

HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

CROSS LAMINATED TIMBER

THE BUILDING PRODUCT OF THE FUTURE.



01 AT A GLANCE

AREAS OF APPLICATION

- ⊕ Single and multiple family houses
- ⊕ Multi-storey residential buildings
- ⊕ Industrial and commercial buildings
- ⊕ Modules and systems
- ⊕ Office buildings, schools and kindergartens
- ⊕ Urban densification
- ⊕ Carports

FIELDS OF USE

- ⊕ Floors
- ⊕ Roofs
- ⊕ Walls
- ⊕ Shear walls for lateral load transmission
- ⊕ Beams

ADVANTAGES

- ⊕ Possibility to combine the truck loads with all of HASSLACHER Timber Group's products
- ⊕ Sanded or calibrated surfaces for all qualities
- ⊕ Flexible dimensions up of to 3.20 m x 20.0 m
- ⊕ Order size = invoice size above a width of 2.20 m
- ⊕ Solid and made of wood
- ⊕ Pleasant and comfortable room climate
- ⊕ Fast and easy assembly
- ⊕ Lower self-weight than reinforced concrete
- ⊕ Highest earthquake safety ratings
- ⊕ High fire and chemical resistance
- ⊕ High performance in terms of thermal insulation
- ⊕ Positive impacts on climate protection through storage of carbon dioxide (CO₂)
- ⊕ Ecologically sustainable building materials



02 OVERVIEW

PRODUCT STANDARD/CERTIFICATION

ETA-12/0281

SURFACE QUALITIES

Excellent surface
Visual quality
Industrial visual quality
Industrial quality

On request, cover lamellas
can also be edge bonded.

CROSS SECTIONS

Thickness: 80 mm to 400 mm
60 mm on request

Width: up to 3.20 m

Length: up to 20 m

WOOD SPECIES

- + Spruce/fir
- + Pine
- + Larch
- + Swiss stone pine, fir, hardwoods (on request)

CERTIFICATION

The current certificates are available in the download area
of our website at **HASSLACHER.COM**.

SUSTAINABILITY

The HASSLACHER Group stands for a careful use of wood
as a resource. Our raw materials come from sustainable
and controlled forestry. Our locations are certified according
to the strict PEFC™ standards.



03

TECHNICAL DATA

BONDING

Melamine resin adhesive with bright glue line, adhesive type I according to EN 301 approved for gluing of loadbearing and non-loadbearing timber components, both indoors and outdoors

LAMELLAS

Thickness: 19 mm to 45 mm
Strength classes: 100% C24/L25/T14
in the top layers
max. 30% C16/L17/T11
in the middle layers

MOISTURE CONTENT

11% \pm 2% at time of delivery

DENSITY

Spruce: approximately 450 kg/m³ to
500 kg/m³ in average

THERMAL CONDUCTIVITY

$\lambda = 0.12$ W/mK

THERMAL CAPACITY

1,600 J/kgK

DIFFUSION RESISTANCE

According to EN ISO 10456
 $\mu = 50$ (dry) to 20 (wet)

FORMALDEHYDE EMISSIONS

E1 according to EN 717-1 (<0.1 ppm)
Actual measured value: <0.02 ppm

FIRE BEHAVIOUR

D-s2, d0
D_{fl}-s1 when used as floor covering

STRUCTURAL FIRE RESISTANCE

first layer: 0.65 mm/min
each additional layer: 0.80 mm/min

SHRINKAGE AND SWELLING BEHAVIOUR

Out-of-plane direction
 $\alpha_{u,90} = 0.24\%$ per 1% change in moisture content

In-plane direction
 $\alpha_{u,90} = 0.01\%$ per 1% change in moisture content

AIRTIGHTNESS

Airtight above 78 mm
Joints, component edges, narrow faces and soffits, installations, etc. must be hermetically sealed

