Applications

The LIGNO Akustik light timber acoustic elements for acoustically effective panelling are used in residential and industrial buildings, e.g. as

- suspended ceilings – for example, under wood and concrete structures.
- wall coverings – also in front of masonry or concrete
- acoustic sails – with edge profiles and light fixtures as acoustic sails freely suspended in the room.
- grid ceiling – as cut-to-size panels for insertion into standard system ceilings.

Structure / technical data

The cross laminated timber panel elements in strip form consist of three layers: Factory slitting of the first layer brings about a batten look on the visible face and the panelling is ball-impact proof, appropriate assembly provided.

The middle ply (transverse layer) is oriented at right angles to the top layer thus providing for a high degree of dimensional stability. The backside layer in turn is formed by lengthwise running panels.

Acoustic absorbers are integrated in the transverse layer. Thanks to the recessed absorber material, the panel is ideal for renovation work because the absorption effect will not get lost through painting or grinding down. Surface structuring achieves additional acoustically advantageous diffuse sound scattering.

The elements are circumferentially profiled for flush-fitting installation.

- Coverage width: 625 mm
- Type of wood: Spruce / fir (wood moisture content: 9 ± 2 %)
- Gluing: PUR adhesive (formaldehyde free), adhesive by weight approx. 1.1 % (triple layer)
- Building material class (DIN 4102): B2 / fire class (EN): D – s2, d0.
- Panel structure (cross laminated timber): natureplus® certificate no 0211-0604-014-1, standard absorber from wood fibre: natureplus® certificate no 0104-0710-012-4

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LIGNO TREND®
Für eine nachhaltige Holz-Baukultur.
Application ranges and suitable element types

Application D1:
Ceiling lining / element installation in the stretching bond

Use of elements in standard length 2,920 mm

Notes:
- Frontal butts are identifiable on the surface.
- Little offcut: The section of the last element is used as the first element in the next row each time.

Element selection:
- Normally inflammable 3S-33
- Hardly inflammable B-s2,d0 to DIN EN 13501-1

Select for extended requirements...
- For individual / larger element length: Type 3S-62
  ▶ see application D2

Application D2:
Ceiling lining / elements in individual length

Use of individually produced elements in continuous lengths ranging up to 8,000 mm, hence no frontal element butt on the building site.

Notes:
- Weight of longer elements can make the assembly difficult.
- The elements should be ordered a bit longer to be adjusted to the exact measurement on the building site.

Element selection:
- Normally inflammable 3S-62 continuous production

Application D3:
Ceiling canopy

LIGNO Acoustic light is available as ready assembled, free-hanging ceiling canopy with circumferential metal frame and with integrated workplace luminaire as an option.

The canopy is suspended on wire ropes or in groups, hence free circulation of air (important in thermal activation of concrete ceilings)

Element selection:
- Normally inflammable 3S-33

Note: Canopies are delivered fully configured

Element selection:

- For individual / larger element length: Type 3S-62
  ▶ see application D2

Ambient atmosphere, application in indoor aquatic centres

Cross laminated timber elements from Lignotrend are approved for use in the service classes 1 and 2 where the wood moisture content does not exceed 20 %. The elements have to be protected from moisture when stored and when installed.

This means that, for example, installation locations in form of buildings enclosed and heated on all sides but also roofed over, open buildings are possible, provided the elements are not exposed to the weather.

The wood moisture content resulting as a function of the ambient atmosphere can be retrieved from the accompanying diagram.

The elements can also be used in the areas of indoor aquatic centres. To limit the wood moisture content to 15 % for safety reasons in these places, we recommend limiting the relative humidity to max. 75 % e.g. through humidity control of the ventilation system (see accompanying diagram acc. to Keylwerth). Non-corroding connection material is needed here, for example, in chlorine-containing room air ▶ Page 7.
**Application D1:** Ceiling lining / element installation in the stretching bond

- **Surface:** Silver fir, knotless, patterned
- **Profile:** 625-12-4
- **Braced installation**

**Notes:**
- Frontal butts are identifiable on the surface.
- Little offcut: The section of the last element is being used as the first element in the next row each time.

**Element selection:** Normally inflammable 3S-33

**Application D2:** Ceiling lining / elements in individual length

- **Acoustic ceiling for a gymnasium** (Planning: City of Stuttgart Building department)

- **Surface:** Silver fir, knotless, patterned (B-s2,d0)
- **Profile:** 625-25-8
- **Individual element length**

**Notes:**
- Weight of longer elements can make the assembly difficult.
- The elements should be ordered a bit longer to be adjusted to the exact measurement on the building site.

**Element selection:** Normally inflammable 3S-62

**Application D3:** Ceiling canopy

- **Ceiling canopy in a fitness studio**

- **Surface:** Silver fir, knotless, patterned
- **Profile:** 625-12-4

**LIGNO Acoustic light** is available as ready assembled, free-hanging ceiling canopy with circumferential metal frame and with integrated workplace luminaire as an option.

The canopy is suspended on wire ropes or in groups, hence free circulation of air (important in thermal activation of concrete ceilings)

**Element selection:** Normally inflammable 3S-33

**Note:** Canopies are delivered fully configured.
Application W1:
Wall covering / element installation in the stretching bond

Use of elements in standard length 2,920 mm

Notes:
- Frontal butts are identifiable on the surface.
- Installation with vertical or horizontal gap pattern.
- Little offcut: The section of the last element is being used as the first element in the next row each time.

Element selection:

- Normally inflammable 35-33
- Hardly inflammable B-s2,d0 to DIN EN 13501-1 35-33, surface impregnated

Select for extended requirements...
- For individual / larger element length: Type 35-62
  ➤ see application W2

Application W2:
Wall lining / elements in individual length

Vertical and horizontal installation of individually produced elements in continuous lengths ranging up to 8,000 mm, hence no frontal element butt on the building site.

Notes:
- Weight of longer elements can make the assembly difficult.
- The elements should be ordered a bit longer to be adjusted to the exact measurement on the building site.

Element selection:

- Normally inflammable 35-62, continuous production

Application W3:
Impact wall, acoustically effective

Fitting of elements on special, force-reducing substructure (elastic brace and counterbrace configuration, force reduction checked).

Installation with horizontal joint pattern.

Element selection:

- Normally inflammable 35-33
- Hardly inflammable B-s2,d0 to DIN EN 13501-1 35-33, surface impregnated
- Normally inflammable 35-62, continuous production

Construction:

➤ Page 24

Green building, ecology, building biology:

The independent organisation natureplus has certified the basic versions of the LIGNO Akustik light products (spruce/fir wood-types) based on expert analyses of the TÜV (German Technical Inspection Agency).

In addition, there are also natureplus certificates for the standard absorber types A70G and A50G respectively.

Among others, the products were tested for:

- Compliance with stringent emission limit values
- Origin of the wood (FSC/PEFC sources)
- Sustainable production of the elements
- Function
Application W1: Wall covering / element installation in the stretching bond

- Wall covering in an office
  (Arch.: phase2 architecture, Berlin)

- Surface:
  Silver fir, knotless, plain
  Profile 625-12-4
  Braced installation

Notes:
- Frontal butts are identifiable on the surface.
- Installation with vertical or horizontal gap pattern.
- Little offcut: The section of the last element is being used as the first element in the next row each time.

