out of the webs into the perforation by the pressure rollers and thus become visible.
Please take a look at the specifications of the machine and adhesive suppliers.

OUR **SERVICES**

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We are an international company with a global network. In many regions of Germany and countries in Europe, we work together with local dealers and sales partners.
IPlease feel free to send your questions by mail or by phone to our main address.

„ORDER SAMPLE!“

Various versions of the proline multiONE are available on request in a high-quality sample box.
As a rule, we only charge a small nominal fee for the samples, billed when the order is placed.

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We support you in every phase of the planning and implementation of your projects. Whether on the phone, at your site, or in the respective object -
We are there for you.
Likewise, we offer training on acoustics and professional consulting sessions.

„VISIT WEBSITE!“

On our website www.akustik-plus.com you will find detailed product information. You will find data sheets, references, current news, and background knowledge on room acoustics.
A network map gives you an overview of our partners in your vicinity.

„Latvija“ Music School & Concert Hall
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“WE LOOK FORWARD TO YOUR PROJECT.“

akustik*plus*

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