DIMENSIONAL TOLERANCES

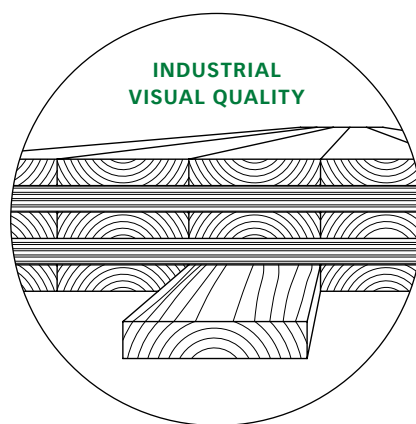
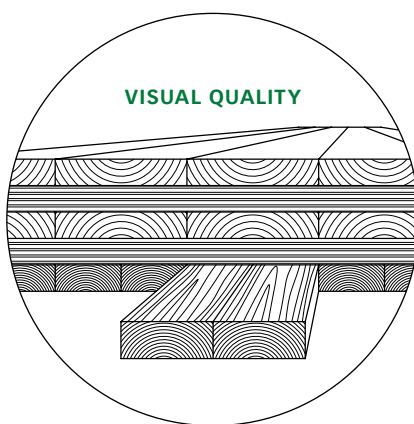
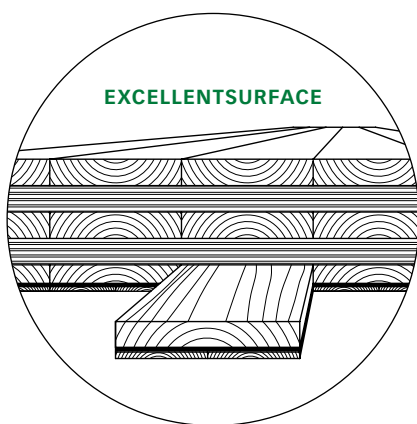
According to DIN 18203-3

SERVICE CLASSES (EN 1995-1-1)

Service class 1 heated interior
Service class 2 roofed outdoor area

QUALITY DESCRIPTION

CHARACTERISTICS	EXCELLENT SURFACE	VISUAL QUALITY
Description	Consists of finger-jointed lamellas, whereby the cover lamellas have a special lay-up including a cross layer. Wood grain and texture result in a very homogeneous appearance. Appearance of gaps is remarkably lessened. Repairs through wood patches are permitted.	Consists of finger-jointed lamellas of one wood species, which have a homogeneous appearance in texture and grain. Field of use: exposed floors in the luxury market. Growth-related features occur in reduced form. Non-conforming growth-related features may be repaired through wood patches.
Wood species for the cover layer	On request, various soft- and hardwood species are available.	On request, spruce, larch, pine, fir and hardwood.
Surface	Sanded	Sanded
Gap width on delivery	Up to maximum of 1 mm	Up to maximum of 1 mm
Knots	Sound knots, isolated black branches are permitted, edge knots and falling knots of up to 10 mm are permitted	Sound knots, isolated black branches are permitted, edge knots and falling knots of up to 15 mm are permitted
Pitch pockets	Pitch pockets are permitted up to 3 mm x 50 mm (or the equivalent in mm ²).	Pitch pockets are permitted up to 5 mm x 70 mm (or the equivalent in mm ²).
Patches	Permitted	Permitted
Blue stains and red stripes	Slight discolorations beneath 5% are permissible, which are predominantly balanced out.	Slight discolorations of 5% of the surface area are permissible.
Insect infestations	Not permissible	Not permissible
Ingrown bark	Permitted	Permitted
Piths	Widely free from ingrown bark	Permitted
Cracks	A crack width up to 1 mm is permissible	A crack width up to 2 mm is permissible
Compression wood	Predominantly balanced out	Up to 40% of the surface area
Soft rots	Not permissible	Not permissible
Mistletoe	Not permissible	Not permissible
Moisture content	maximum 10% ±2%	maximum 10% ±2%
Board thicknesses	Specific lay-up of the cover lamella	19 to 45 mm
Board widths	80 mm to 200 mm; only boards with identical widths are used in the cover layer.	80 mm to 200 mm; only boards with identical widths are used in the cover layer.
Type of cutting	The cut is heartwood-free	Centre boards
Scope of application	The specified surface qualities are only valid for the outer layer(s), and thus not applicable for the cross-laminated timber's narrow faces. The indicated surface qualities are valid upon delivery. Crack and gap formation may occur in use, in particular at extreme climatic conditions.	
Sanded surface	The surfaces are sanded or calibrated up to a panel width of 3.20 m, or a panel thickness of 30 cm. In dependence of the panel format or on the cover layer's orientation the element may be sanded perpendicular to grain direction.	
Edge bonding	Edge-wise gluing of the boards of the longitudinal cover layer on request.	