Element selection:
- "Normally inflammable 3S-33
- Page 8, continuous production
- Hardly inflammable 3S-33, surface
- Page 6, B-s2,d0 to DIN impregnated information on EN 13501-1
- Select for extended requirements...
- For individual / larger element length: Type 3S-62
  see application W2

Application W2: Wall lining / elements in individual length

- Interior finish of a canteen

- Surface:
  Silver fir, knotless, patterned
  Profile 625-12-4

Notes:
- Weight of longer elements can make the assembly difficult.
- The elements should be ordered a bit longer to be adjusted to the exact measurement on the building site.

Element selection:
- "Normally inflammable 3S-62, Page 8
- Hardly inflammable 3S-33, surface
- Page 6, B-s2,d0 to DIN impregnated information on EN 13501-1
- Normally inflammable 3S-62, Page 8
- continuous production

Application W3: Impact wall, acoustically effective

- Impact walls and ceiling lining in a sports hall
  (Arch.: Harter + Kanzler, Freiburg)

- Surface:
  Silver fir, knotless, patterned
  Profile 625-12-4
  (Ceiling 625-24-8)

Notes:
- Fitting of elements on special, force-reducing substructure (elastic brace and counterbrace configuration, force reduction checked).
- Installation with horizontal joint pattern.

Element selection:
- "Normally inflammable 3S-33, Page 6
- Hardly inflammable 3S-33, surface
- Page 6, B-s2,d0 to DIN impregnated information on EN 13501-1
- Normally inflammable 3S-62, Page 8
- continuous production

Green building, ecology, building biology:

- Certification: natureplus certificate

- Presentation display for jewellery

- Surface:
  Silver fir, knotless, patterned
  Profile 625-12-4
**Type 3S-33**

**Geometry**

**Application**
See pages 2-5

**Availability**
- only in standard length 2,920 mm
- with normally flammable surface, with acoustic profile 625-12-4 also hardly inflammable B-s2,d0

**Absorber type A70G**

Approx. 70 % absorber portion in the transverse layer, absorber: Wood fibre

**View:**
Timber ledge profile

Wood types and profile alternatives ▶ from page 12

**Variant R0 ('reflecting')**

Rigid transverse layer with relieving strip (wood fibre)

Note: Higher weight! ▶ see page 19
### Type 3S-33

#### Fastening alternatives

All connection material must be set in line with the axis of the intermediate timber transverse layer. Fastening in the absorber is not permissible!

<table>
<thead>
<tr>
<th>1. Concealed fastening using clamps or nails</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fastening in the acoustic gaps</strong> using appropriate compressed-air staple gun: Clamp nail gun from Holzher / Reich, type 3425 with foot for Lignotrend acoustic panels is available from Lignotrend (can also be leased).</td>
</tr>
<tr>
<td>Clamps type G, approx. 5 pcs. per element side or approx. 10 pcs. per panel (dependent on load, provide proof of this where appropriate)</td>
</tr>
<tr>
<td>Always fasten in line with the axis of the timber transverse layer recognisable in the gaps!</td>
</tr>
<tr>
<td>Also observe the edge distance on the element. Clamp in the second edge gap when using profiles with 12 mm battens!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Concealed fastening using special screws</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fastening in the acoustic gaps</strong> using a self-drilling partial-thread screw 3.2 x 60 (head diameter 5.2 mm) or wood mounting screw 3.2 x 50 mm TX10 (for example by Eurotec: Hobotec Zierkopf Art.110292/110297), approx. 5 pcs. per element side or 8-12 pcs./panel.</td>
</tr>
<tr>
<td>Special screws and suitable bits are available from Lignotrend.</td>
</tr>
<tr>
<td>Using screws in the gap lets them almost completely disappear from view. The minor indentation occurring in the adjacent ledges with 4 mm gaps is inconspicuous but can seem disturbing on wall coverings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Concealed fastening, only elements NF with groove and tongue joint</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fastening in the zone of tongue joint</strong> using a diagonally set self-drilling partial-thread screw, e.g. 4 x 50, approx. 5 pcs. per element side or 8-12 pcs./panel.</td>
</tr>
<tr>
<td>See alternative 2 for first and last element row with special screws in the gap.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Concealed fastening in the area of indoor aquatic centres, only elements NF with groove and tongue joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>As alternative 3, but, depending on climate, use screw made from highly corrosion-resistant steel (e.g. in chlorine-containing air: Made by Würth, type Assy 3.0 HCR, 4 x 50 mm, material no 1.4539 – corrosion resistance class IV, APV no: Z-30.3-6)</td>
</tr>
<tr>
<td>Quantity of screws: approx. 5 pcs. per element side or 8-12 pcs./panel</td>
</tr>
<tr>
<td>The element should be pre-drilled if the screw that is being used does not have milling ribs on its head.</td>
</tr>
<tr>
<td>Erste und letzte Elementreihe vertikal sichtbar schrauben.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Concealed fastening onto metal substructure, only elements NF with groove and tongue joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure element using a vice</td>
</tr>
<tr>
<td>Fastening in the area of tongue joint using a diagonally set screw suitable for sheet metal screw connection, approx. 5 pcs. per element side or 8-12 pcs./panel.</td>
</tr>
<tr>
<td>The element should have been pre-drilled!</td>
</tr>
<tr>
<td>Screw on the first and last element row in a vertically visible manner.</td>
</tr>
</tbody>
</table>
Type 3S-62

Geometry

Application
See pages 2-5

Availability
- Produced in individual length / continuously up to 8,000 mm
- In standard length 2,920 mm
- Available with normally inflammable surface

View:
Timber ledge profile
Wood types and profile alternatives ➤ from page 12

Absorber type A50G
Approx. 50% absorber portion in the transverse layer, absorber: Wood fibre

Lateral section:

Absorber variant R0 (‘reflecting’)
Gaps not slotted through as far as the absorber layer, absorber not effective as a result.

Lateral section:

Longitudinal section [individual lengths / continuously produced, type of absorber A50G]:

Continuous: General finger jointing, all approx. 2,875 m
2,400 to 8,000 [individual lengths]

Longitudinal section [standard length 2,920 mm, type of absorber A50G]:

Standard element without general joint
2,920 [standard length]
**Type 3S-62**

**Geometry and fastening**

**Edging (individual lengths):**
Tongue and groove joint lateral, butt front end

**Edging (standard length 2,920 mm):**
Groove and tongue joint circumferential

---

**Fastening**

1. **Concealed fastening**
   - Fastening in the acoustic gaps using a diagonally set self-drilling partial-thread screw, min. 5 x 90, approx. 4 pcs. per element side or 8 pcs./panel in 2.92 m length
   - First and last element row screwed in the gap or with rebated strip on the rear side (see chapter installation).
**Substructures**

**Type 3S-33: Lengthwise substructure**
- Wooden battens *along the element* under the lateral butts as well as circumferential on the edge
- Pitch $e = 625$ mm
- Battens’ cross-section min. 30/100,

**Type 3S-33: Hardly inflammable substructure**
- Steel sheet profile, e.g. ceiling profile made of galvanized steel sheet CD 60 /27 to DIN 18182 *transverse to the element* as well on the edge
- Pitch e.g. $e = 625$ mm or dependent on load
- Use elements with profile type NF

**Type 3S-62: Transversal substructure**
- Wooden battens *across the element* under the lateral joints as well as circumferential on the edge
- Pitch $e = 800$ to $900$ mm, depending on the circumstances
- Battens’ cross-section min. 30/60, alternately (with suspended ceilings in particular) precise straight U*psi profile F-120 from Lignotrend
## Surface

### Flammability

The panels behave in a normally inflammable manner with regard to flammability, like solid wood or wood fibre. The ledge layer will be modified if high flame resistance should be demanded (pressure impregnation, partly thicker material). Test certificates for high flame resistance on request. See tables below for possible combinations.

