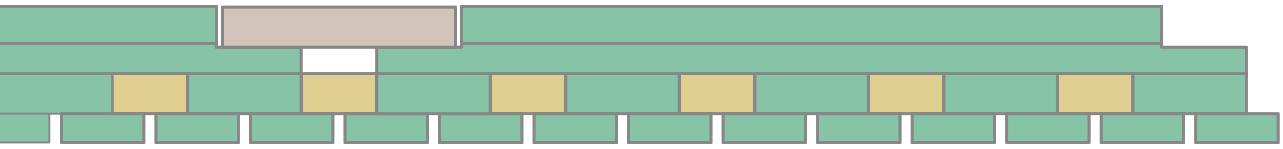
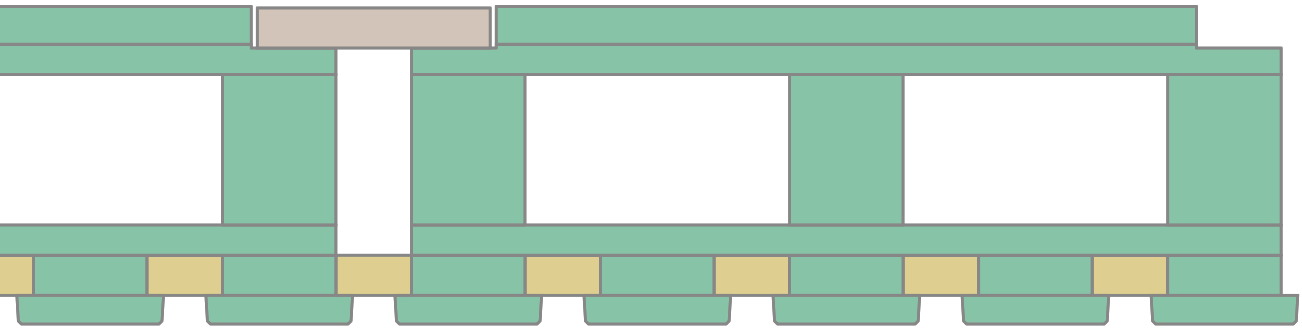
LIGNO® Acoustic classic-x

Technical Data



Configurable cross-laminated timber
solid element for roof components



Configurable cross-laminated timber
box element for roof components

LIGNO®
Configurable CLT

Contents

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LIGNO TREND®
For sustainable building in timber.

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subject to modifications.

Components with LIGNO® Acoustic classic-x
Introduction

Load-bearing roof slab with thermal insulation

In both **flat** and **pitched roofs**, LIGNO® cross-laminated timber, as an area-forming element with a visible surface, acts as a load-bearing panel and a statically stiffening plate in one ▶ page 13. The supporting structure is simple: In hall roofs, the element strips lie directly on the beam construction without purlins; in smaller buildings they usually lie directly on the walls, either parallel to the roof ridge or in the direction of the roof pitch.

The latest generation of the roof elements from Lignotrend is flexibly configurable for individual requirements ▶ **www.lignotrend.com/konfigurator**. LIGNO® Acoustic classic described in this document is selected if the surface shall show wide strips. The LIGNO® Block element line is available for more delicate slat surfaces. ▶ **see separate data sheet.**

The elements have high dimensionally stable: One or more transverse layers in the element make it tolerant to construction-related change of wood moisture – preventing deformations that are typical for wood.

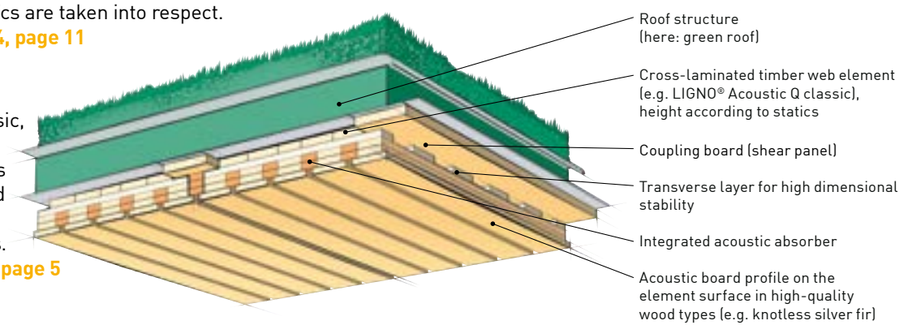
Visible surface, cutting to size, pipes and cables

The production of the roof elements with real wood visual quality is available in several alternatives, no subsequent interior finishing necessary. Knotless silver fir is unique. ▶ page 6

Openings, e.g. for installing luminaires, can be prepared ex works ▶ see separate surfaces data sheet.
With the LIGNO® Acoustic Q3 classic variant, conduits, cables and even ventilation ducts can be pre-installed.

Thermal insulation

Also in flat roofs a part of the thermal insulation can be installed in cavities if the laws of building physics are taken into respect.
Building physics ▶ page 4, page 11

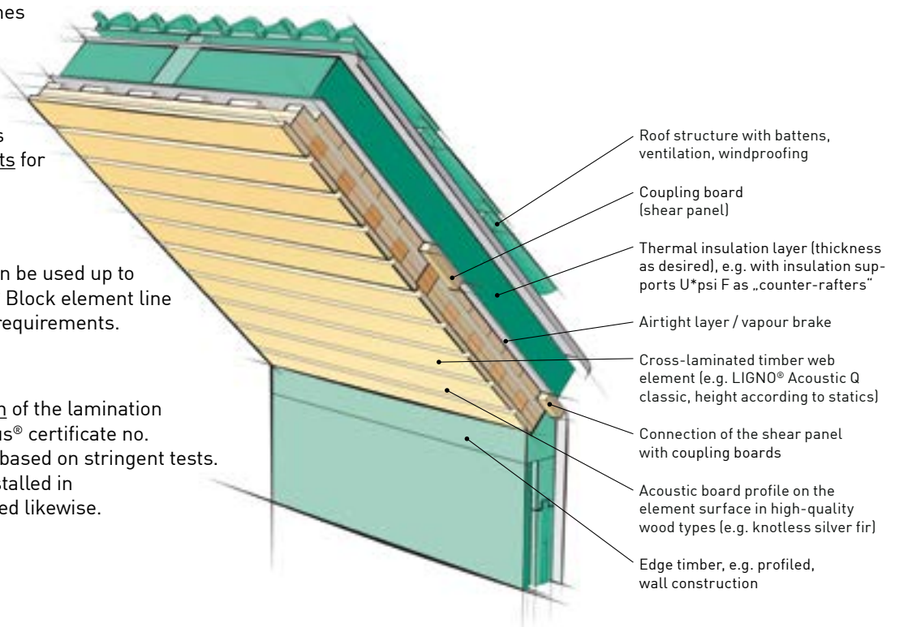


Room acoustics

With LIGNO® Acoustic classic, acoustic absorbers are already integrated ex works and reduce noise levels and reverberation.
The visible layer shows gaps.
Acoustic profiles ▶ from page 5

Span

Architectural design becomes flexible due to free spans. Elements can be prepared in the factory for local reinforcements and hidden joists. Large cross-sections are available as BV elements for large spans.



