best wood®
SCHNEIDER

best wood **CLT and CLT XL**

Technical information

www.schneider-holz.com

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Uncomplicated, fast & reliable – the team of best wood SCHNEIDER® deals with your requests.

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best wood CLT

best wood CLT is a load-bearing solid wood element, consisting of at least three layers of crossways glued solid wood boards, which is suitable for all building requirements thanks to its excellent construction characteristics. The crosswise layer structure of high-quality raw material provides a high degree of dimensional stability, and leads to only small amounts of swelling and shrinking in the panel level in the event of moisture changes.

A high degree of prefabrication of the best wood CLT with downstream joinery and the simplicity of joining the best wood CLT elements ensures swift and cheap installation and guarantees dry construction.

Static and fire protection verification can be easily produced using the best wood STATICS software. Component structures and connections with best wood CLT can be found on the web site at www.schneider-holz.com.

Technical characteristics

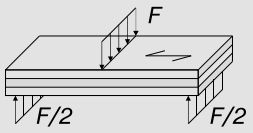
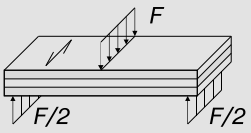
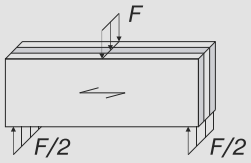
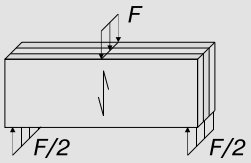
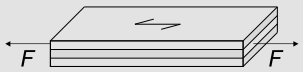
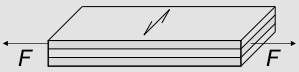
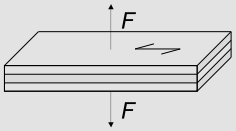
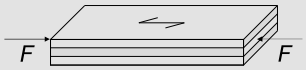
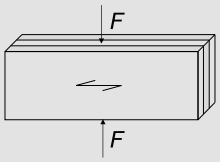
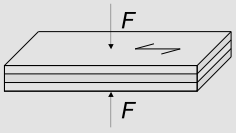
Technical data

Strength class	C24
Application classes	Use in application classes 1 and 2 according to EN 1995-1-1
Drying	Kiln dried, wood moisture max. 15 % at delivery
Bonding	Clear, water-proof gluing with polyurethane adhesives (free of formaldehyde)
Lamellae	20, 30 and 40 mm, sorted for quality and finger-jointed
General information	CLT: Planed on four sides, bottom side chamfered 4 mm (measured diagonally), trimmed precisely ± 1 mm CLT XL: Planed lengthwise/profiled and with planar calibration, bottom side chamfered 4 mm (measured diagonally), trimmed precisely ± 1 mm
Heat conductivity	λ = 0.12 (W/m*K) according to ETA-21/0568
Specific heat capacity	1600 (J/kg*K) according to EN ISO 10456
CLT panel diffusion resistance	μ 20 (damp) / 50 (dry) in accordance with EN ISO 10456
Emission class	E1 according to DIN EN 717-1
Shape change	At board level ≈ 0.02 % per 1 % change in wood moisture perpendicular to board level ≈ 0.24 % per 1 % change in wood moisture
Reaction to fire	D-s2, d0 according to DIN EN 13501-1
Fireproofing	Verification possible via the free best wood STATICS software
Airtightness	Airtightness after testing in accordance with EN 12114 from 60 mm

Wall and ceiling material parameters

Characteristics		Symbol	Value	Unit
Strength class			C24	
1. Perpendicular to board level				
Bending strength	Parallel to fiber direction	$f_{m,k}$	k_{sys}*24	N/mm²
Tensile strength	Perpendicular to fiber direction	$f_{t,90,k}$	0.4	N/mm²
Compressive strength	Perpendicular to fiber direction	$f_{c,90,k}$	3.0	N/mm²
Shear strength	Parallel to fiber direction	$f_{v,k}$	4.0	N/mm²
	Perpendicular to fiber direction (Rolling shear strength)	$f_{R,k}$	1.3^(1) (CLT) 1.2^(2) (CLT) 1.1 (CLT XL)	
Modulus of elasticity	Parallel to fiber direction	$E_{0,mean}$	12,000	N/mm²
	Perpendicular to fiber direction	$E_{90,mean}$	370	
Modulus of shear	Parallel to fiber direction	G_{mean}	690	N/mm²
	Perpendicular to fiber direction	$G_{90,mean}$	50	
2. At board level				
Bending strength	Parallel to fiber direction	$f_{m,k}$	k_{sys}*24	N/mm²
Tensile strength	Parallel to fiber direction	$f_{t,0,k}$	14.5	N/mm²
Compressive strength	Perpendicular to fiber direction	$f_{c,0,k}$	21.0	N/mm²
Modulus of elasticity	Parallel to fiber direction	$E_{0,mean}$	12,000	N/mm²
3. Fireproofing				
Charring rate		β_0	0.65	mm/min
		β_n	0.7	
Density		ρ_k	1,1*350	kg/m³

k_{sys} = min (0.975 + 0.025 * n_i ; 1.2) with n_i = number of layers in the span direction; (1) for lamella thicknesses of 20 and 30 mm; (2) for lamella thicknesses of 40 mm

Beanspruchung		Kennwerte für den Nachweis der Lagen in Faserrichtung
		f_m f_v und f_r E_0 G und G_r
		$f_{m,edge}$ $f_{v,xy}$ und $f_{tor,node}$ E_0 G_{xy}
		$f_{t,0}$ $E_{t,0}$
		$f_{t,90}$ E_{90}
		$f_{c,0}$ $E_{c,0}$
		$f_{c,90}$ $E_{c,90}$

Statics

Pre-dimensioning

Perm. loads* [kN/m²]	Live loads [kN/m²]	Span length of single span beams [m]						Span lengths of double span beams [m]					
		3.00	4.00	5.00	6.00	7.00	8.00	3.00	4.00	5.00	6.00	7.00	8.00
1.00	1.00	80	100	140	200	200	220	60	90	160	200	200	220
	1.50												
	2.00	80						80					
	3.00		110			220	240		100				
	5.00	100	130	160	220		260	80	110			220	220
2.50	1.00	90	130	160	200	220	260	80	130	160	170	170	200
	1.50												
	2.00												220
	3.00	100			220							200	
	5.00		140	180		240	280	90			180	220	240
4.00	1.00	100	140	180	220	240	280	90	140	150	160	200	220
	1.50												
	2.00						-						
	3.00	110		200		260					170	220	
	5.00		160							160	200		240

* The dead weight of the best wood CLT panel has already been taken into account

These tables are only intended for pre-dimensioning and are no substitute for structural analysis.

Fire resistance: R0 | R30 | R60 | R90

Example for a CLT ceiling in a detached house:

Design values:		**Result:**
Permanent load	g = 1.0 kN/m²	Demanded thickness of ceiling = 140 mm
Live load	q = 2.0 kN/m²	Charring rate = R60
Span length	l = 5.0 m	

This pre-measuring is no substitute for structural verification.