CHARACTERISTICS

INDUSTRIAL VISUAL QUALITY

INDUSTRIAL QUALITY

Description	Surfaces are composed by one wood species; colour differences, wood grain and texture are categorically less relevant. Use as a surface for industrial hall constructions. Non-conforming growth-related features may be repaired with wood patches. Quality possible on request.	No visual requirements at all; the surface is assumed being covered with additional materials. Various wood species are possible for cover layer.
Wood species for the cover layer	Spruce/fir, pine	Spruce/fir, pine
Surface	Sanded	Calibrated
Gap width on delivery	Up to maximum of 2 mm	Up to maximum of 3 mm
Knots	Ingrown, black knots up to 20 mm diameter permissible, broken-off edge knots and falling-out knots up to 25 mm permissible.	Restrictions are in accordance to the corresponding strength grading
Pitch pockets	Pitch pockets are permitted up to 6 mm x 80 mm (or the equivalent in mm ²)	No restrictions
Patches	Permitted	Permitted
Blue stains and red stripes	Discolorations of up to 10% of the surface are permitted	No restrictions
Insect infestations	Not permissible	Worm grooves of up to 2 mm of diameter are permissible
Bark pockets	Permitted if isolated	Permitted
Piths	Permitted	Permitted
Cracks	A cracks width up to 3 mm permissible	Restrictions are in accordance to the corresponding strength grading
Compression wood, Beech wood	Restrictions are in accordance to the corresponding strength grading	Restrictions are in accordance to the corresponding strength grading
Soft rots	Not permissible	Not permissible
Mistletoe	Not permissible	Not permissible
Moisture content	Maximum 12% ±2%	Maximum 12% ±2%
Board thicknesses	19 to 45 mm	19 to 45 mm
Board widths	80 mm to 240 mm; boards with varying widths in one layer are possible.	80 mm to 280 mm; boards with varying widths in one layer are possible.
Type of cutting	No restrictions	No restrictions
Scope of application	The specified surface are only valid for the outer layer(s), and thus not applicable for the cross laminated timber's narrow faces. The indicated surface qualities are valid upon delivery. Crack and gap formation may occur in use, in particular at extreme climatic conditions.	
Sanded surface	The surfaces are sanded or calibrated up to a panel width of 3.20 m, or a panel thickness of 30 cm. In dependence of the panel format or on the outer layer's orientation the element may be sanded perpendicular to grain direction.	
Edge bonding	On request, the outer lamellas can also be edge bonded	

PRODUCT PORTFOLIO

PANEL LAY-UPS

Type	Thickness (mm)	Layers	Panel lay-ups (mm)						Width (m)	Length (m)	Mass (kg/m ²)
BSP 60	60	3		20	20	20			2.20–3.20 m	to 20 m	27
BSP 80	80	3		20	40	20					36
BSP 90	90	3		30	30	30					41
BSP 100	100	3		30	40	30					45
BSP 120	120	3		40	40	40					54
BSP 100	100	5	20	20	20	20	20		No modular dimensions	The type and orientation of the layers define the recommended maximum length of the panels for reasons of transport and installation.	45
BSP 120	120	5	30	20	20	20	30				54
BSP 140	140	5	40	20	20	20	40				63
BSP 160	160	5	40	20	40	20	40				72
BSP 180	180	5	40	30	40	30	40				81
BSP 200	200	5	40	40	40	40	40				90
BSP 200	200	7s / 7ss	30	30	30	20	30	30			90
BSP 210	210	7s / 7ss	30	30	30	30	30	30			95
BSP 220	220	7s / 7ss	40	40	20	20	20	40			99
BSP 240	240	7s / 7ss	40	40	20	40	20	40			108
BSP 260	260	7s / 7ss	40	40	30	40	30	40			117
BSP 280	280	7s / 7ss	40	40	40	40	40	40			126
BSP 300	300	8s / 8ss	40	40	30	40 + 40	30	40			135
BSP 320	320	8s / 8ss	40	40	40	40 + 40	40	40			144

Due to the density's natural variability, the quantified masses may vary up to ±15%.

ss: outer layers consist of 2 longitudinal layers (l)

BSP 60 mm and other panel thicknesses or special lay-ups on request.