Fire resistance

LIGNO® Acoustic classic can be used up to R30 ▶ page 7. The LIGNO® Block element line is even suitable for higher requirements.

Green building

The harmlessness to health of the lamination is certified by the natureplus® certificate no. 0211-0606-014-1, which is based on stringent tests. The wood fibre material installed in acoustic elements is certified likewise.

Configuration of the element height
Load-bearing capability

Element height (direct load-capacity verification)

With the **LTB-x dimensioning software**, a configuration can be created with realistic pre-dimensioning and, later, the complete verifiable proof can be done.
Download at
▶ **www.lignotrend.com/ltb**

For the so-called „**hot dimensioning**" (fire resistances up to R30), a second, **separate verification** is to be carried out after choosing the fire resistance in which the theoretical residual cross-section is taken into account.

More comprehensive options with regard to static systems as well as the load arrangement are offered by version of the **DC-Statik** software from Dietrich's that was specially adapted to LIGNO® cross-laminated timber in spring 2021.
▶ **www.lignotrend.com/dc-statik**

Shear panel´s load-bearing ability

The **statically effective plate** is formed by coupling the element strips with coupling boards.
Softwood coupling boards (at least C24, cross-section 154 mm x 26.5 mm) are delivered as standard. They are installed on site, for example with clamps. In the case of higher stresses, they can be replaced by LVL panel strips, for example. Additional stiffening boards or diagonals are usually not necessary!

A static verification of the plate is inevitable.

▶ Characteristic values page 13

Insualtion
Configuration of the cavties

Thermal insulation

With the box element LIGNO® Acoustic Q3 classic-x in the configurations listed below, the cavities can ex works be filled with **thermal insulation** in order to reduce the height of the overall component. Since no vapour barrier is arranged on the warm side of the element due to the wood surface, attention must in particular be paid to the moisture balance in the construction. For thermal insulation and vapour values see ▶ page 11

When used in non-ventilated flat roof constructions, the building physics must be carefully considered, especially if - due to the element filling - more than 1/3 of the thermal insulation is to be placed inside of the vapour barrier that lies itself on the cold side of the element. A building physics simulation is then necessary.

		150	170	190	210	230	250	270	290	310	330	350-450
_s0 unfilled cavity		■	■	■	■	■	■	■	■	■	■	■
_smw cavity with mineral wool mats	**_z0_p0**	■	■	■	■	■	■	■	■	■	■	■

Configuration of the element surface
Acoustic profiles, absorber _al40g

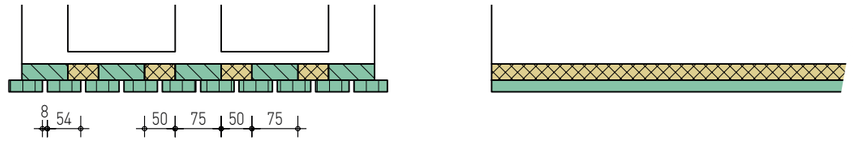
Sound-absorbing board profiles

To achieve a sound-absorbing effect of the interior element surface it is profiled with joints ex works. The layer located behind is fitted with an absorber.

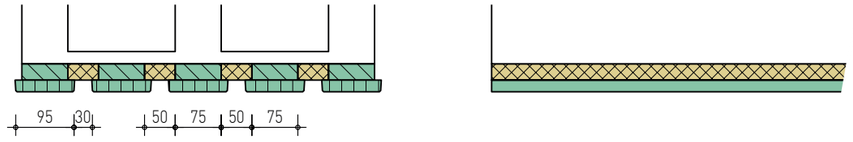
Absorber layer _al40g

with wood fibre acoustic absorber (40% of area)

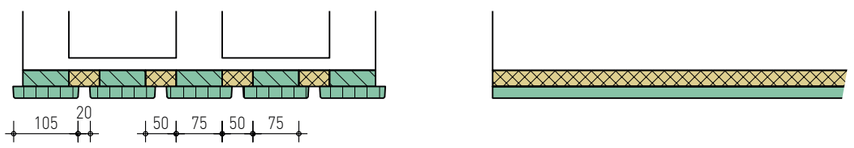
_625-54-8 54 mm stripe, 8 mm gap



_625-95-30 95 mm stripe, 30 mm gap



_625-105-20 105 mm stripe, 20 mm gap



Configuration of the element surface
Wood type, surface treatment

Hight-quality genuine wood surface

With most types of timber, the one-ply-panels used for the visible layer of the elements consist of lamella sections, which are connected lengthwise by finger-joints. Approx. every 2.87 m, the complete elements are coupled by a general butt joint, which is recognisable close up as a fine line over element width of 625 mm.

▶ **The technical data sheet „LIGNO® surfaces“ contains a precise description of the character of the available wood types.**

Silver fir knotless, patterned	**_WTL**	Vivid pattern, variation in brightness and colour
Silver fir knotless, plain	**_WTS**	Like _WTL, but with less variation, finer grain. Limited availability, please enquire about delivery time.
Silver fir knotless, economy	**_WTE**	Like _WTL, but with wood irregularities.
Spruce knotless, plain	**_FIS**	Comparable with _WTS, but very little colour variation
Spruce with knots (A-qual.)	**_FI-ä**	Grade with knots in homogeneous pattern, continuous lamellae without finger-joints
Oak knotless	**_EI**	Vivid pattern, variation in the brightness, lamella joint visible only as a line (horizontal finger joints). Limited availability, please enquire about delivery time.
Larch knotless	**_LÄS**	Vivid pattern, slight variation in brightness
Other types of timber		Should the element soffit be designed with a different type of wood? Please ask a Lignotrend consultant; he will check the feasibility.

Surface treatment

Light-protection primer, transparent	Glaze for light-coloured wood: Transparent UV-protection primer to prevent darkening of the wood. Suitable for interior use (not classified as toxic). Final treatment necessary if washout cannot be ruled out. Make: Adler Lignovit Interior UV 100 LT5.
Other surface treatments	An on-site application is recommended for other final treatments of the surface.