The following parameters and certificates were taken into account in the calculations:

Certificate of load-bearing capacity according to DIN EN 1995-1-1:2010-12 with NA:2013-08

Certificate of structural fire design according to DIN EN 1995-1-2:2010-12 with NA:2010-12

Application class 1

Load duration class of the intermittent load: medium

$\Psi_2 = 0.3$; $k_{def} = 0.60$; C24

Ultimate limit state; certificate of bending stress; certificate of (rolling) shear stress

Serviceability limit state; initial deflection ≤ l/300; final deflection ≤ l/200; total deflection ≤ l/300

Verification of vibration: Width of the ceiling panel b = 1.2 * span length; additional rigidity $EI_{x,y}$ from 5 cm screed slab; modal damping ratio $\zeta = 0.03$; limitation of acceleration a ≤ 0.4 m/s²

best wood STATICS

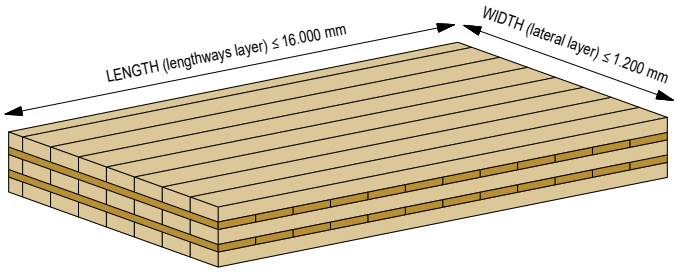
We have developed the statics software best wood STATICS to help you in your planning. Structures with roof, wall and ceiling elements made from CLT can be verified simply, reliably and quickly. The statics software can be found online under best wood STATICS.

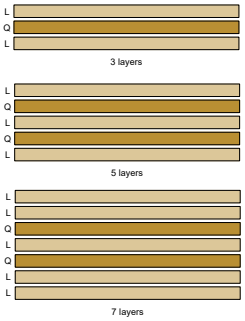
Scope of services:

- Measurement in the GZT and the GZG in accordance with Eurocode 5 with NA DE, NA DE or SIA 265
- Single to four span beams each with and without cantilever possible on the left and/or right end
- Entry of additional permanent and variable area loads possible
- Vibration verification in accordance with the EC 5 procedure or in accordance with Hamm/Richter
- Fire protection verification according to DIN EN 1995-1-2 with NA DE, NA FR or SIA 265
- Calculation results are issued in the form of checkable static calculations.

Overview of layer structure

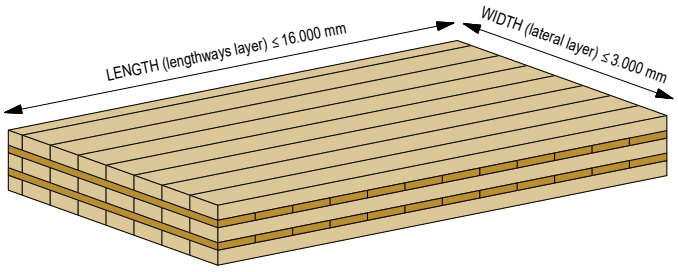
best wood CLT – CEILING

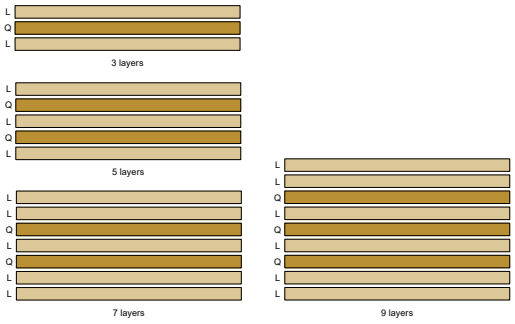




For other CLT – CEILING layer structures see page 12/13

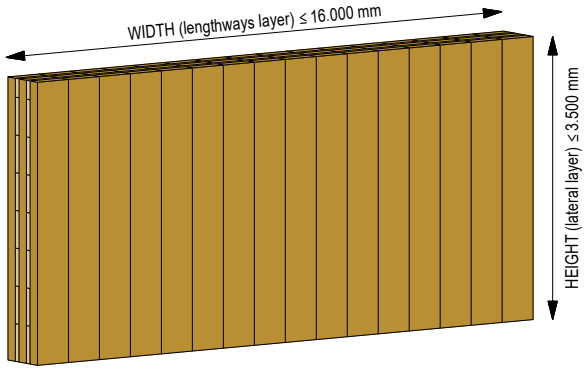
best wood CLT – CEILING XL

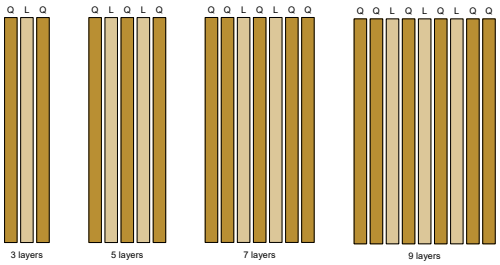




For other CLT – CEILING XL layer structures see page 14/15

best wood CLT – WALL XL





For other CLT – WALL XL layer structures see page 16/17

Layer structure overview

best wood CLT

	Criteria	Local industrial quality	Scandinavian visual quality	Local visual quality KNOT-FREE
1	Lamella width	≤ 160 mm	≤ 160 mm	≤ 160 mm
2	Wood moisture	max. 15%	max. 15%	max. 15%
3	Wood species mixture	spruce/fir	not permissible	not permissible
4	Bonding	occasional open joints up to max. 2 mm width permissible	occasional open joints up to max. 1 mm width permissible	occasional open joints up to max. 1 mm width permissible
5	Blue stain	permissible	not permissible	not permissible
6	Discolouration (brownness etc.)	permissible	not permissible	not permissible
7	Resin pockets	permissible	no clusters, max. 3 x 50 mm	no clusters, max. 3 x 50 mm
8	Bark ingrowths	permissible	not permissible	not permissible
9	Drying cracks	permissible	permissible ≤ 1.5 mm	permissible ≤ 1.5 mm
10	Core – pith	permissible	allowed if occasional	none
11	Insect infestation	burrows up to 2 mm allowed	not permissible	not permissible
12	Branches – healthy	permissible	permissible	Ø max. 10 mm
13	Branches – black	permissible	Ø max. 10 mm	Ø max. 10 mm
14	Branches – hole	permissible	not permissible	not permissible
15	Wane	max. 2 x 500 mm	not permissible	not permissible
16	Surface	planed	sanded	sanded
17	Quality of the gluing of the narrow sides and of the end faces	occasional imperfections permissible	occasional imperfections permissible	occasional imperfections permissible
18	Surface cosmetics with correction of knotholes, Lamello, strips, ...	permissible	permissible	permissible

best wood CLT XL

	Criteria	Local visual industrial quality	Local Industrial quality
1	Lamella width	≤ 250 mm	≤ 160 mm
2	Wood moisture	max. 15 %	max. 15 %
3	Wood species mixture	spruce/fir	spruce/fir
4	Bonding	occasional open joints up to max. 2 mm width permissible	occasional open joints up to max. 2 mm width permissible
5	Blue stain	slight discolouration permissible	permissible
6	Discolouration (brownness etc.)	slight discolouration permissible	permissible
7	Resin pockets	permissible	permissible
8	Bark ingrowths	permissible	permissible
9	Drying cracks	permissible	permissible
10	Core – pith	permissible	permissible
11	Insect infestation	not permissible	burrows up to 2 mm allowed
12	Branches – healthy	permissible	permissible
13	Branches – black	permissible	permissible
14	Branches – hole	permissible up to max. 30 mm	permissible
15	Wane	not permissible	max. 2 x 500 mm
16	Surface	sanded	planed
17	Quality of the gluing of the narrow sides and of the end faces	occasional imperfections permissible	occasional imperfections permissible
18	Surface cosmetics with correction of knotholes, Lamello, strips, ...	permissible	permissible