### Available surfaces and profiles

<table>
<thead>
<tr>
<th>With type 3S-33</th>
<th>Type of wood</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>625-12-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>625-nature-4</td>
<td></td>
</tr>
<tr>
<td>Normally inflammable B2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[to DIN 4102-1]</td>
<td></td>
<td></td>
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<tr>
<td>625-21-4</td>
<td></td>
<td></td>
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<tr>
<td>625-19-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>625-25-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normally inflammable B-s2,d0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[to DIN EN 13501-1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>625-12-4</td>
<td></td>
<td></td>
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<tr>
<td>625-21-4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<th>Treatment</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>625-12-4</td>
<td></td>
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<tr>
<td></td>
<td>625-nature-4</td>
<td></td>
</tr>
<tr>
<td>Normally inflammable B2</td>
<td></td>
<td></td>
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<tr>
<td>[to DIN 4102-1]</td>
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<tr>
<td>625-21-4</td>
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<tr>
<td>625-19-6</td>
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<tr>
<td>625-25-8</td>
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</tr>
</tbody>
</table>

1 with surface layer impregnated, extra charge on surface, extended delivery time! Impregnated wood has darker colour cast.

2 with impregnated, a bit thicker surface layer, note change of inner structure, extra charge on surface, extended delivery time! Impregnated wood has darker colour cast.

3 not recommended because knots may fall out in the small ledges
## Surface

### Types of wood

Unless otherwise indicated, the ledge surfaces are manufactured from one-ply-panels consisting of approx. 80 mm wide lamellas. In the case of knotless sorting, the individual lamellas consist of pieces being largely free of knots, connected through finger joints in length and having uneven length. The slotting generates the characteristic ledge look.

The surface of the prefabricated elements are sanded smoothly and have received structural brushing (if not ordered with a finish).

<table>
<thead>
<tr>
<th>Type of wood</th>
<th>Short name</th>
<th>Description</th>
<th>Illustration, not binding in colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver fir knotless, patterned</td>
<td>Wt (L)</td>
<td>A lively 'coloured' appearance thanks to wood stripes distinctly varying in brightness. Fir wood notched in rift / semi-rift.</td>
<td><img src="image1" alt="Illustration" /></td>
</tr>
<tr>
<td>Silver fir knotless, plain</td>
<td>Wt (S)</td>
<td>Brightness/colour shade of the stripes vary less here than with Wt (L) and close-grained wood is being used. Fir wood notched in rift / semi-rift.</td>
<td><img src="image2" alt="Illustration" /></td>
</tr>
<tr>
<td>Fir knotless, plain</td>
<td>Fi (S)</td>
<td>Similar to Wt (S), brightness/colour shade vary here in a particularly small manner. Spruce wood notched in rift / semi-rift.</td>
<td><img src="image3" alt="Illustration" /></td>
</tr>
<tr>
<td>Spruce, with fine knots ('trend')</td>
<td>Fi (Å)</td>
<td>Evenly vibrant surface structure with knots, looks very homogenous in the overall appearance. The individual lamellas approx. 45 mm wide do not show any finger joint connections.</td>
<td><img src="image4" alt="Illustration" /></td>
</tr>
<tr>
<td>Larch knotless</td>
<td>Lä</td>
<td>A lively ‘coloured’ appearance thanks to wooden stripes, which vary distinctly in brightness/colour shade. Larch wood notched in rift / semi-rift.</td>
<td><img src="image5" alt="Illustration" /></td>
</tr>
<tr>
<td>Industrial quality silver fir</td>
<td>Wt (Ind)</td>
<td>Manufacturing and character like Wt (L) but with wood defects, knotholes, optical impairments like box, curled spots, etc.</td>
<td><img src="image6" alt="Illustration" /></td>
</tr>
<tr>
<td>Oak</td>
<td>Ei</td>
<td>A lively 'coloured' appearance thanks to wood stripes distinctly varying in brightness.</td>
<td><img src="image7" alt="Illustration" /></td>
</tr>
</tbody>
</table>

| Other types of wood                  | Other types of wood can be used in a suitable size and compatibility with the glue and subject to availability of suitable one-ply-panels. |

1 Also available impregnated for hardly inflammable variants, see extra charge, allow for extended delivery time.
2 Please note possibly extended delivery times.
3 Use together with profile 625-12-4 is not recommended because of potential loose knots.

<table>
<thead>
<tr>
<th>Knots</th>
<th>Spradic loose knots</th>
<th>Slight cracks</th>
<th>Wanes</th>
<th>Pitch pockets</th>
<th>Beele holes</th>
<th>blue stain</th>
<th>red stripes</th>
<th>bad planer spots</th>
<th>small knotholes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>□</td>
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<td>□</td>
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<td>8</td>
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</tr>
</tbody>
</table>

4 very small knots, <5 mm permissible
5 permissible if isolated
6 < 30 x 3 mm permissible
7 < 10 mm permissible
8 < 50 x 2 mm permissible
Absorber layer and acoustic profile

Acoustic absorber
Wooden and acoustic strips in different arrangements are placed in the intermediate layer of the acoustic panels in transverse direction to the visible ledge profile:

<table>
<thead>
<tr>
<th>Type</th>
<th>Explanation</th>
<th>3S-33</th>
<th>3S-62</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A70G</td>
<td>Standard absorber 70% absorber portion in the intermediate layer Absorber material: Wood fibre, slightly water-repellent (make: Gutex Thermosafe, natureplus certificate no 0104-0710-012-4)</td>
<td>✓</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>A50G</td>
<td>Standard absorber 50% absorber portion in the intermediate layer Absorber material: Wood fibre, slightly water-repellent (make: Gutex Thermosafe, natureplus certificate no 0104-0710-012-4)</td>
<td>□</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>R0</td>
<td>’Reflecting’ layer: Either no absorber has been inserted here or the intermediate layer has no absorbing effect since the joints of the fair-faced layer do not reach into the absorber. Slightly increased element weight.</td>
<td>□</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Acoustic profile
The surface layer will be furnished with a fine ledge profile. Acoustically effective absorber material is integrated behind the joints (Standard: wood fibre).