Basic element configuration - box element
Fire resistance R 30

LIGNO® Acoustic Q3 classic_z0_k0

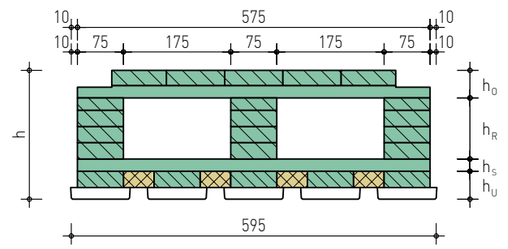
Height	Recomm. maximum length	Upper girder h_O	Web h_R	Dead weight _625-54-8	Dead weight _625-95-30	Dead weight _625-105-20	Cavity	Filling weight at 60 kg/m³
130	≤ 15 m	24,5	40,0	45	44	45	0,011	1
150	≤ 15 m	24,5	33,5	49	48	48	0,022	1
170	≤ 15 m	24,5	53,5	52	51	52	0,034	2
190	≤ 18 m	25	73,5	56	55	56	0,044	3
210	≤ 18 m	25	93,5	60	59	59	0,056	3
230	≤ 18 m	25	113,5	63	62	63	0,067	4
250	≤ 18 m	25	133,5	67	66	67	0,078	5
270	≤ 18 m	25,5	153,5	71	70	70	0,089	5
290	≤ 18 m	25,5	173,5	74	73	74	0,100	6
310	≤ 18 m	60	158,0	89	88	88	0,100	6
330	≤ 18 m	60	178,0	92	91	92	0,111	7
350	≤ 18 m	60	198,0	96	95	96	0,122	7
370	≤ 18 m	80	198,0	100	104	105	0,122	7
390	≤ 18 m	100	198,0	105	114	114	0,122	7
410	≤ 18 m	120	198,0	115	123	124	0,122	7
430	≤ 18 m	140	198,0	133	132	133	0,122	7
450	≤ 18 m	160	198,0	143	142	143	0,122	7
mm		mm	mm	kg/m²	kg/m²	kg/m²	m³/m²	kg/m²

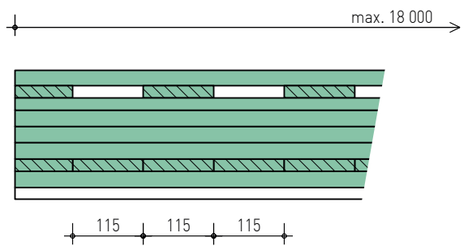
Additional layer **_z0** h_Z - Transversal layer h_S 20 mm

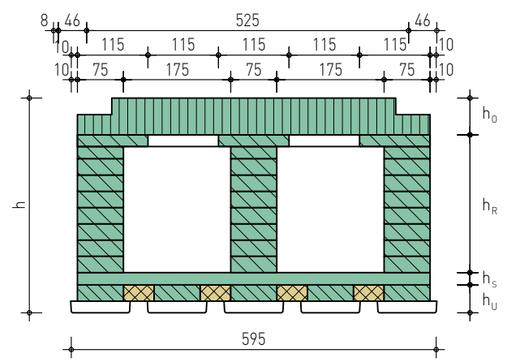
No plus layer **_p0** h_P – Surface h_U 45,5 mm

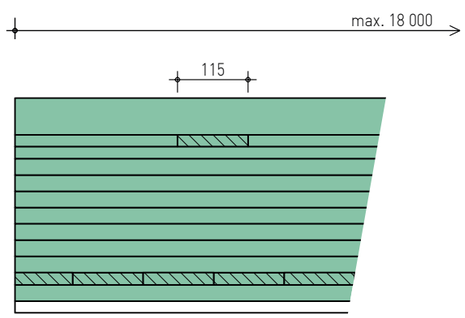
Configuration options

- Visible surface, acoustic profile ▶ from page 5
- Fire resistance up to R 30
- Improvement of the sound absorption ▶ page 13









Basic element configuration - solid element
Visible quality / fire resistance R 0

LIGNO® Acoustic Q classic_z0_k0

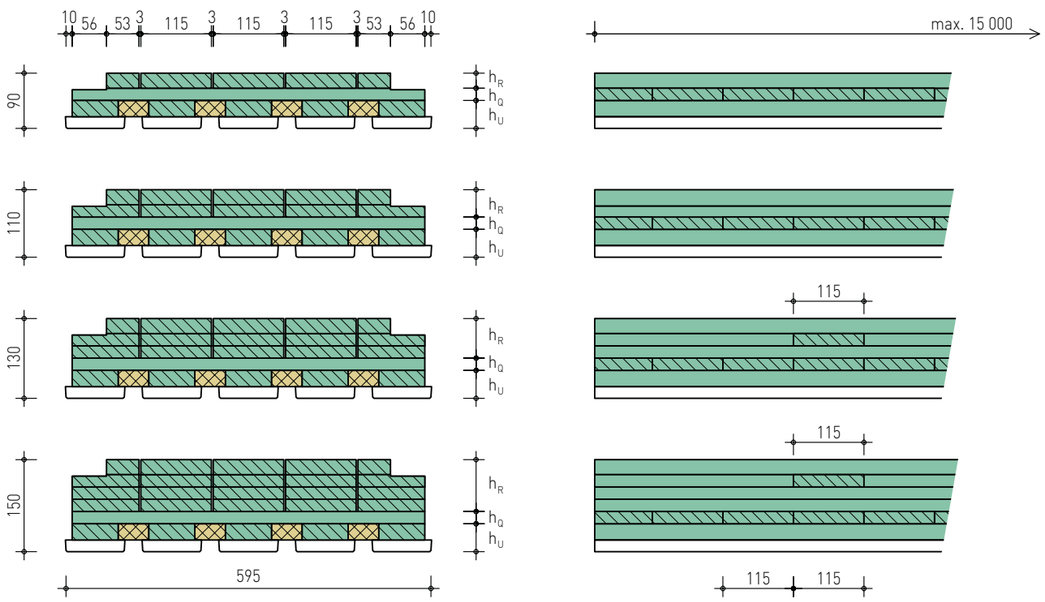
Height	Recomm. maximum length	Upper girder h_O	Web h_R	Dead weight _625-54-8	Dead weight _625-95-30	Dead weight _625-105-20	Cavity
90	≤ 12 m	24,5	0,0	36	35	36	0,000
110	≤ 15 m	24,5	20,0	45	44	45	0,000
130	≤ 15 m	24,5	40,0	55	54	54	0,000
150	≤ 15 m	24,5	60,0	64	63	64	0,000
mm		mm	mm	kg/m²	kg/m²	kg/m²	m³/m²