POST-PROCESSING

ADVANTAGES

- + Maximum precision due to modern technology
- + Fast and cost-efficient assembly on the construction site due to a high level of prefabrication.
- + Ongoing development through regular and continuous quality control.
- + Professional support in design, consultancy and service by qualified employees

MACHINING OPTIONS

- + Rectangular formatting of the panel
- + Machining of the narrow faces for X-fix, step or spline joints
- + Inclined cuts and curves
- + Door and window openings
- + Routing of channels for building service installations
- + Holes and slots for all types of fasteners

Hundegger Portal Processing Centre

Timber framing facilities	5-axis unit for circular saw and milling cutter 2 x 3-axis milling machines 5-axis CNC centre with chain saw 2 vertical drilling units
Component dimensions	Length: up to 20 m Thickness: up to 400 mm Width: 3.20 m

Celaschi Progress CR75-7065

Timber framing facilities	5-axis unit for portal processing Double-end tenoners for precise processing of narrow faces
Component dimensions	Length: 1.5 to 20 m Thickness: up to 400 mm Width: 600 mm to 3.2 m

Computer Interfaces | Import Formats

- (1) hsbCAD (main program) | Files are evaluated and directly migrated.
- (2) *.sat (ACIS), 2D/3D *.dwg, *.dxf | Files can be imported and post-processed.
- (3) From Dietrich's, Cadwork and SEMA, files can be exported, which can be post-processed with hsbCAD.
- (4) From *.bvx files are exported, which are post-processed with hsbCAD

A *.pdf file is also required for all of the above-mentioned import formats and interfaces. This is vital for the determination of component designations, cover layer orientations, qualities and further relevant information.





MECHANICAL PROPERTIES

MECHANICAL PROPERTIES

ACCORDING TO THE EUROPEAN TECHNICAL ASSESSMENT (ETA-12/0281)

Out-of-plane loading			Numerical value
Modulus of elasticity	Parallel to the boards' grain direction	$E_{0,mean}$	11,800 N/mm ²
Modulus of elasticity	Perpendicular to the boards' grain direction	$E_{90,mean}$	370 N/mm ²
Shear modulus	Parallel to the boards' grain direction	$G_{090,mean}$	690 N/mm ²
rolling shear modulus	Perpendicular to the boards' grain direction	$G_{9090,mean}$	50 N/mm ²
Bending strength	Parallel to the boards' grain direction	$f_{m,k}$	26.4 N/mm ²
Tensile strength	Perpendicular to the boards' grain direction	$f_{t,90,k}$	0.12 N/mm ²
Compressive strength	Perpendicular to the boards' grain direction	$f_{c,90,k}$	2.50 N/mm ²
Shear strength	Parallel to the boards' grain direction	$f_{v,090,k}$	4.0 N/mm ²
Rolling shear strength	Perpendicular to the boards' grain direction	$f_{v,k}$	1.75 N/mm ²

In-plane loading			Numerical value
Modulus of elasticity	Parallel to the boards' grain direction	$E_{0,mean}$	11,600 N/mm ²
Shear modulus	Parallel to the boards' grain direction	$G_{090,mean}$	250 N/mm ²
Bending strength	Parallel to the boards' grain direction	$f_{m,k}$	24.0 N/mm ²
Tensile strength	Parallel to the boards' grain direction	$f_{t,90,k}$	14.0 N/mm ²
Compressive strength	Parallel to the boards' grain direction	$f_{c,90,k}$	21.0 N/mm ²
Shear strength	Parallel to the boards' grain direction	$f_{v,090,k}$	4.0 N/mm ²

Density			Numerical value
Characteristic density		ρ_k	350 kg/m ³
Mean density		ρ_{mean}	420 kg/m ³

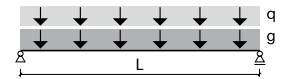
The above-stated mechanical properties are identical to the ones declared in ETA-12/0281.

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TABLES FOR PRELIMINARY DESIGN

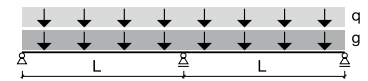
FLOORS WITHOUT CONSIDERATION OF VIBRATIONS FLOOR CLASS 3

SINGLE-SPAN BEAMS



$g_{1,k} + q_k$	Span length L						
	3.00 m	3.50 m	4.00 m	4.50 m	5.00 m	5.50 m	6.00 m
2.0 kN/m ²	BSP 80 3s	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 140 5s	BSP 160 5s
3.0 kN/m ²	BSP 90 3s	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 160 5s	BSP 180 5s
4.0 kN/m ²	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s
5.0 kN/m ²	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 200 7ss
6.0 kN/m ²	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 160 5s	BSP 200 5s	BSP 200 7ss	BSP 220 7ss
7.0 kN/m ²	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	BSP 240 7ss
8.0 kN/m ²	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 7ss	BSP 220 7ss	BSP 240 7ss