<table>
<thead>
<tr>
<th>Profile type</th>
<th>Gap width $b_F$</th>
<th>Ledge width $b_L$</th>
<th>No of ledges per element</th>
<th>Ball-impact resistance</th>
<th>Hardly inflammable</th>
</tr>
</thead>
<tbody>
<tr>
<td>625-12-4</td>
<td>4 mm</td>
<td>12.4 mm</td>
<td>38</td>
<td>✓</td>
<td>□</td>
</tr>
<tr>
<td>625-19-6</td>
<td>6 mm</td>
<td>19.0 mm</td>
<td>25</td>
<td>✓</td>
<td>□</td>
</tr>
<tr>
<td>625-25-8</td>
<td>8 mm</td>
<td>24.9 mm</td>
<td>19</td>
<td>✓</td>
<td>□</td>
</tr>
<tr>
<td>625-21-4</td>
<td>4 mm</td>
<td>21.0 mm</td>
<td>25</td>
<td>✓</td>
<td>□</td>
</tr>
<tr>
<td>625-nature-4</td>
<td>4 mm</td>
<td>ca. 12-25 mm</td>
<td></td>
<td>✓</td>
<td>□</td>
</tr>
</tbody>
</table>

Other profiles on request

Important note on selecting the acoustic profile
The profile with 625-12-4 should be avoided on large continuous wall surfaces in rather small rooms because this may result in optical irritations. Remedy: Pictures, darkly-treated partial areas, interruption through areas without relief pattern, choice of profile 625-21-4. The ledge profile with 8 mm gap can be disadvantageous for the wall because the joints become transparent depending on light conditions and any staggered transverse layers would be seen.
**Surface**

**Glaze / priming paint**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transparent primer for light protection</strong>&lt;br&gt;(Böhme SunCare 800 LT)</td>
<td>Transparent primer for UV-protection against darkening of the wood. Can be used in the interior (not classified as toxic). The product is based on water-soluble light protection agent and must be cured by customers against the effects of water using glaze or wax in cases where washout cannot be excluded. Final treatment with, for example, transparent matte varnish. <strong>Caution: Must be treated again if a touch up should be necessary.</strong></td>
</tr>
</tbody>
</table>

**Final treatment**

Final treatment of the acoustic panels is possible ex works **up to 5 m length of element. Minimum quantity 25 elements** per colour shade.

Please note the extended delivery time!

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Varnish, transparent, with transparent primer for light protection</strong></td>
<td>Factory final treatment using matte transparent varnish including transparent primer for light protection against darkening.</td>
</tr>
<tr>
<td><strong>Varnish whitish, translucent W10</strong></td>
<td>Factory final treatment with white pigmented varnish. The wood grain shines through.</td>
</tr>
<tr>
<td><strong>Varnish white, covering W20</strong></td>
<td>Factory final treatment with white varnish. <strong>Note: Surfaces may show uneven hues under unfavourable lighting conditions.</strong></td>
</tr>
<tr>
<td><strong>Varnish coloured, in RAL/NCS colour shades</strong></td>
<td>Factory final treatment with coloured varnish upon consultation. <strong>Note: Surfaces may show uneven hues under unfavourable lighting conditions.</strong></td>
</tr>
<tr>
<td><strong>B1 varnishes</strong></td>
<td>Hardly inflammable variants of varnishes (B1) in all colours and transparent to option.</td>
</tr>
</tbody>
</table>

**Light reflection properties of the surfaces**

<table>
<thead>
<tr>
<th>Reflectance measurement to DIN 5036 Part 3</th>
<th>with transparent UV protection SunCare 800 LT</th>
<th>As before but darkened (without UV protection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spruce without knots: A quality ('Trend') Fi</td>
<td>Closed surface 69.5 %</td>
<td>Acoustic profile 625-12-4 approx. -7 %</td>
</tr>
<tr>
<td>Silver fir, knotless, patterned Wt (L)</td>
<td>63.5 %</td>
<td>approx. -5 %</td>
</tr>
<tr>
<td>Silver fir, knotless, plain Wt (S)</td>
<td>67.2 %</td>
<td></td>
</tr>
</tbody>
</table>

**Ball-impact resistance**

The ball-impact resistance for LIGNO Akustik light acoustic elements in use on a wall or ceiling has been confirmed through laboratory testing using various installation variants. The test on the LIGNO Akustik light elements was conducted with batten profile (4 mm joint width / 12 mm batten width) at the Stuttgart MPA material testing laboratory acc. to DIN 18032-3:1997-04. The test certificate can be requested from Lignotrend.

There are tested substructures for **force-reducing impact walls.**
Element configuration and designation

Available lengths and absorber types

<table>
<thead>
<tr>
<th>Type</th>
<th>Element lengths</th>
<th>Type of absorber layer</th>
<th>Fire class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard 2,920 mm</td>
<td>Individual 2,400 to 8,000 mm</td>
<td>A50G</td>
</tr>
<tr>
<td>3S-33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3S-62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Individual lengths and some surface finishes are not available for every type, see matrix above, as well as page 11.

Element designation

1. Form of base element
   3S 3-layer element, four-batten backlayer, absorber open on back
   The leading number states the number of layers, the letter describes the design of the back.

2. Height
   xx Height information in mm
   Note: Individual lengths and some surface finishes are not available for every type, see matrix above, as well as page 11.

3. Design of absorber layer
   e.g. A70G
   The leading letter indicates the absorption property [A = absorbing/R = reflecting], the following number states the approximate percentage of absorber area proportion in the intermediate layer and the ending letter designates the absorber material.
   Note: Not every element can be combined with every absorber layer, see table on page 13.

4. Type of wood surface
   e.g. Wt (L)
   The LIGNO Acoustic light panels receive a surface made from real wood. The short name indicates the type of wood and sorting used.
   Available surface finishes from page 12.

5. Acoustic profile
   625-19-6 6 mm gap, 19 mm ledge
   This information specifies the ledge dimensions of the acoustic profile: The leading number states the element width, the second one: the width of the ledge, the third number: the gap width.
   See page 13 for available surface finishes.

Example: LIGNO Acoustic light 3S-33 / A70G, Wt (L), 625-19-6

6. Option: Surface treatment for softwood surfaces (extended delivery time)
Online room acoustics calculation

On the website, www.lignotrend.com/raumakustik-rechner, there is an online calculation tool available for examining the room acoustic properties of various types of rooms.

Note: The analysis software only determines the necessary absorber area for the cubage described and does not provide information about the arrangement of the absorber areas in the room. The results should therefore be regarded as orienting and they do not substitute the evaluation of the building project through a person (e.g. acoustics expert engineer) competent in room acoustics.

With all data completed, the requirements (reverberation period or noise level decrease) relevant for the usage chosen will be displayed in a graph as well as the calculated properties of the room.

A note will indicate compliance / non-compliance with the standard requirement.

The acoustics expert engineer will assist in evaluating the calculation results as well as any over/underruns.

The graph represents the absorption characteristics of the absorber chosen via the acoustically relevant frequencies.

Characteristic absorption values of tested configurations

The following pages represent various installation variants with the laboratory-tested characteristic values. Please contact our technical advisers for the detailed test certificates if required or download them from the Internet under www.lignotrend.com.