Additional layer **_z0** h_Z –
No plus layer **_p0** h_P –
Transversal layer h_S 20 mm
Surface h_U 45,5 mm

Configuration options

Visible surface, acoustic profile

▶ from page 5

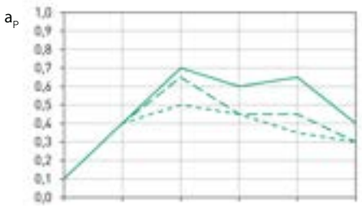


Performance
Acoustic absorption

Key absorption figures

Subsequent interior finishing work for acoustically absorbing suspended ceilings is rendered superfluous because the elements are configured with an acoustic profile, see ▶ page 5. Natural wood fibre material is used as the absorber material. Test reports ▶ www.lignotrend.com

LIGNO® Acoustic Q classic-x
_z0_k0_al40g



No cavities,
limited low-frequency absorption.

Profile	a_W	NRC	SAA	SAK	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
_625-54-8	**0,40**	0,45	0,42	D	0,10	0,40	0,50	0,45	0,35	0,30
_625-95-30	**0,60**	0,60	0,59	C	0,10	0,40	0,70	0,60	0,65	0,40
_625-105-20	**0,45**	0,50	0,48	D	0,10	0,40	0,65	0,45	0,45	0,30

Sound insulation
Requirements

Requirements for the airborne sound insulation of exterior components (examples)

according to DIN 4109

Noise level range (decisive exterior noise level)		Airborne sound insulation $R'_{w,res}$ Office rooms	**Living rooms, hotel rooms, classrooms**	Wards in hospitals
I	56 bis 60 dB	≥ 30 dB	**≥ 30 dB**	≥ 35 dB
II	61 bis 65 dB	≥ 30 dB	**≥ 35 dB**	≥ 40 dB
III	66 bis 70 dB	≥ 35 dB	**≥ 40 dB**	≥ 45 dB
IV	71 bis 75 dB	≥ 40 dB	**≥ 45 dB**	≥ 50 dB
V	76 bis 80 dB	≥ 45 dB	**≥ 50 dB**	[1]
VI		≥ 50 dB	[1]	[1]

[1] The requirements must be defined here on the basis of the local conditions.

according to SIA 181 (2006) [2]

Degree of disturbance due to exterior noise	Requirements for protection against airborne sound D_e Low sensitivity	Medium sensitivity	High sensitivity
low	≥ 22 dB	≥ 27 dB	≥ 32 dB
considerable to very strong	≥ L_r–38 dB (L_r–30 dB)	≥ L_r–33 dB (L_r–25 dB)	≥ L_r–28 dB (L_r–20 dB)
	(Values in brackets apply to the night)		

L_r Assessment level according to the regulation of the Noise Protection Ordinance

[2] The specified values represent the normal requirement, increased requirement in each case 3 dB stricter.

Sound insulation performance
Roof elements

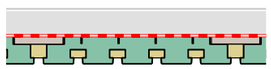
Airborne sound in roof components

Roof components made of LIGNO® achieve good values for the sound insulation value R_w even without cladding on the underside. Only products equivalent in terms of noise-relevant may be used in the structure to these characteristic products specified in the test reports (e.g. density, dynamic stiffness)!

Specified values are laboratory values, **a reserve is therefore to be taken into account in the verification for flanking sound transmission!** The following must be adhered to: existing $R'_w \geq$ required R'_w as well as existing $L'_{n,w} \leq$ required $L'_{n,w}$.

Test reports ▶ **www.lignotrend.com**

Tin roof



Covering	0,8 mm	Aluminium sheet
Insulation	80 mm	Thermal insulation Mineral wool
	5 mm	Bitumen membrane
Load-bearing element	LIGNO® Acoustic Q classic_90 (Dead weight ca. 33 kg/m²)	

without ballasting

e.g. CLT box module
LIGNO® Acoustic Q classic_90
(Dead weight approx. 33 kg/m²)

R_w (C;C_{tr})= **44 dB** (-3;-9)

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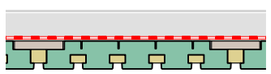


Structure as shown on the left, but with additional 10 mm gypsum fibreboard

without ballasting

e.g. CLT box module
LIGNO® Acoustic Q classic_90
(Dead weight approx. 33 kg/m²)

R_w (C;C_{tr})= **48 dB** (-3;-10)

PB 0010.01-P27_DE

Building physics
Thermal conductivity

LIGNO® Acoustic Q3 classic-x

_z0_k0

Height	Cavity empty R_0	$e\lambda_0$	Cavity insulated R_1	$e\lambda_0$
130	1,025	0,127	1,332	0,098
150	1,075	0,140	1,633	0,092
170	1,109	0,153	1,926	0,088
190	1,139	0,167	2,212	0,086
210	1,160	0,181	2,497	0,084
230	1,178	0,195	2,781	0,083
250	1,194	0,209	3,063	0,082
270	1,211	0,223	3,342	0,081
290	1,222	0,237	3,623	0,080
310	1,387	0,224	3,645	0,085
330	1,399	0,236	3,923	0,084
350	1,410	0,248	4,201	0,083
370	1,575	0,235	4,374	0,085
390	1,737	0,224	4,545	0,086
410	1,899	0,216	4,714	0,087
430	2,059	0,209	4,883	0,088
450	2,218	0,203	5,051	0,089
mm	m²K/W	W/mK	m²K/W	W/mK

LIGNO® Acoustic Q classic-x

_z0_k0

Height	Cavity empty R_0	$e\lambda_0$
90	0,722	0,208
110	0,884	0,170
130	1,045	0,144
150	1,203	0,125
mm	m²K/W	W/mK

The values given were determined in accordance with EN ISO 6946:2003-10 (heat flow upwards). They refer to the component layer „filled or unfilled roof element", ignoring any superstructure. In most building physics calculation programs, LIGNO® elements can be defined as an intrinsic material with the „equivalent" thermal conductivity eq λ determined from the heat transmission resistance as well as element height and bulk density.

Flat roof structure as non-ventilated flat roof

Part of the thermal insulation can be installed in the load-bearing element ex works.