Delivery options

best wood CLT – CEILING INDUSTRIAL QUALITY

		Local spruce industrial quality (planed)				
Thick-ness [mm]	Layers	Layer structure				
			L	Q	L	
3 layers						
60	3		20	20	20	
80	3		30	20	30	
90	3		30	30	30	
100	3		40	20	40	
120	3		40	40	40	
		L	Q	L	Q	L
5 layers						
140	5	40	20	20	20	40
160	5	40	20	40	20	40
180	5	40	30	40	30	40
200	5	40	40	40	40	40
220	7	40+40	20	20	20	40+40
240	7	40+40	20	40	20	40+40
260	7	40+40	30	40	30	40+40
280	7	40+40	40	40	40	40+40

20 = lamella thickness in mm ; L = lengthways layer ; Q = lateral layer

Wood species/quality	Local spruce industrial quality	
Dimensions	Length	2.30 to 16.00 m
	Width	900 to 1200mm, shiplap edge ≤ 1150 mm cover size
	Minimum production length	per element width 8.00 m
	Other cross sections	Available by request

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best wood CLT – CEILING VISUAL QUALITY

	Thick-ness [mm]	Layers	Scandinavian spruce visual quality or local spruce KNOT-FREE (sanded on one side)				
			Layer structure				
3 layers			L	Q	L		
	60	**3**	20	20	20		
	80	**3**	30	20	30		
	90	**3**	30	30	30		
	100	**4**	20+20	20	40		
	120	**4**	20+20	40	40		
			L	Q	L	Q	L
5 layers	**140**	**6**	20+20	20	20	20	40
	160	**6**	20+20	20	40	20	40
	180	**6**	20+20	30	40	30	40
	200	**6**	20+20	40	40	40	40
	220	**8**	20+20+40	20	20	20	40+40
	240	**8**	20+20+40	20	40	20	40+40
	260	**8**	20+20+40	30	40	30	40+40
	280	**8**	20+20+40	40	40	40	40+40

20 = lamella thickness in mm ; L = lengthways layer ; Q = lateral layer

Wood species/quality	Scandinavian spruce visual quality only up to 200 mm; local spruce KNOT-FREE only up to 200 mm	
Dimensions	Length	2.30 to 16.00 m
	Width	up to 3000 mm
	Minimum production length	per element width 8.00 m
	Other cross sections	Available by request

Delivery options

best wood CLT – CEILING XL INDUSTRIAL QUALITY

			Local spruce industrial quality						
	Thick-ness [mm]	Layers	Layer structure						
					L	Q	L		
3 layers	60	3			20	20	20		
	80	3			30	20	30		
	90	3			30	30	30		
	100	3			40	20	40		
	110	3			40	30	40		
	120	3			40	40	40		
				L	Q	L	Q	L	
5 layers	100	5		20	20	20	20	20	
	110	5		20	20	30	20	20	
	120	5		30	15	30	15	30	
	120	5		30	20	20	20	30	
	130	5		30	20	30	20	30	
	140	5		40	20	20	20	40	
	150	5		40	20	30	20	40	
	160	5		40	20	40	20	40	
	170	5		40	30	30	30	40	
	180	5		40	30	40	30	40	
	190	5		40	40	30	40	40	
	200	5		40	40	40	40	40	
	220	7		40 + 40	20	20	20	40 + 40	
	240	7		40 + 40	20	40	20	40 + 40	
	260	7		40 + 40	30	40	30	40 + 40	
	280	7		40 + 40	40	40	40	40 + 40	
	300	8		40 + 40	30	40 + 40	30	40 + 40	
	320	8		40 + 40	40	40 + 40	40	40 + 40	
			L	Q	L	Q	L	Q	L
7 layers	340	9	40 + 40	30	40	40	40	30	40 + 40
	360	9	40 + 40	40	40	40	40	40	40 + 40

20 = lamella thickness in mm ; L = lengthways layer ; Q = lateral layer

Wood species/quality	Local spruce industrial quality	
Dimensions	Length	2.30 to 16.00 m
	Height	up to 3000 mm
	Minimum production length	per element width 8.00 m
	Minimum production width	1800 mm
	Other cross sections	Available by request

best wood CLT – CEILING XL visual industrial quality

	Thick-ness [mm]	Layers	Local spruce visual industrial quality (one sided)						
			Layer structure						
					L	Q	L		
3 layers	60	3			20	20	20		
	80	3			30	20	30		
	90	3			30	30	30		
	100	4			20 + 20	20	40		
	110	4			20 + 20	30	40		
	120	4			20 + 20	40	40		
				L	Q	L	Q	L	
5 layers	100	5		20	20	20	20	20	
	110	5		20	20	30	20	20	
	120	5		30	15	30	15	30	
	120	5		30	20	20	20	30	
	130	5		30	20	30	20	30	
	140	6		20 + 20	20	20	20	40	
	150	6		20 + 20	20	30	20	40	
	160	6		20 + 20	20	40	20	40	
	170	6		20 + 20	30	30	30	40	
	180	6		20 + 20	30	40	30	40	
	190	6		20 + 20	40	30	40	40	
	200	6		20 + 20	40	40	40	40	
	220	8		20 + 20 + 40	20	20	20	40 + 40	
	240	8		20 + 20 + 40	20	40	20	40 + 40	
	260	8		20 + 20 + 40	30	40	30	40 + 40	
	280	8		20 + 20 + 40	40	40	40	40 + 40	
	300	9		20 + 20 + 40	30	40 + 40	30	40 + 40	
	320	9		20 + 20 + 40	40	40 + 40	40	40 + 40	
			L	Q	L	Q	L	Q	L
7 layers	340	10	20 + 20 + 40	30	40	40	40	30	40 + 40
	360	10	20 + 20 + 40	40	40	40	40	40	40 + 40

20 = lamella thickness in mm ; L = lengthways layer ; Q = lateral layer

Wood species/quality	Local spruce visual industrial quality (one sided)	
Dimensions	Length	2.30 to 16.00 m
	Height	up to 3000 mm
	Minimum production length	per element width 8.00 m
	Minimum production width	1800 mm
	Other cross sections	Available by request