Legend to the representations on the following pages:

- Weighted sound absorption coefficient acc. to DIN EN ISO 11654.
- Sound absorption class
- Ledge width / gap width
- Gap depth
- Absorber thickness
- Cavity height behind element

1. Selection of the regime to be based on calculation and usage of the examined room.
2. Description of the geometry by specification of dimensions or volume.
3. Declaration of size and properties, as well as condition of the room envelope’s surfaces. The computing tool checks the data for plausibility.
4. Information on furnishing.
5. Arrangement of up to three different absorbers.
6. Selection of the absorbers and substructure if necessary.

- Forecast values based on test results on type 3S-28/A720
- Measured data are transferable, in very good approximation to this profile, due to the same opening degree
- Substantial improvement to be expected for low-frequency absorption with the cavity behind the element (cf. comparison of configurations 2.1 and 2.4)
- Forecast values based on the smaller opening of this profile
Acoustic absorption
Panelling with type 3S-33

1.1 LIGNO Acoustic light 3S-33/A70G
Directly installed without cavity.

<table>
<thead>
<tr>
<th>$\alpha_w$</th>
<th>SAK</th>
<th>$b_x/b_y$</th>
<th>$t_x$</th>
<th>$h_x$</th>
<th>$h_y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,30</td>
<td>D</td>
<td>12/4</td>
<td>16</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>ca. 0,20</td>
<td></td>
<td>21/4</td>
<td>16</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>ca. 0,25</td>
<td></td>
<td>nature</td>
<td>16</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

Test report: 6827-10-2²
(dashed line: nature-profile, without test report)

1.2 LIGNO Acoustic light 3S-33/A70G
Installation on 30 mm battens.

<table>
<thead>
<tr>
<th>$\alpha_w$</th>
<th>SAK</th>
<th>$b_x/b_y$</th>
<th>$t_x$</th>
<th>$h_x$</th>
<th>$h_y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,60</td>
<td>C</td>
<td>12/4</td>
<td>16</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>ca. 0,35</td>
<td></td>
<td>21/4</td>
<td>16</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>ca. 0,45</td>
<td></td>
<td>nature</td>
<td>16</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

Test report: 6827-10-2²
(dashed line: nature-profile, without test report)

1.3 LIGNO Acoustic light 3S-33/A70G
Installation 200 mm suspended.

<table>
<thead>
<tr>
<th>$\alpha_w$</th>
<th>SAK</th>
<th>$b_x/b_y$</th>
<th>$t_x$</th>
<th>$h_x$</th>
<th>$h_y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,80</td>
<td>B</td>
<td>12/4</td>
<td>16</td>
<td>20</td>
<td>200</td>
</tr>
<tr>
<td>ca. 0,55</td>
<td></td>
<td>21/4</td>
<td>16</td>
<td>20+60</td>
<td>200</td>
</tr>
<tr>
<td>ca. 0,65</td>
<td></td>
<td>nature</td>
<td>16</td>
<td>20+60</td>
<td>200</td>
</tr>
</tbody>
</table>

Test report: 6827-10-2²
(dashed line: nature-profile, without test report)

1.4 LIGNO Acoustic light 3S-33/A70G
Installation 250 mm suspended, backed with 60 mm wood-fibre mat (make: Gutex Thermoflex).

<table>
<thead>
<tr>
<th>$\alpha_w$</th>
<th>SAK</th>
<th>$b_x/b_y$</th>
<th>$t_x$</th>
<th>$h_x$</th>
<th>$h_y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,80²</td>
<td>B</td>
<td>12/4</td>
<td>16</td>
<td>20+60</td>
<td>190</td>
</tr>
<tr>
<td>ca. 0,55</td>
<td></td>
<td>21/4</td>
<td>16</td>
<td>20+60</td>
<td>200</td>
</tr>
<tr>
<td>ca. 0,65</td>
<td></td>
<td>nature</td>
<td>16</td>
<td>20+60</td>
<td>200</td>
</tr>
</tbody>
</table>

Test report: 6599-09-1²,³

1.5 LIGNO Acoustic light 3S-33/A70G
Installation on 30 mm battens, backed with 30 mm hemp fibre mat (make: Thermo-Hanf Premium).

<table>
<thead>
<tr>
<th>$\alpha_w$</th>
<th>SAK</th>
<th>$b_x/b_y$</th>
<th>$t_x$</th>
<th>$h_x$</th>
<th>$h_y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,80³</td>
<td>B</td>
<td>12/4</td>
<td>16</td>
<td>20+30</td>
<td>30</td>
</tr>
<tr>
<td>ca. 0,55</td>
<td></td>
<td>21/4</td>
<td>16</td>
<td>20+30</td>
<td>30</td>
</tr>
<tr>
<td>ca. 0,65</td>
<td></td>
<td>nature</td>
<td>16</td>
<td>20+30</td>
<td>30</td>
</tr>
</tbody>
</table>

Test report: 6599-09-1²,³

1.6 LIGNO Acoustic light 3S-33/R0
Any installation, because gaps are not slotted through and no absorber integrated.

<table>
<thead>
<tr>
<th>$\alpha_w$</th>
<th>SAK</th>
<th>$b_x/b_y$</th>
<th>$t_x$</th>
<th>$h_x$</th>
<th>$h_y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,10</td>
<td>-</td>
<td>12/4</td>
<td>16</td>
<td>-</td>
<td>30</td>
</tr>
</tbody>
</table>

Test report: P-BA 181/2004¹

see page 16 for legend and footnotes
Acoustic absorption
Panelling with type 3S-62

2.1 LIGNO Acoustic light 3S-62/A50G
Direct installation without clearance to the background (cavity only between battens on the rear side).

<table>
<thead>
<tr>
<th>αw</th>
<th>SAK</th>
<th>b₁/b₂</th>
<th>t₁</th>
<th>h₂</th>
<th>h₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.70</td>
<td>c</td>
<td>12/4</td>
<td>21</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

Test report: P-BA 250/2004

2.2 LIGNO Acoustic light 3S-62/A50G
Direct installation without clearance to the background. Cavity only between battens on the rear side, insulated with mineral fibre compressed from 40 to 25 mm (make: Rockwool Sonorock).

<table>
<thead>
<tr>
<th>αw</th>
<th>SAK</th>
<th>b₁/b₂</th>
<th>t₁</th>
<th>h₂</th>
<th>h₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
<td>c</td>
<td>12/4</td>
<td>21</td>
<td>20+</td>
<td>30/25</td>
</tr>
</tbody>
</table>

Test report: P-BA 249/2004

2.3 LIGNO Acoustic light 3S-62/A50G
Direct installation without clearance to the background. Cavity only between battens on the rear side, insulated with hemp fibre mat compressed from 30 to 25 mm (make: Thermo-Hanf Premium).