Caution with non-ventilated flat roofs (warm roofs) in which a seal is arranged over the insulation and an airtight, vapour blocking interior seal between the element and the insulation. Such a structure can work in terms of building physics, even without a further vapour-tight layer on the inside of the roof element, if about 2/3 of the insulation lies above the element. **The finished acoustic profile respectively therefore doesn't need to be covered! Depending on the structure or shading of the roof, a dynamic calculation of the moisture balance is useful in case of doubt.**

If insulating materials such as soft wood fibre or cellulose are used, it may be possible to transfer even more insulation into the cavity of the element without the structure becoming too moist. A verification through detailed considerations extending beyond the calculation according to Glaser.

Building physics
Water vapour diffusion

LIGNO® Acoustic Q3 classic-x

_z0_k0

Height	$\mu_{eq,min}$	$\mu_{eq,max}$	$s_{D,min}$	$s_{D,max}$
130	5,4	35,4	0,7	4,6
150	4,7	37,3	0,7	5,6
170	4,1	38,8	0,7	6,6
190	3,7	40,0	0,7	7,6
210	3,3	41,0	0,7	8,6
230	3,5	41,7	0,8	9,6
250	3,2	42,4	0,8	10,6
270	3,0	43,0	0,8	11,6
290	2,8	43,4	0,8	12,6
310	4,8	47,1	1,5	14,6
330	4,5	47,3	1,5	15,6
350	4,6	47,4	1,6	16,6
370	5,4	47,6	2,0	17,6
390	6,2	47,7	2,4	18,6
410	6,8	47,8	2,8	19,6
430	7,4	47,9	3,2	20,6
450	8,0	48,0	3,6	21,6
mm	mm	mm	m	m

LIGNO® Acoustic Q classic-x

_z0_k0

Height	$\mu_{eq,min}$	$\mu_{eq,max}$	$s_{D,min}$	$s_{D,max}$
90	6,7	40,0	0,6	3,6
110	5,5	41,8	0,6	4,6
130	5,4	43,1	0,7	5,6
150	4,7	44,0	0,7	6,6
mm	mm	mm	m	m

For the water vapour diffusion resistance, the lower values $\mu_{eq,min}$ or $s_{D,min}$ are given for the „most open" state, in which the vapour can diffuse without hindrance through air layers to the inner surface of the element's upper girder, for instance in the axis of the cavity of an element with acoustic profile. For the upper value $\mu_{eq,max}$ or $s_{D,max\,w}$ w, a solid wood layer in element thickness was applied correspondingly in the axis of one of the webs. With high insulated elements, the modelling of three layers with cover plates and insulation layer provides more realistic results.

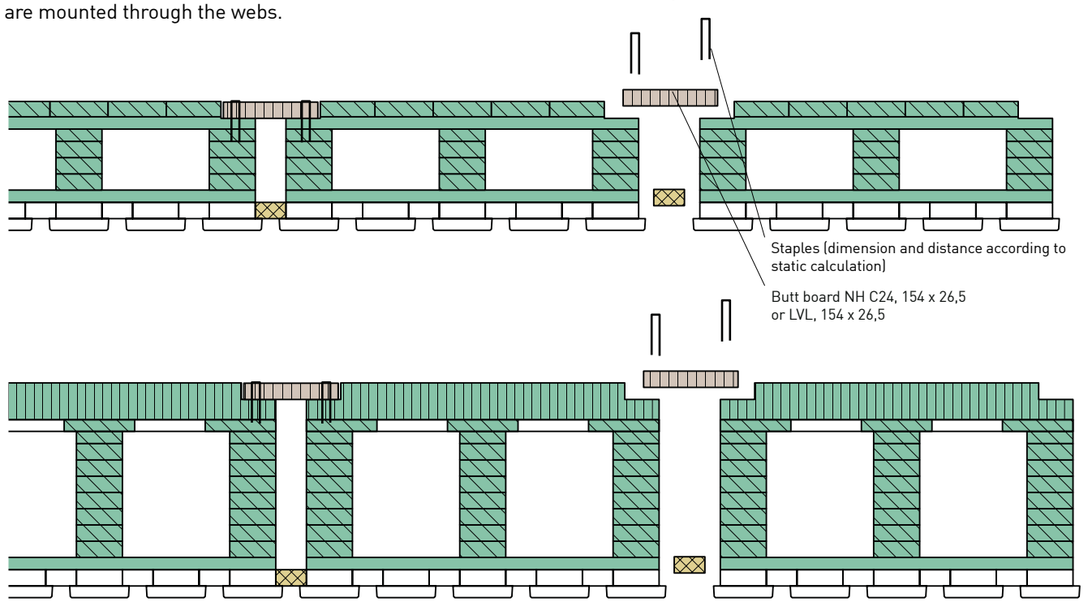
Bracing panels
Construction

Coupling

Coupling is done by means of a butt board at the **lateral butt joint of the elements**. Solid wood boards (strength class at least C24, cross-section 154 mm x 26.5 mm) are delivered as standard. In the case of elements with acoustic profile or with larger stresses, they can be replaced by stripes of LVL, for example. Additional bracing by boards or diagonals usually aren't necessary.

The butt boards are connected to both adjacent elements with **staples** or – less common – with wood screws (dimension and distance of the connectors as specified in the static calculation).

The **connection of the bracing panels to the adjacent components** is usually done with **long wood screws (d = 8 mm)**, which are mounted through the webs.



The butt boards are used as boards for the transport pallets when delivering.
Use boards from dismantled pallets for the element joint!

Static verification
In particular, the following points must be taken into account when verifying bracing performance of a roof:

- Load capacity of the elements as well as of butt board and connection means
- Edge belt of bracing
- Connection joints to neighbouring components
- Resilience of the connectors / panel deformation

Sample statics ▶ www.lignotrend.com.
The Technical Dept. is available for support with the verification.

Load capacity values

Butt board C24 (154 mm x 26,5 mm)		admissible shear flow	R_k	53 kN/m					
Clamps			n	5	10	15	No. per metre	100	cm
	1,80 x 63	admissible shear flow	R_k	3,6	7,2	10,8		0,70	kN/m
Wood screws			n	5	10	15	No. per metre	100	cm
	d= 6 mm	admissible shear flow	R_k	3,15	6,3	9,45		0,63	kN/m
	d= 8 mm	admissible shear flow	R_k	5,55	11,1	16,65		1,11	kN/m

Bracing panels
Characteristic values

Load capacity and rigidity values

The characteristic values from the following tables are used in the bracing panel analysis. Since, as a rule, depending on the load case transverse to or parallel with the element stripes, either the complete number of *whole* elements or *exactly one* edge element are applied for the load dissipation, the **values for the shear load capacity of the elements per element in the width of 0.625 m are specified**, *not* on the 1 m-wide panel surface.