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Delivery options

best wood CLT – WALL XL INDUSTRIAL QUALITY

				Local spruce industrial quality				
	Thickn. [mm]	Layers	Layer structure					
3 layers	60	3			Q 20	L 20	Q 20	
	80	3			30	20	30	
	90	3			30	30	30	
	100	3			40	20	40	
	110	3			40	30	40	
	120	3			40	40	40	
				Q	L	Q	L	Q
5 layers	100	5		20	20	20	20	20
	110	5		20	20	30	20	20
	120	5		30	15	30	15	30
	120	5		30	20	20	20	30
	130	5		30	20	30	20	30
	140	5		40	20	20	20	40
	150	5		40	20	30	20	40
	160	5		40	20	40	20	40
	170	5		40	30	30	30	40
	180	5		40	30	40	30	40
	190	5		40	40	30	40	40
	200	5		40	40	40	40	40
	220	7		40 + 40	20	20	20	40 + 40
	240	7		40 + 40	20	40	20	40 + 40
	260	7		40 + 40	30	40	30	40 + 40
	280	7		40 + 40	40	40	40	40 + 40
	300	8		40 + 40	30	40 + 40	30	40 + 40
	320	8		40 + 40	40	40 + 40	40	40 + 40
			Q	L	Q	L	Q	L	Q
7 layers	340	9	40 + 40	30	40	40	40	30	40 + 40
	360	9	40 + 40	40	40	40	40	40	40 + 40

20 = lamella thickness in mm ; L = lengthways layer ; Q = lateral layer

Wood species	Local spruce industrial quality	
Dimensions	Length	2.30 to 16.00 m
	Height	up to 3500 mm
	Minimum production length	per element width 8.00 m
	Minimum production width	1800 mm
	Other cross sections	Available by request

best wood® SCHNEIDER

best wood CLT – WALL XL visual industrial quality

	Thick-ness [mm]	Layers	Local spruce visual industrial quality (one sided)						
			Layer structure						
3 layers	60	3			Q 20	L 20	Q 20		
	80	3			30	20	30		
	90	3			30	30	30		
	100	4			20 + 20	20	40		
	110	4			20 + 20	30	40		
	120	4			20 + 20	40	40		
				Q	L	Q	L	Q	
5 layers	100	5		20	20	20	20	20	
	110	5		20	20	30	20	20	
	120	5		30	15	30	15	30	
	120	5		30	20	20	20	30	
	130	5		30	20	30	20	30	
	140	6		20 + 20	20	20	20	40	
	150	6		20 + 20	20	30	20	40	
	160	6		20 + 20	20	40	20	40	
	170	6		20 + 20	30	30	30	40	
	180	6		20 + 20	30	40	30	40	
	190	6		20 + 20	40	30	40	40	
	200	6		20 + 20	40	40	40	40	
	220	8		20 + 20 + 40	20	20	20	40 + 40	
	240	8		20 + 20 + 40	20	40	20	40 + 40	
	260	8		20 + 20 + 40	30	40	30	40 + 40	
	280	8		20 + 20 + 40	40	40	40	40 + 40	
	300	9		20 + 20 + 40	30	40 + 40	30	40 + 40	
	320	9		20 + 20 + 40	40	40 + 40	40	40 + 40	
			Q	L	Q	L	Q	L	Q
7 layers	340	10	20 + 20 + 40	30	40	40	40	30	40 + 40
	360	10	20 + 20 + 40	40	40	40	40	40	40 + 40

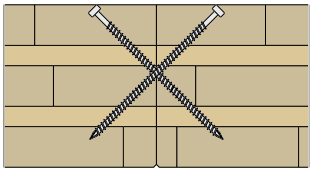
20 = lamella thickness in mm ; L = lengthways layer ; Q = lateral layer

Wood species	Local spruce visual industrial quality (one sided)	
Dimensions	Length	2.30 to 16.00 m
	Height	up to 3500 mm
	Minimum production length	per element width 8.00 m
	Minimum production width	1800 mm
	Other cross sections	Available by request

Installation variants

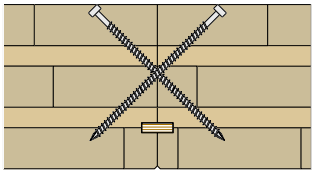
Installation variants	best wood CLT – CEILING	best wood CLT – CEILING XL / ROOF	best wood CLT – WALL XL
Variant 0	✓	✓	✓
Variant 11	✓	✓	✗
Variant 12	✓	✗	✗
Variant 13	✓	✓	✓
Variant 14	✓	✓	✗
Variant 15	✓	✗	✗
Variant 16	✓	✓	✓
Variant 17	✗	✗	✓

Variant 0 – fitted with square edges



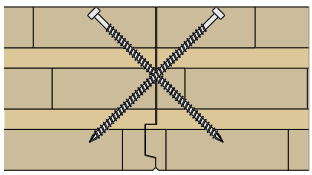
With installation variant 0, the elements are fitted with square edges and screwed on crosswise with full thread screws under 45°. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner

Variant 12 – separate tongue



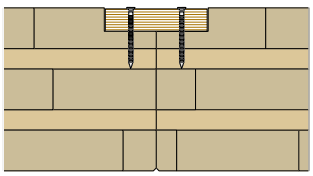
Installation variant 12 has a groove for connecting the elements using a separate tongue made from veneer plywood. The static connection takes place using full thread screws crosswise at 45°. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Variant 11 – tongue and groove



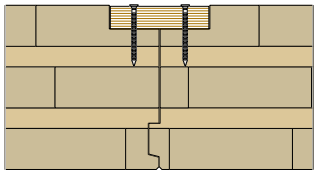
Installation variant 11 is connected via a tongue and groove connection and screwed on crosswise using full thread screws at 45°. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Variant 13 – square edge with inlay board



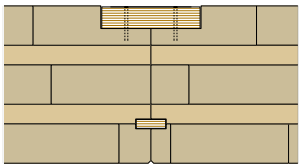
With installation variant 13 the elements are connected via an inlay board made from three-layer board that is inlaid into a rebate. The inlay board can be statically attached using nails, staples or screws. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Variant 14 – tongue and groove with inlay board



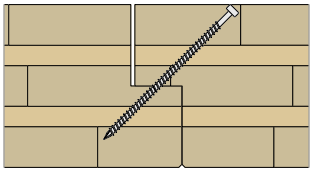
With installation variant 14 the elements are connected via a tongue and groove connection and via an inlay board made from three-layer board that is inlaid into a rebate. The inlay board can be statically attached using nails, staples or screws. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Variant 15 – edge profile with rebate for inlay board and separate tongue



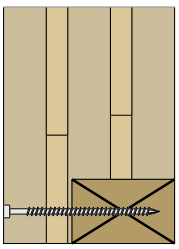
Installation variant 15 has a rebate for connecting the elements with an inlay board made from three-layer board and also a groove for a separate tongue made from veneer plywood. The inlay board can be statically attached using nails, staples or screws. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Variant 16 – shiplap edge