<table>
<thead>
<tr>
<th>αw</th>
<th>SAK</th>
<th>b₁/b₂</th>
<th>t₁</th>
<th>h₂</th>
<th>h₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.65</td>
<td>c</td>
<td>12/4</td>
<td>21</td>
<td>20+</td>
<td>30/25</td>
</tr>
</tbody>
</table>

Test report: 6435-09-01 V-5

2.4 LIGNO Acoustic light 3S-62/A50G
Installation 150 mm suspended.

<table>
<thead>
<tr>
<th>αw</th>
<th>SAK</th>
<th>b₁/b₂</th>
<th>t₁</th>
<th>h₂</th>
<th>h₃</th>
<th>h₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.70</td>
<td>c</td>
<td>12/4</td>
<td>21</td>
<td>20</td>
<td>175</td>
<td></td>
</tr>
</tbody>
</table>

Test report: 6435-09-01 V-3

2.5 LIGNO Acoustic light 3S-62/A50G
Installation 150 mm suspended, backed with 30 mm hemp fibre mat (make: Thermo-Hanf Premium).

<table>
<thead>
<tr>
<th>αw</th>
<th>SAK</th>
<th>b₁/b₂</th>
<th>t₁</th>
<th>h₂</th>
<th>h₃</th>
<th>h₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.70</td>
<td>c</td>
<td>12/4</td>
<td>21</td>
<td>20+</td>
<td>30</td>
<td>145</td>
</tr>
</tbody>
</table>

Test report: 6435-09-01 V-6

2.6 LIGNO Acoustic light 3S-62/A50H
Divergent integrated absorber type A50H (make: Herakustik). Direct installation without clearance to the background (cavity only between battens on the rear side).

<table>
<thead>
<tr>
<th>αw</th>
<th>SAK</th>
<th>b₁/b₂</th>
<th>t₁</th>
<th>h₂</th>
<th>h₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50</td>
<td>c</td>
<td>12/4</td>
<td>21</td>
<td>25</td>
<td>17</td>
</tr>
</tbody>
</table>

Test report: P-BA 209/2009

see page 16 for legend and footnotes
### Acoustic absorption (Ceiling canopies)

**Element weights**

<table>
<thead>
<tr>
<th>Type</th>
<th>3S-33</th>
<th>3S-62</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width covered</td>
<td>625 mm</td>
<td>625 mm</td>
</tr>
<tr>
<td>Length covered</td>
<td>Standard</td>
<td>2,920 mm</td>
</tr>
<tr>
<td></td>
<td>Individual / continuous</td>
<td>2,400 to 8,000 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Softwood surface, all profiles except 625-21-4</td>
<td>9,2 kg/element (16,8 kg/m²)</td>
</tr>
<tr>
<td></td>
<td>Oak surface</td>
<td>+1,0 kg/element (+1,8 kg/m²)</td>
</tr>
<tr>
<td></td>
<td>Profile 625-21-4</td>
<td>+0,9 kg/element (+0,9 kg/m²)</td>
</tr>
<tr>
<td></td>
<td>Absorber R0 instead of A70G / A50G</td>
<td>+2,7 kg/element (+4,9 kg/m²)</td>
</tr>
<tr>
<td></td>
<td>Absorber A50H instead of A50G</td>
<td>+1,0 kg/element (+1,8 kg/m²)</td>
</tr>
<tr>
<td></td>
<td>Surface B-s2,d0 / B1</td>
<td>+0,4 kg/element (+0,8 kg/m²)</td>
</tr>
</tbody>
</table>

(Values in brackets indicate the weight per element in standard length 2.92 m)
**Type 3S-33**

**Installation**

1. Attach substructure, level exactly horizontally
   - Direct installation: Use fasteners suitable for the load-bearing wall/ceiling, line if necessary.
   - Suspended installation: With system suspending brackets [e.g. two-piece metal suspending bracket Nonius].

2. First row of elements
   - Prepare openings and cuttings as well as components to build in on the ground.
   - A shadow gap to the adjacent surface will elegantly compensate minor dimensional tolerances.
   - Fasten elements using the connectors chosen [see page 7].
   - Also insert a piece of plywood tongue at the elements’ front so that the surface is flush.

3. Further element rows
   - Insert plywood tongue at the elements’ side
   - Fasten elements
   - Installation is mostly carried out in the stretching bond:
     The piece to start of the next row is the offcut of the previous row’s last element.

**Suspended installation**

- Use of common suspension systems in combination with squared timber
  (in the case of Nonius type suspending brackets, use lower part for screw-on installation on wood).
Cutting

Straight sections using circular saw and rail.

Look out for sharp tools!

Making openings

- Securing battens against breaking off:
  Insert wooden stripes loosely into the area to be drilled:
  Stripes in same width as the gaps, approx. 16 mm high.
- Making the hole
  using a drill bit tube or jigsaw.

Suitability for installation in wood panelling has to be checked with built-in components, especially electric components such as lamps.

Observe manufacturer’s specifications!

Braced installation

Stretching bond

- The offcut of the last element in a row is being used as the first element in the next row.

Optimising the appearance (particularly with wall panelling and profiles with wide gaps)

Bei ungünstigem Lichteinfall können die hinter den Deckleisten liegenden Querlagen erkennbar sein.

Transverse layers behind the fair-faced ledges can be seen in unfavourable incidence of light.

If it is desired that the transverse layers of adjacent element rows are aligned to each other, cut off a short piece from the first element in each case, when installing the next element row. This is how one will return back to the transverse layer grid.

Cut the first element per row in length in such a way that the transverse layers are aligned with those of the preceding row.
### Type 3S-33 Termination

In order to achieve a termination visually appealing termination on free edges (e.g. openings, support penetrations), **one-ply-panel material of the same type of wood as the element view** is available from Lignotrend, on request also ready-to-use edge battens in identical surface treatment on request.

Commercially available metal profiles can alternatively be used as edge finish.

<table>
<thead>
<tr>
<th>Proposal 1: Rebated terminal batten</th>
<th>Proposal 2: Rebated terminal batten</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Longitudinal edge</strong></td>
<td><strong>Longitudinal edge</strong></td>
</tr>
<tr>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Face edge</strong></td>
<td><strong>Face edge</strong></td>
</tr>
<tr>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>

(Representations exemplary for profile 625-12-4)

In this example, the terminal batten is laterally butt-joined. It is fastened e.g. using nails or small clamps.

**Notes:**
- Observe the different batten rebate geometry on longitudinal and face edge!
- One will need battens with half and full gap width as rebate width.

<table>
<thead>
<tr>
<th>Proposal 3: Metal profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Longitudinal and face edge</strong></td>
</tr>
<tr>
<td><img src="image5" alt="Diagram" /></td>
</tr>
</tbody>
</table>

(Representations exemplary for profile 625-12-4)

A planed batten with a precisely defined distance from the element edge is mounted onto the elements’ back as a reference edge for the terminal batten.

In this way, the **identical joint and batten width like the elements’ surface** can be produced on the termination of the visible face.

**Notes:**
- Observe dimensional differences btw. lateral edge and face edge for the backside batten (Side: 5 mm, face 3 mm).
- We recommend arranging the last substructure batten on such edges (not shown) recessed to the last but one ledge of the rear element layer by approx. 20 cm.

<table>
<thead>
<tr>
<th>Proposal 3: Metal profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>An L-profile</strong></td>
</tr>
<tr>
<td><img src="image6" alt="Diagram" /></td>
</tr>
</tbody>
</table>

An L-profile will be mounted as termination.