LIGNO® Acoustic classic Q3

_z0_k0

Height	$V_{R,k,xy}$	GA_{ef}	I_z	$M_{R,k,z}$
130	35,7	4619	112,2	57,1
150	35,7	4619	131,2	66,8
170	35,7	4619	150,1	76,4
190	35,7	4619	169,1	86,1
210	35,7	4619	188,1	95,8
230	35,7	4619	207,1	105,4
250	35,7	4619	226,0	115,1
270	35,7	4619	245,0	124,7
290	35,7	4619	264,0	134,4
310	21,9	2828	348,5	177,4
330	21,9	2828	367,4	187,1
350	21,9	2828	386,4	196,7
370	21,9	2828	418,1	212,9
390	21,9	2828	449,8	229,0
410	21,9	2828	481,5	245,1
430	21,9	2828	513,2	261,2
450	21,9	2828	544,8	277,4
mm	kN	kN	$10^3\,cm^4$	kNm

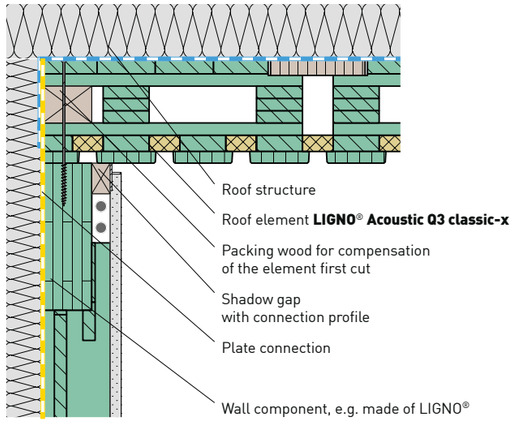
LIGNO® Acoustic classic Q

_z0_k0

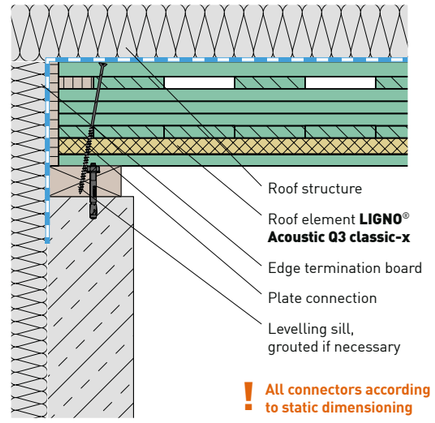
Height	$V_{R,k,xy}$	GA_{ef}	I_z	$M_{R,k,z}$
90	14,6	2785	93,2	47,5
110	21,5	2785	124,9	63,6
130	21,5	2785	156,6	79,7
150	21,5	2785	188,3	95,9
mm	kN	kN	$10^3\,cm^4$	kNm

Design proposals
Support

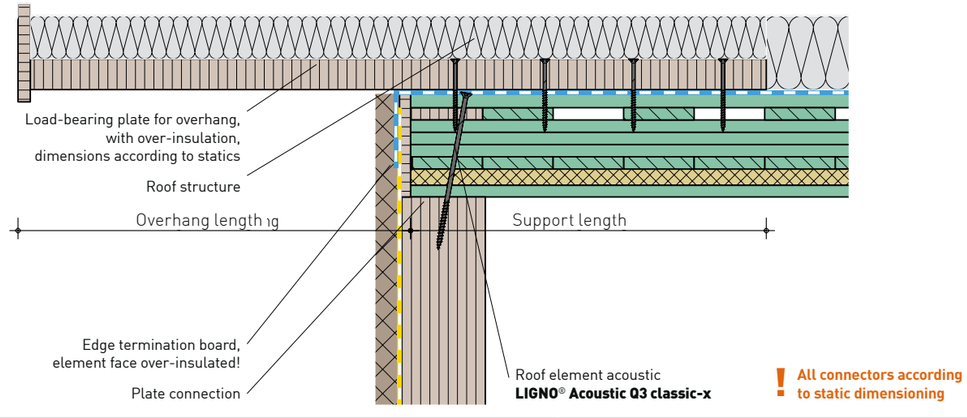
Support on timber
Exterior wall



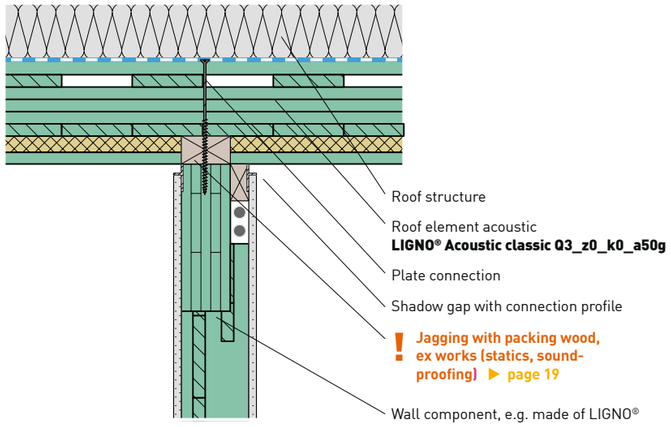
Support on concrete
by means of timber sill



Roof edge with overhang
with complete insulation



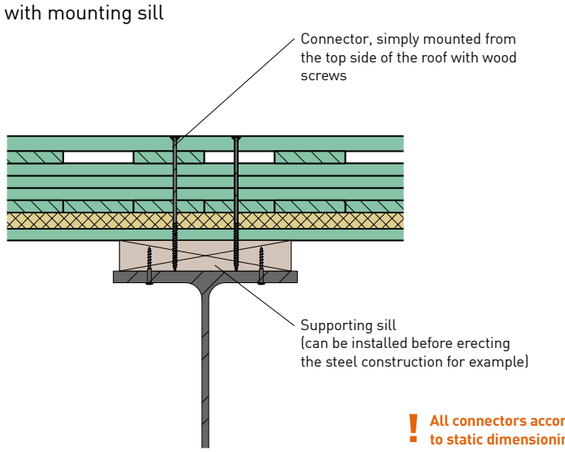
Support on timber
Intermediate bearing



! Notes on non-ventilated flat roof structure ▶ page 11

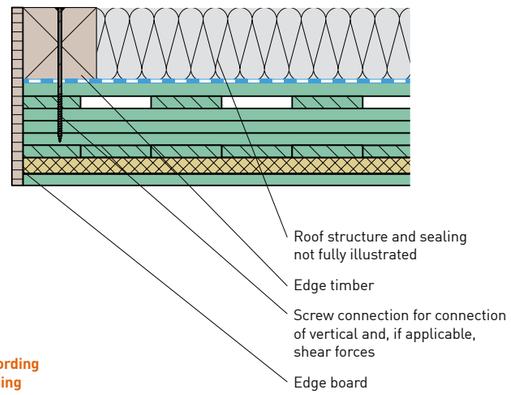
! All connectors according to static dimensioning