With variant 16, the elements are connected via a shiplap edge over half of the element height and with a width of 50 mm. The static connection takes place using full thread screws at 45°. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Variant 17 – threshold profile



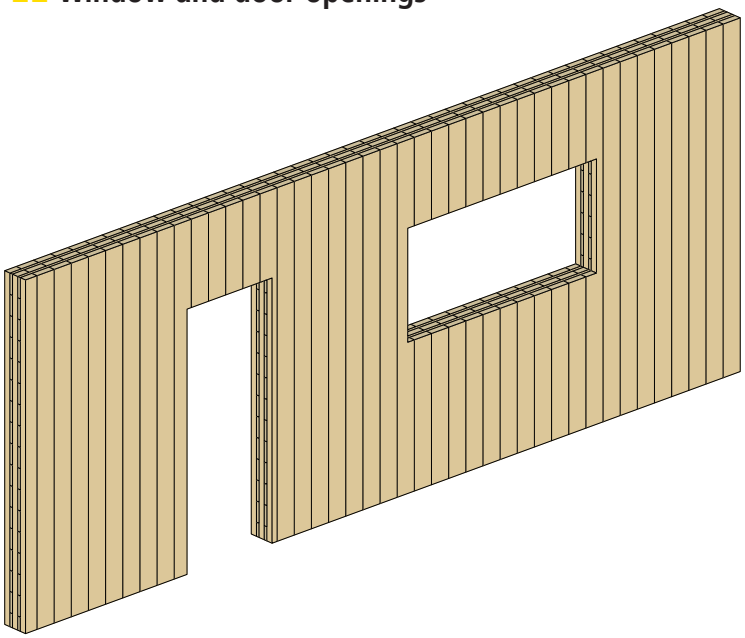
With installation variant 17 there is rebate at one side of the wall for fitting best wood CLT – WALL XL elements to a threshold profile. The dimensions of the rebate (max. 59 mm high and 170 mm deep) can be individually adapted to the planned threshold profile. The length and spacing of the fasteners must be determined in a project-specific way by the supporting structure planner.

Joinery

Our best wood CLT ceiling and wall elements can be provided with a variety of cut-outs, edge profiles and recesses, for example for ceiling spotlights, cables or window, door and stairway openings.

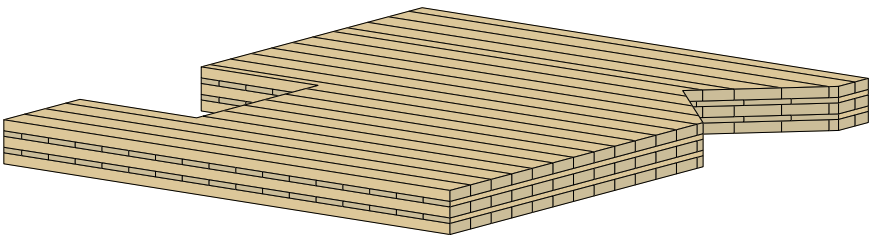
The factory-made joinery saves the need to process the ceiling elements on the construction site and thus ensures rapid construction progress. In addition, for example, drill holes and saw cuts can be created at a defined angle, which would be impossible on the construction site or only possible with a great deal of effort. The computer-aided processing in production guarantees precise, high-quality joinery.

Window and door openings



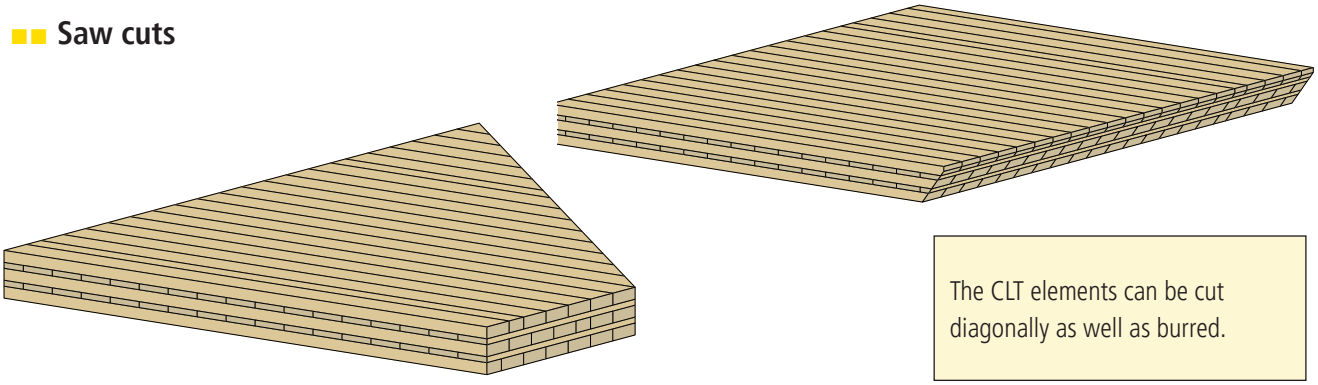
All corners of window and door openings are sharp-edged.

Notches



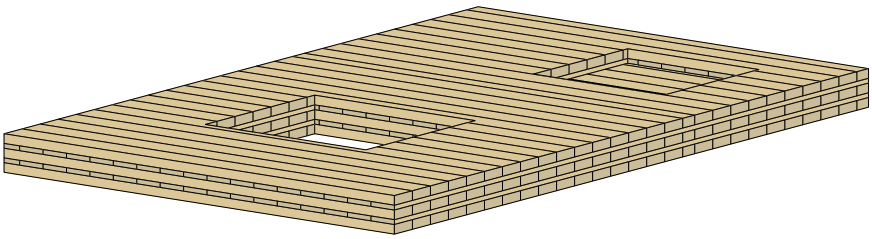
For notches ≥ 100 mm and angles ≥ 90°, the corners are sharp-edged. For smaller notches, the corners are round.

Saw cuts



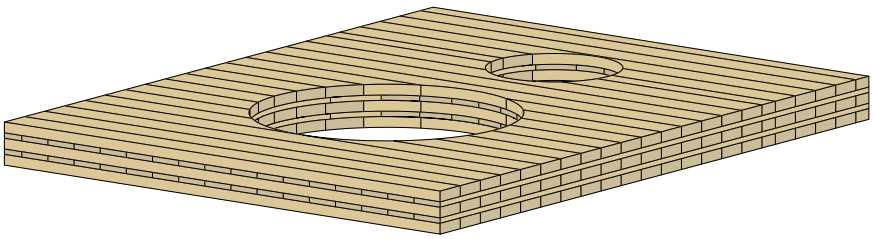
The CLT elements can be cut diagonally as well as burred.

Square breakthrough + countersinking



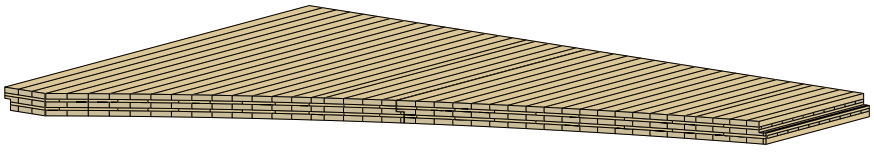
For openings ≤ 100 mm, the corners are round.