**Notes:**
- The joint visible will become smaller at the frame.
- Only feasible if fixing from above is possible (e.g. with pre-assembled sail).
### Type 3S-33

**Inspection flaps**

**Inspection flap, screwed on, for rare opening**

Simple inspection flap, made from standard elements:
- Opening width = element width, opening length arbitrary
- Leave out desired opening when installing the panelling.
- Fit in the inspection flap, cut off the wooden stripe behind the groove on elements with groove and tongue, fix with a strap as a protection from falling down.
- Insert flap with plywood tongue on one side and close it using a special screw 3.2 x 60 in the acoustic gap on the other second side.

**Inspection flap, loosely inserted**

Simple inspection flap, made from standard elements:
- Opening width = element width minus width of substructure, opening length as requested, max. 1000 mm
- When installing the panelling, cut out desired opening to the desired opening size.
- Fit in the inspection flap, attach battens projecting some centimetres in length in both directions, onto the two middle rear-side ledges of the element, fix with a strap as a protection from falling down.
- Insert element, secure in the acoustic gaps through screw fitting of the load-bearing battens.

**Factory-finished inspection flap with lock, for frequent opening**

Pre-assembled inspection flap elements with hinge and lock in acoustic gap look, available from Lignotrend:
- Sturdy, visible metal rails on two sides
- Opening width = approx. 550 mm
- Opening length (standard) = 625 mm, individual opening lengths on request
- Cut out desired opening when installing the panelling
- Fasten in the acoustic gap of the edging strip using special screws 3.2 x 60
**Type 3S-33**

**Special application fields**

**Impact wall**

We developed an impact wall construction for LIGNO Acoustic light that guarantees force reduction as required for sports halls (cf. **BAGUV requirements specifications for impact protection** – German Federal Association of Public-sector Accident Insurances e.V.). For this purpose, a multilayer substructure (brace and counterbrace configuration) is made from strips of Multiplex panels.

The effectiveness was tested at the MPA material testing laboratory in Stuttgart (test certificate no 902 1102 000-1/Sc/Whr): The demanded minimum force reduction of 60% was greatly surpassed with values of up to 85%.

In analogy, there is a test for surface not absorbing acoustically using a partly slit three-ply-panel (d= 19 mm) as panelling (test certificate no 902 1102 000-2/Sc/Whr).

---

1st layer: **Horizontal battens** from Multiplex panel strips 50 mm x 18 mm on support block 50 mm x 50 mm, thickness min. 18 mm or [for thicker wall constructions] vertical support batten, pre-drilled in each case

- **Fastening** depending on the base, with one screw per block, e.g. 6 x 90 in plastic dowel 8 x 40
- **Battens’ vertical grid:** e= 625 mm
- **Support pad horizontal grid:**
  - Type 3S-33: f= 601 mm
  - Type 3S-62: f= 625 mm
- **Observe distance of the first block to the adjacent wall:**
  - a= 110 mm

2nd layer: **Vertical battens** from Multiplex panel strips 50 mm x 18 mm, mount offset from support blocks by f/2

- **Fastening with two screws 4 x 35 per crossing point**
- **Horizontal grid:**
  - Type 3S-33: f= 601 mm
  - Type 3S-62: f= 625 mm

**Impact wall panelling**

- Prepare openings, cuttings and components to build in on the ground.
- Cut the element edge of the first element 1 of the row such that the element begins with a wood transverse layer in full width (in this way, the transverse layers of the elements will always be directly above the vertical battens of the substructure).
- **Mount panels without plywood tongue in this case!** Also observe the installation instructions on the panel types, please!

**Horizontal section**

18 x 18 x 18 Support block or batten with screw 6 x 90, for example, using plastic dowels d= 8 mm suitable for concrete

2 screws 4 x 35 per crossing point
Type 3S-33
Special application fields

Cuttings for grid ceilings
The LIGNO Acoustic light 3S-33 panels are available pre-cut for the purpose of inserting them into grid ceilings (e.g. from Donn profiles DX 24).

<table>
<thead>
<tr>
<th>Width</th>
<th>613 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>613 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>9.1 kg/m² approx. 3.5 kg/panel</td>
</tr>
</tbody>
</table>

Other cuttings up to 625 mm in width on request.

Freely suspended acoustic canopies
Assembled canopy for targeted, selective interruption of sound reflection. The load-bearing ceiling will not be thermally decoupled (e.g. when the building uses activation of concrete core).

The canopy consists of 2 LIGNO Acoustic light element strips, optionally one light fixture, aluminium edges and appropriate suspension cables and connection material.

<table>
<thead>
<tr>
<th>Canopy width</th>
<th>1436 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canopy length</td>
<td>1291 mm (in direction of the acoustic ledges)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 22 kg (incl. light fixture)</td>
</tr>
<tr>
<td>Optional light fixture</td>
<td>1 pc. Trilux LUCEO H CDP 128/54 E03</td>
</tr>
<tr>
<td>Fastening</td>
<td>Cables (state required length when ordering), upper and lower brackets, hooks included</td>
</tr>
</tbody>
</table>

Other sizes on request.
### Type 3S-62
#### Installation

1. **Attach substructure, level exactly horizontally**
   - Direct installation: Use fasteners suitable for the load-bearing wall/ceiling, line if necessary.
   - Suspended installation: With system suspending brackets (e.g. two-piece metal suspending bracket Nonius).

2. **First row of elements**
   - Prepare openings and cuttings as well as components to build in on the ground.
   - A shadow gap to the adjacent surface will elegantly compensate minor dimensional tolerances.
   - Fasten crossbar in the thickness of the rear element ribs (A50G: d= 23 mm) to the substructure.
   - Fasten elements with self-drilling, diagonally set screw 5 x 90 to the tongue and special screw 3.2 x 60 in the acoustic gap.
   - Alternatively use two interlocking rebated strips.

3. **Further element rows**
   - Insert elements into groove/tongue joint and fasten at the tongue using a diagonally set screw 5 x 90.
   - With elements in standard length, installation is carried out in the stretching bond: The first element in the next row is the offcut of the last element of the previous row. No bond necessary with individual lengths (continuous).