Support: steal beam
with mounting sill

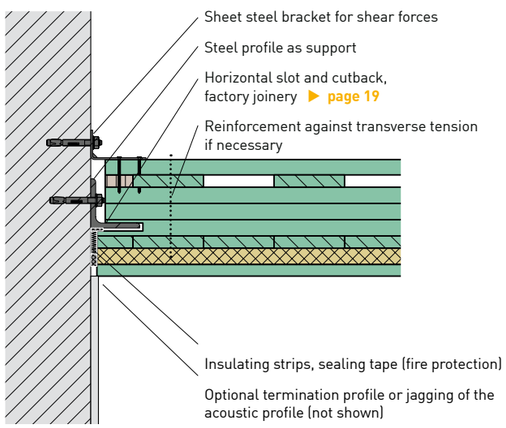


! All connectors according to static dimensioning

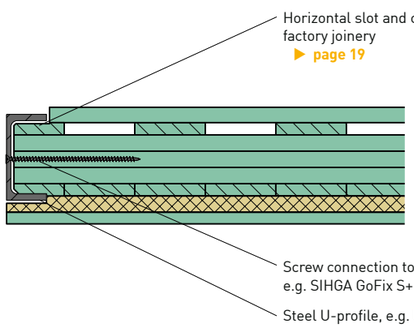
Free edge / trimmer joist
(e.g. at openings, roof edges)



Concrete wall edge support
with steel profile



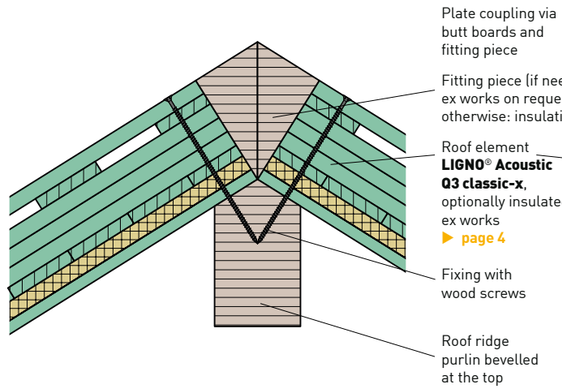
Free edge / steel profile
e.g. flush-with-ceiling window lintel



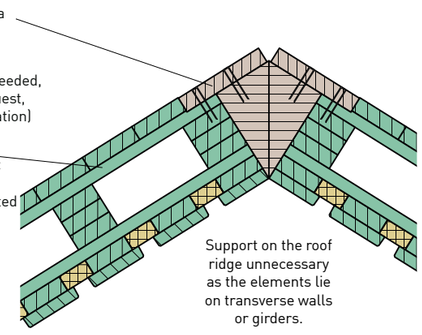
! Connectors, steel profile according to static dimensioning

Design proposals
Pitched roof

Roof ridge
Elements parallel to gable

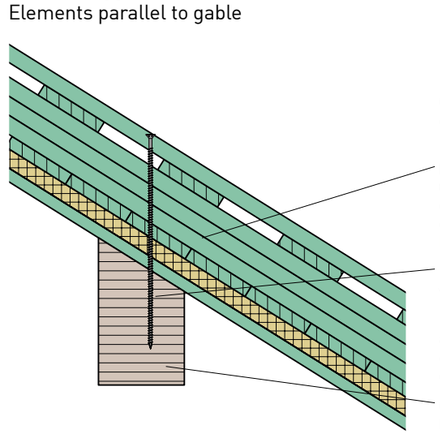


Roof ridge
Elements parallel to ridge

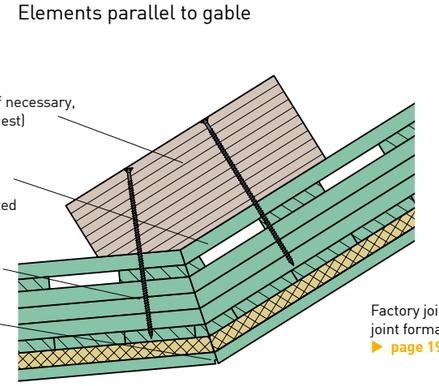


! All connectors according to static dimensioning

Central support
Elements parallel to gable

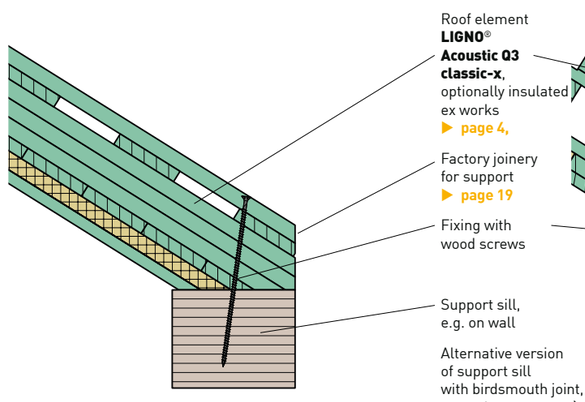


Free bend
Elements parallel to gable

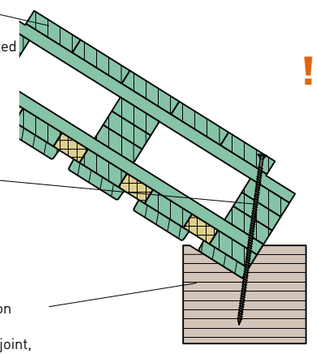


! All connectors according to static dimensioning

Eaves support
Elements parallel to gable



Eaves support
Elements parallel to ridge



! All connectors according to static dimensioning

Ready to mount ex works: Joinery

Preparation of the construction elements ready for installation

The preparation of the LIGNO® elements so that they are ready to mount can be ordered in addition to mere delivery. The scope of the pre-planning depends on the possible degree of prefabrication.