Round breakthrough

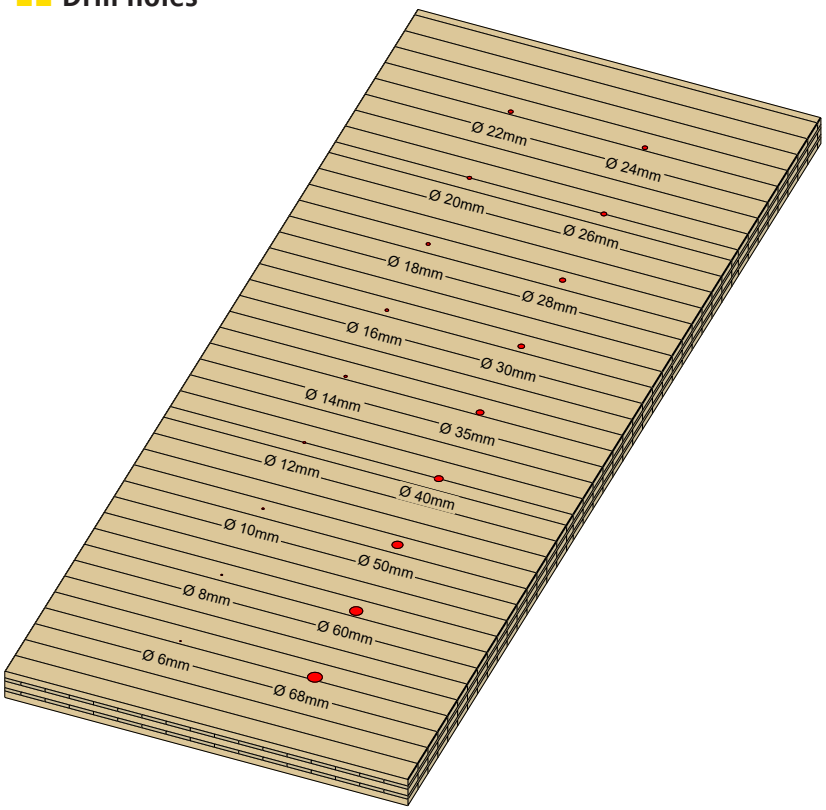


Round openings can be produced in almost any dimensions.

Curve

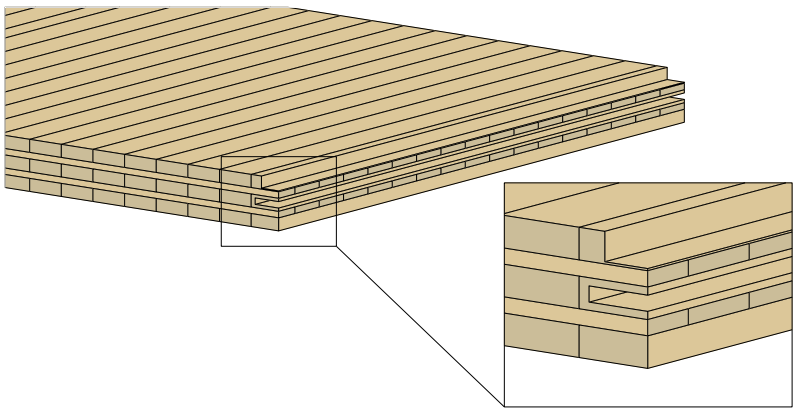


Drill holes



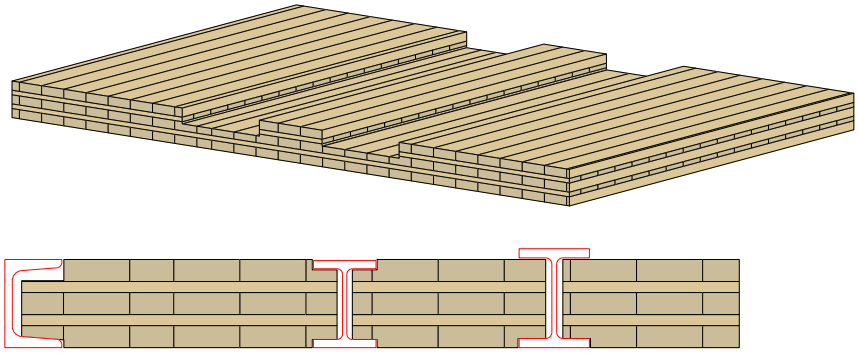
Drill holes between 6 mm and 68 mm can be realised. The drilling depth depends on the drilling diameter.

Rebate/slot at front (continuous)



Continuous rebates can be produced in almost any dimensions. The achievable depth of frontal slots depends on the slot width.

Rebates/countersinking



It is possible to create grooves for cables, etc. and countersinking for wood-concrete composite ceilings. The maximum milling depth depends on the diameter of the milling cutter.

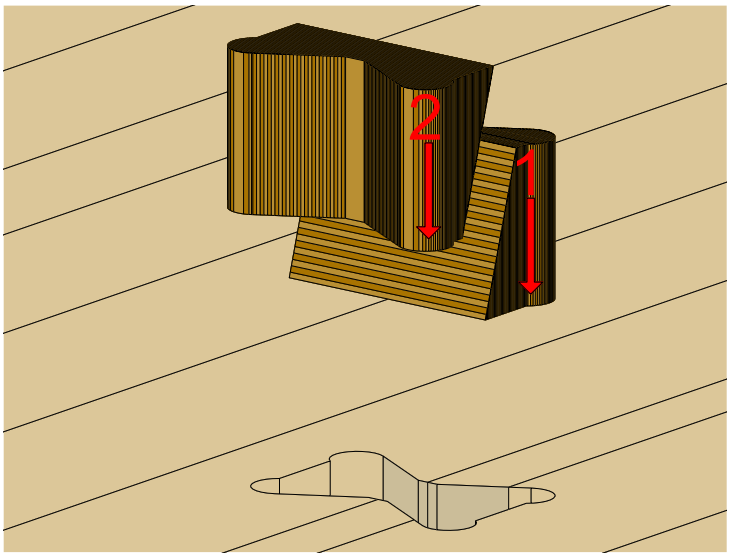
Rebates for steel beams can be produced in almost any dimensions.

Attachment holes

- SIHGA Pick & SIHGA Pick Max
- Pitzl Power Clamp Type 3
- Rothoblaas WASP
- WÜRTH transportation anchor
- RAPID T-Lift
- Disposable lifting straps / lifting loops

More information about the individual lifting systems can be found from page 26 of this processing guideline.

X-fix milling



Wooden connector in wedge shape

Work scheduling – Project planning

Interfaces

The plans are prepared for production in the "CAD planning and technical consultancy" department.