#### Suspended installation
   - Use of common suspension systems in combination with squared timber, better: Precisely straight U*psi F-120 profile from Lignotrend (when using Nonius type suspending brackets, choose use lower suspender part for screw-on installation on wood).
Type 3S-62: Details

All types: Checklist, invitation to tender

Cutting, installation, details, impact wall

Please orient yourself using the representations of type 3S-33. The details can be analogously transferred to type 3S-62 with corresponding adjustment of dimensions

 ► from page 20

Checklist

Material for panelling

<table>
<thead>
<tr>
<th>Material for panelling</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIGNO Acoustic light acoustic panels</td>
<td>Allow for a reserve in quantity for offcuts.</td>
</tr>
<tr>
<td>Insulating mats</td>
<td>If required, for backing [e.g. hemp, supplier: Lignotrend]</td>
</tr>
<tr>
<td>UV protection “SunCare”</td>
<td>If required, for curing spots that were ground on the building site, supplier: Lignotrend.</td>
</tr>
<tr>
<td>Single-layer panel pieces for termination</td>
<td>In same type of wood as the acoustic panels, supplier: Lignotrend.</td>
</tr>
</tbody>
</table>

Material for simple batten substructure

<table>
<thead>
<tr>
<th>Material for simple batten substructure</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battens</td>
<td>Solid wood, e.g. cross-section 30 / 100, e= 625 mm (type 3S-33) or 40 / 60, e= 800 mm (type 3S-62)</td>
</tr>
<tr>
<td>Dowels and fasteners</td>
<td>Select according to base</td>
</tr>
<tr>
<td>Clamps</td>
<td>For fastening the elements in the acoustic joints (type 3S-33 only), see page 7 for specification</td>
</tr>
<tr>
<td>Screws</td>
<td>As required, e.g. partial-thread drilling screws 3.2 x 60 instead of clamps (type 3S-33, supplier: Lignotrend) or partial-thread drilling screws 5 x 90 (type 3S-62)</td>
</tr>
<tr>
<td>Battens for lining</td>
<td>For fastening the first elements and end elements or in case a lateral section should follow between the rear webs, see cross-section drawings for thickness</td>
</tr>
<tr>
<td>Screws with narrow head</td>
<td>Partial-thread drilling screws 3.2 x 60 for fastening first/end elements in the acoustic gap (supplier: Lignotrend)</td>
</tr>
<tr>
<td>Rebated strip</td>
<td>Alternative for first elements and end elements (type 3S-62 only)</td>
</tr>
<tr>
<td>Nails</td>
<td>For securing the end elements from rebated strips falling down (type 3S-62 only)</td>
</tr>
</tbody>
</table>

Material for higher suspension, e.g. with $U^\psi$ 120

<table>
<thead>
<tr>
<th>Material for higher suspension, e.g. with $U^\psi$ 120</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U^\psi$ F-120 profile</td>
<td>As precisely straight, light timber substructure [source: Lignotrend]</td>
</tr>
<tr>
<td>Suspension system</td>
<td>Commercially available systems, e.g. Nonius suspension or Würth ceiling quick-fixing anchor W-DS.</td>
</tr>
</tbody>
</table>

Material for termination

<table>
<thead>
<tr>
<th>Material for termination</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edge battens with rebate</td>
<td>As per detail selected, available from Lignotrend on request</td>
</tr>
<tr>
<td>Battens, planed</td>
<td>For fastening onto the element rear side as a stop for the edge batten</td>
</tr>
</tbody>
</table>

Tools

<table>
<thead>
<tr>
<th>Tools</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immersion saw with rail (circular saw)</td>
<td>For cutting the elements to size.</td>
</tr>
<tr>
<td>Jigsaw</td>
<td>For internal corners, round cut-outs.</td>
</tr>
<tr>
<td>Hammer drill / rotary hammer</td>
<td>For installation on concrete / masonry.</td>
</tr>
<tr>
<td>Cordless screwdriver</td>
<td>For downlights or similar, battens are inserted into the joint for large holes in order to prevent the battens from breaking away.</td>
</tr>
<tr>
<td>Special bit with extended tip</td>
<td>If screw fitting takes place in the gaps [supplier: Lignotrend]</td>
</tr>
<tr>
<td>Staple gun with special foot</td>
<td>(3S-33 only). See page 7, loan device available from Lignotrend.</td>
</tr>
<tr>
<td>Drill bit tube / Forstner drill, incl. battens in 4, 6 or 8 mm width</td>
<td>Chalk line for marking the positions of the first elements on the substructure in true alignment.</td>
</tr>
<tr>
<td>Chalk line / spirit level / Line laser</td>
<td>For touching up fouling and re-application of sanded off UV protection glaze.</td>
</tr>
<tr>
<td>Sanding paper / brush</td>
<td>We recommend wearing gloves during installation to avoid contamination.</td>
</tr>
</tbody>
</table>

Gloves / dust mask

Tender templates

Detailed texts for invitation to tender on all Lignotrend elements with templates for planning and statics, delivery and installation, trimming and subassembly are available in digital form (in GAEB, RTF or PDF format) from the Internet under www.lignotrend.com as well as on our planning CD-ROM.
Processing guidelines

The explanations given below must be adhered to without fail. Please convey the helpful hints also to your customers, developer or follow-up trades!

## Incoming goods

<table>
<thead>
<tr>
<th>Receiving controls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Package undamaged?</td>
<td></td>
</tr>
<tr>
<td>Delivery scope (panels, accessories) correct?</td>
<td></td>
</tr>
<tr>
<td>Wood moisture content 9 ± 2 %?</td>
<td></td>
</tr>
</tbody>
</table>

Please check it immediately upon receipt and contact Lignotrend in case of any discrepancies. Phone +49 (0) 7755-9200-0.

Date / name / signature

Unloading and displacing the packages with a forklift or lifting cart, do not suspend with straps! Use a crane fork when unloading with a crane.

## General Information

Lignotrend products, particularly the acoustic panels come with a top-quality visible surface. Hence, it is essential to pay particular attention to having clean hands or rather wear gloves and do not step on visible surfaces.

Minor longitudinal curvatures of the elements are possible due to minimal differences in wood moisture in the layers and do not represent any deficiency. These curvatures can be compensated by warping against the substructure during installation.

Wood is a natural product and its natural properties, deviations and characteristics therefore always have to be taken into account. In particular, when buying and using it, the purchaser must take into consideration its biologic, physical and chemical properties. The spectrum of natural differences in colour, structure and other qualities within one type of wood is a part of the properties of wood as natural product and does not warrant any complaint or liability claim.

## Storage

Carefully protect the elements using suitable covering material against: Moisture of any kind (rain, fog, splash water, snow), wind as well as sun (UV radiation). Store pallets levelled and on clean squared timber. Because of the risk of the formation of condensate beneath the packaging foil:

Storage in dry, closed buildings only!

## Processing

Prior to processing, the elements should – for acclimatisation purposes, for several days – be stored in the climate that will prevail in the room later on. Failure to comply may, for example, cause gaps to form on the frontal element butt.

Please orient yourself by the details described in this documentation during installation. Your Lignotrend technical adviser will be at your disposal for checking an individual, detailed solution in cases where you should have deviating basic conditions in your project. Industrial safety has top priority. Therefore, meet the standard safety precautions with regard to working!

## Disposal

Waste released during processing of Lignotrend elements can be disposed of like other waste wood, packaging material (foils and wood) must be disposed of by the client or by the processing party according to the local law governing waste (AbfR).

## Cleaning and maintenance

Simple vacuum-cleaning of the visible surface using a brush attachment is absolutely sufficient. If that should prove insufficient, wiping with a damp cloth is possible but without any detergents! One should brush and not sand if there is a high dirt accumulation. Care must be taken with surfaces that have been treated with a UV protection: Colour differences must be anticipated in this case – contact us.

## Expert advice

Do you have any questions about planning, invitation to tender or processing? Do you require a sample piece? Do you need an individual quote? Contact the nearby technical adviser: www.lignotrend.com/consultants