Examples:

- Cutting to size of the elements: mitre cuts, bevel cuts and round cuts
- Machining of the element soffit: Jagging of wall supports, milling of recesses for built-in parts such as luminaires, partition wall rails or similar
- Milling of built-in parts, e.g. trimmer joists, steel beams as flush-with-the-ceiling joist
- Preparation for installations: Drill holes for cable or pipe feed-throughs, openings for installation shafts, insertion of electrical cables or conduits with pull wire or ventilation ducts
- Preassembly of large-area modules (format up to 2.50 m x 18 m)

Preassembled large-area modules during installation

Insertion of the absorber strip in the lateral element joint

Attachment of the butt board (not shown: stapling according to statics)

Connection of the panel to girder or head plate

Solid elements

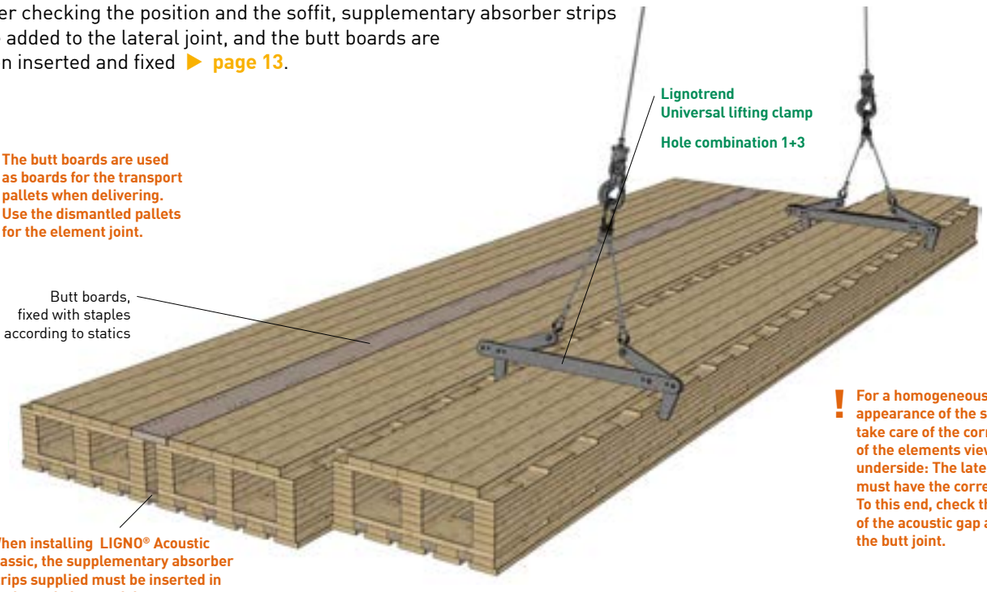
Finished joined BV box elements

Assembly procedure gerneal

Installation with Lignotrend lifting tool

The roof elements are laid stripe by stripe or as large-area modules, pulled together laterally – if necessary, a beam puller or a screw clamp can be used as an aid. After aligning the elements, each element is fixed to the supports.

After checking the position and the soffit, supplementary absorber strips are added to the lateral joint, and the butt boards are then inserted and fixed ▶ page 13.



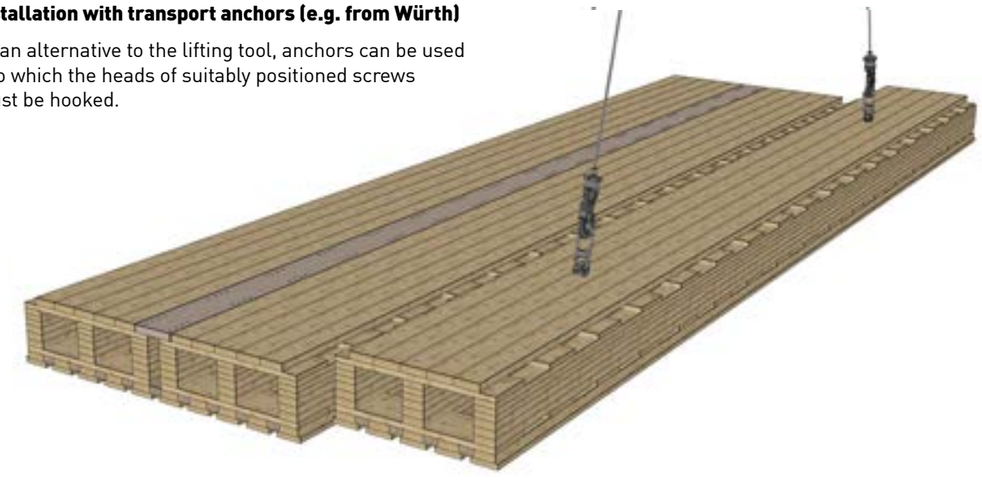
! The butt boards are used as boards for the transport pallets when delivering. Use the dismantled pallets for the element joint.

! When installing LIGNO® Acoustic classic, the supplementary absorber strips supplied must be inserted in the lateral element joint

! For a homogeneous appearance of the soffit, take care of the correct position of the elements viewing from the underside: The lateral butt joint must have the correct position. To this end, check the width of the acoustic gap at the butt joint.

Installation with transport anchors (e.g. from Würth)

As an alternative to the lifting tool, anchors can be used into which the heads of suitably positioned screws must be hooked.



Large-area, preassembled elements

When mounting large-area modules with a width of 1.875 m or 2.50 m respectively, suitable suspension gear or cross bars must be used.

HOTLINE
for questions on installation
+49 7755 9200-0

Processing instructions

Goods receiving / unloading

- Unload the elements from the truck pallet by pallet if possible
- When unloading with a strap:
  Insert a board underneath so that the edges of the visible surface are not damaged

Intermediate storage

- Store protected against splash water and level on suitable support wedges
- Protect against moisture and long-term solar irradiation
- No long-term outdoor storage!
  (also not under foil, otherwise danger of formation of dew and mould!)

Installation

- To protect the visible surface, use only the illustrated or equivalent lifting tools
- For protection against dirt, wear clean gloves when assembling

Weather protection

- **Keep a large tarpaulin at the ready (for use in case of thunderstorms, for example)**
- **Apply the first sealing layer (e.g. weatherproof vapour barrier) as soon as possible after assembly.**

Coupling the bracing panel

- First insert the supplementary absorber strips in the lateral joint
- Fastening with staples according to statics, see also ▶ page 13. Bracing panel connection to wall construction with screws according to statics.
- The butt boards are used as boards for the packaging pallets when delivering.
  Use the dismantled pallets for the element joint.

Important note:

- **Pay attention to the acoustic gap in the joint when installing.**
  Before fixing each element: check the butt joint from the underside of the roof!

In addition, the general application notes on Lignotrend cross-laminated timber products are to be observed.

▶ **Installation hotline +49 (0) 77 55 – 92 00-0**