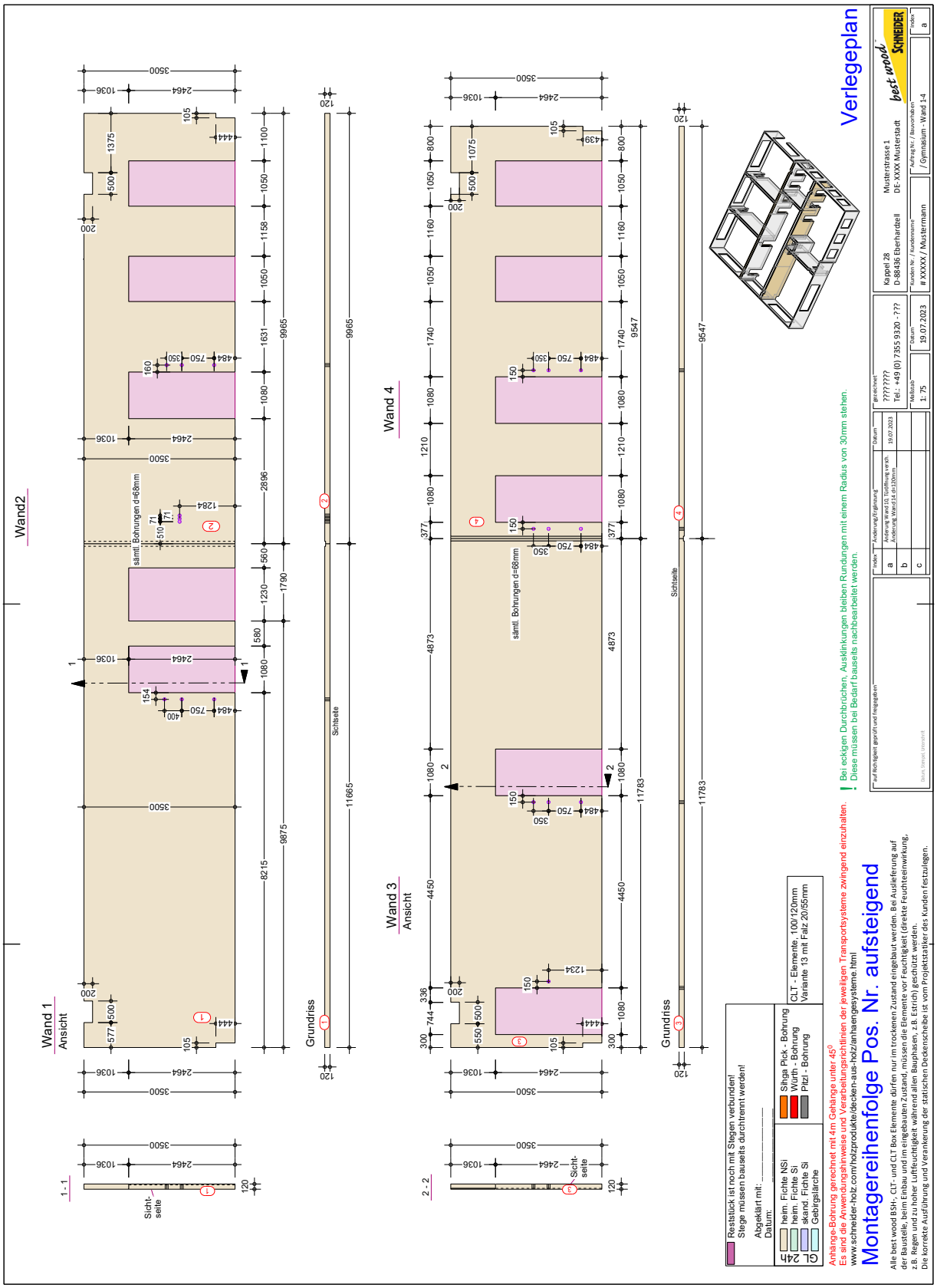
All plans which you receive from us have been drawn using the Cadwork program. Cadwork is 3D – CAD/CAM software for wood construction. The following interfaces make an import possible. The amount of in-house work and therefore the processing time depend on the imported file format and the quality of your plans.

Interfaces from the Cadwork drawing program – Import I Export

Processable file formats	
Import	**Export**
Cadwork 3D (preferred)	pdf
pdf (always)	dxf/dwg/sat/ifc/btl
SEMA	Cadwork 3D (after consultation)
Dietrichs	SEMA (after consultation)
dxf/dwg	dxf/dwg
sat	sat
ifc	ifc
BTL	BTL

Work scheduling – Project planning

Planning expenditure



Loading, transport, installation and billing

The transport and installation of cross laminated timber components should always be carried out by experienced specialist companies which have been specially set up and trained for this purpose. When doing so, attention must be paid to the following:

- The elements must be protected from the effects of the weather (moisture penetration, direct sunlight) and soiling from transport to installation. The stretch film that is used for transport does not provide protection from the weather, which is why the elements must be stored under a roof or additional weather-resistant protective tarpaulins. The stretch film must be removed immediately after installing the elements.

- If the CLT elements are put into intermediate storage after delivery until they are installed, they must be kept in a clean and level storage location on floor battens.

- Edge protectors must always be used when unloading and lifting. Lifting may only be carried out using approved lifting gear (e.g. Sigha Pick, WÜRTH, WÜRTH transportation anchor or the like).

- In order to avoid rust spots on the CLT elements, it is essential to apply corrosion protection to steel components prior to installation.

- Production-related complaints (e.g. resin pockets, open joints, surface damage etc.) must be submitted prior to installation.

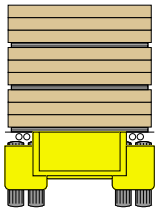
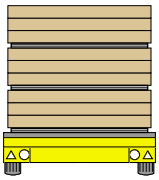
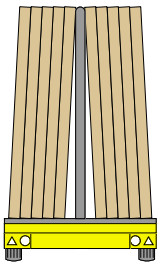
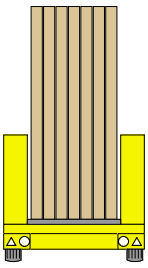
- With best wood CLT elements, no installation gaps need to be taken into consideration. If fire protection requirements exist for the elements, a suitable element joint variant from approval ETA-21/0568 must be selected. An installation gap must be taken into consideration with certain element joint variants.

- **All subsequent trades and their employees on the construction project must be made aware of the fact that a visible ceiling is a finished component that must not be soiled during the remainder of the work, and must be protected from the effects of excessive moisture.**

Transport

The wooden elements must not be exposed to the external climate or extreme climate conditions (e.g. direct moisture impact) at any time.