TWO-SPAN BEAMS



$g_{1,k} + q_k$	Span length L						
	3.00 m	3.50 m	4.00 m	4.50 m	5.00 m	5.50 m	6.00 m
2.0 kN/m ²	BSP 80 3s	BSP 80 3s	BSP 80 3s	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s
3.0 kN/m ²	BSP 80 3s	BSP 90 3s	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 140 5s
4.0 kN/m ²	BSP 80 3s	BSP 90 3s	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 140 5s	BSP 160 5s
5.0 kN/m ²	BSP 90 3s	BSP 100 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s
6.0 kN/m ²	BSP 90 3s	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 160 5s	BSP 180 5s
7.0 kN/m ²	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s
8.0 kN/m ²	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 160 5s	BSP 180 5s	BSP 200 7ss

The tables shall support the preliminary design of CLT and do not replace the static proof.
The CLTdesigner software application was developed by the Graz University of Technology and is available for our customers free of charge and without obligation, for more detailed information please consult hasslacher.at.

PANEL LAY-UP:

3s: 3-layer; 5s: 5-layer;

7ss: Parallel lamellas in the cover layers

Duration of fire resistance:

R0 **R30** **R60** **R90**

Preliminary design according to EN 1995-1-1 and the technical assessment.

BOUNDARY CONDITIONS

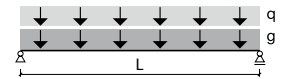
- ⊕ Service class 1 in accordance to EN 1995-1-1
- ⊕ Persistent load $g_{1,k}$ is without the self-weight of X-LAM; (the self-weight was taken into account via $g_{0,k}$.)
- ⊕ Imposed load class A and B (for residential and office areas)
- ⊕ Structural fire resistant design according to EN 1995-1-2 and the technical assessment
- ⊕ Share of imposed load q_k is at least 50% of the total load
- ⊕ Oscillations are not taken into account in this preliminary design.
- ⊕ The load is regarded as uniformly distributed, individual/concentrated loads are not taken into account.
- ⊕ Preliminary design was carried out by means of using the CLTdesigner of Graz University of Technology.

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TABLES FOR PRELIMINARY DESIGN

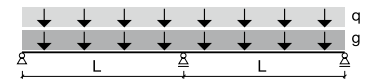
FLOORS EXPOSED TO VIBRATIONS FLOOR CLASS 1

SINGLE-SPAN BEAMS



$g_{1,k}$ (kN/m ²)	q_k (kN/m ²)	Span length L							
		3.00 m	3.50 m	4.00 m	4.50 m	5.00 m	5.50 m	6.00 m	
1.0	2.0	BSP 90 3s	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 7ss	
	3.0	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 7ss	
	4.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 200 7ss	
1.5	2.0	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	
	3.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	
	4.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	
2.0	2.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 220 7ss	
	3.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 220 7ss	
	4.0	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 220 7ss	

TWO-SPAN BEAMS



$g_{1,k}$ (kN/m ²)	q_k (kN/m ²)	Span length L							
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1.0	2.0	BSP 90 3s	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 7ss	
	3.0	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 7ss	
	4.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 200 7ss	
1.5	2.0	BSP 90 3s	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	
	3.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	
	4.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 210 7ss	
2.0	2.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 220 7ss	
	3.0	BSP 100 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 220 7ss	
	4.0	BSP 120 3s	BSP 120 3s	BSP 140 5s	BSP 160 5s	BSP 180 5s	BSP 200 5s	BSP 220 7ss	

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PANEL LAY-UP:

3s: 3-layer; 5s: 5-layer;

7ss: Parallel lamellas in the cover layers

Duration of fire resistance:

R0 **R30** **R60** **R90**

Preliminary design according to EN 1995-1-1 and the technical assessment.

BOUNDARY CONDITIONS

- ⊕ Service class 1 in accordance to EN 1995-1-1
- ⊕ The cross-laminated timber's self-weight was taken into account via $g_{0,k}$
- ⊕ Imposed load class A and B (for residential and office areas)
- ⊕ Structural fire resistant design according to EN 1995-1-2 and the technical assessment
- ⊕ The load is regarded as uniformly distributed.
- ⊕ Individual loads must be taken into account separately
- ⊕ Preliminary design was carried out by means of using the CLTdesigner of Graz University of Technology.

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HASSLACHER NORICA TIMBER'S PRODUCT PORTFOLIO



Sawn timber



Surfaced timber



Structural finger jointed solid timber & GLT®



Glued solid timber Duo/Trio



Glued laminated timber



Glued ceiling systems



Cross laminated timber



Glued laminated timber – special components



Special products



Pellets



Formwork panels



Pallets & packaging solutions

From **wood** to **wonders**.

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HASSLACHER
NORICA TIMBER

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