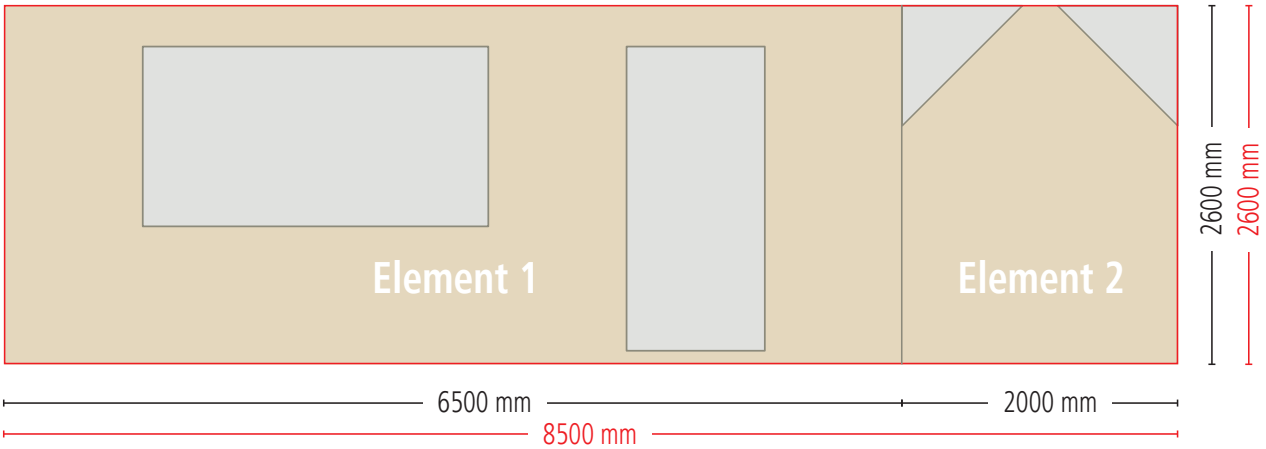
- The components are protected by a film during transport.
- The customer is responsible for weather protection once the components are on the construction site. The elements / packages are not packed individually ex works.

	Horizontal transport best wood trailer	**Horizontal transport** best wood low loader with swap body	**Vertical transport** best wood low loader with swap body	**Vertical transport** best wood inloader with removable pallet
Length:	≤ 15.60 m	≤ 15.80 m	≤ 15.80 m	≤ 10.75 m
Width / height:	≤ 3.00 m	≤ 3.00 m	≤ 2.80 – 3.00 m	≤ 3.50 m

Elements which exceed the dimensions listed in the table are regarded as special transports!
These must be requested in good time, as we require a lead time to organise the transport.

Billing example for best wood CLT – XL



Component area, net Residue (deliverable by request) Calculated area (production board)

Fasteners for manufacturing the ceiling and wall panels

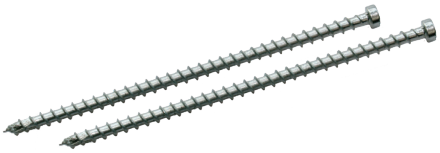
X-fix® milling

X-fix® C is a two-piece, self-tightening wood-wood connector for compression and tension-proof connection of CLT ceilings and walls. X-fix®C is a wedge-shaped dovetail wood-wood connector. The X-fix® C wedge shape even clamps large-format ceiling panels or wall parts in a self-tightening, form-fitting way. The advantages of X-fix® C: Fast installation, form-fitting connection is ideal for visible surfaces, no panel tighteners required for ceiling connections, and thanks to the wedge shape, X-fix® C even clamps large-format ceiling panels together in a self-tightening way, no metal in the pure wood-wood connection.

Note: Only possible with CLT in conjunction with a tongue and groove connection.

Heco-Topix® plus

The Heco-Topix® plus as a full thread screw with cylinder head in accordance with ETA-19/0553 for a cross fitting at the ceiling element joint for creating a static ceiling section. The ceiling section can be verified using the best wood STATICS statics software.



Inlay board

We would be pleased to supply our inlay boards made from three-layer boards SWP/2 S 3L in accordance with DIN EN 13353:2011 in cross-sectional dimensions of 100 x 22 mm or 100 x 27 mm together with your CLT elements.

Nails, clips or wood screws may be used as fasteners. The dimensions, quantity and arrangement of the fasteners must be chosen in accordance with the static requirements, and can be measured using the best wood STATICS statics software.

11. Attachment systems

Important information for all attachment systems:

The usage instructions of the respective manufacturer (e.g. check drill hole) must be observed before lifting the elements using lifting/turning systems.

SIHGA Pick

The SIHGA Pick is a load-handling device with a load-carrying capacity of up to 1250 kg per anchor point, and can be attached to the surface or the front of the elements.

More information can be found in the operating instructions of the SIGHA Pick.

Drill hole diameter	50 mm
Drill hole depth	70 mm
Minimum component thickness	
- planar industrial quality	70 mm
- planar visual quality	90 mm
- front	90 mm

SIHGA Pick Max

The SIHGA Pick Max uses the same principle as the SIHGA Pick, but can support up to 2400 kg per anchor point. It can also be attached to the surface or the front of the ceiling, roof and wall elements.

More information can be found in the operating instructions of the SIGHA Pick Max.

Drill hole diameter	50 mm
Drill hole depth	140 mm
Minimum component thickness	
- planar industrial quality	140 mm
- planar visual quality	160 mm
- front	100 mm

SIHGA Pocket Traverse

The SIHGA Pocket Traverse is a traverse with a small format that weighs just 16.5 kg. In combination with SIHGA Pick, SIHGA Pick Max or lifting loops, twice the load can be lifted. Because of the special geometry, the traverse guarantees even load distribution at the anchor points, making 4-strand lifting possible. The SIHGA Pocket Traverse has a load-carrying capacity of 2500 kg at 0°.

More information can be found in the operating instructions of the SIHGA Pocket Traverse.

Pitzl PowerClamp III

The lifting clamp has a load-bearing capacity of up to 1500 kg per anchor point. It can be used to lift the ceiling, roof and wall elements at the front and also on the surface.

More information can be found in the operating instructions of the Pitzl PowerClamp III.

Drill hole diameter	40 mm
Drill hole depth	93 mm
Minimum component thickness	
- planar industrial quality	60 mm
- planar visual quality	100 mm
- front	80 mm

WÜRTH transportation anchor

The WÜRTH transportation anchor is used in combination with the ASSY®3.0 combination screw to lift ceiling, roof and wall elements. Any rotating, tilting and pivoting movement is possible, also under load.

More information can be found in the operating instructions of the WÜRTH transportation anchor.

rothoblaas WASP

The transportation anchor for ceiling, roof and wall elements holds the screw head firmly in the wooden element with its integrated jaws. It can be used for both axial and lateral loads, and is certified in accordance with Machinery Directive 2006/42/EC.

More information can be found in the operating instructions of the rothoblaas WASP

RAPID T-LIFT

The RAPID T-Lift is used as a lifting system for ceiling, roof and wall elements. It consists of a T-Lift screw and a spherical head anchor, and can lift up to 2.5 t per lifting accessory using 4-strand suspension.

More information can be found in the operating instructions of the RAPID T-Lift.

LIFTING LOOPS

One or more loops per element can be led through the wall elements using drill holes, and used as attachment elements. The respective manufacturer of the lifting loops that are used must be consulted regarding the attachment variants, tilt angles and maximum load-bearing capacities which are possible. The positions of the drill holes must be defined in consultation with the Schneider work scheduling department.

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