Ingenious hardwood
BauBuche

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Order our BauBuche sample box free of charge.

Rendering: Thomas Knapp, HOF 437
Photo: Adrian Tyler

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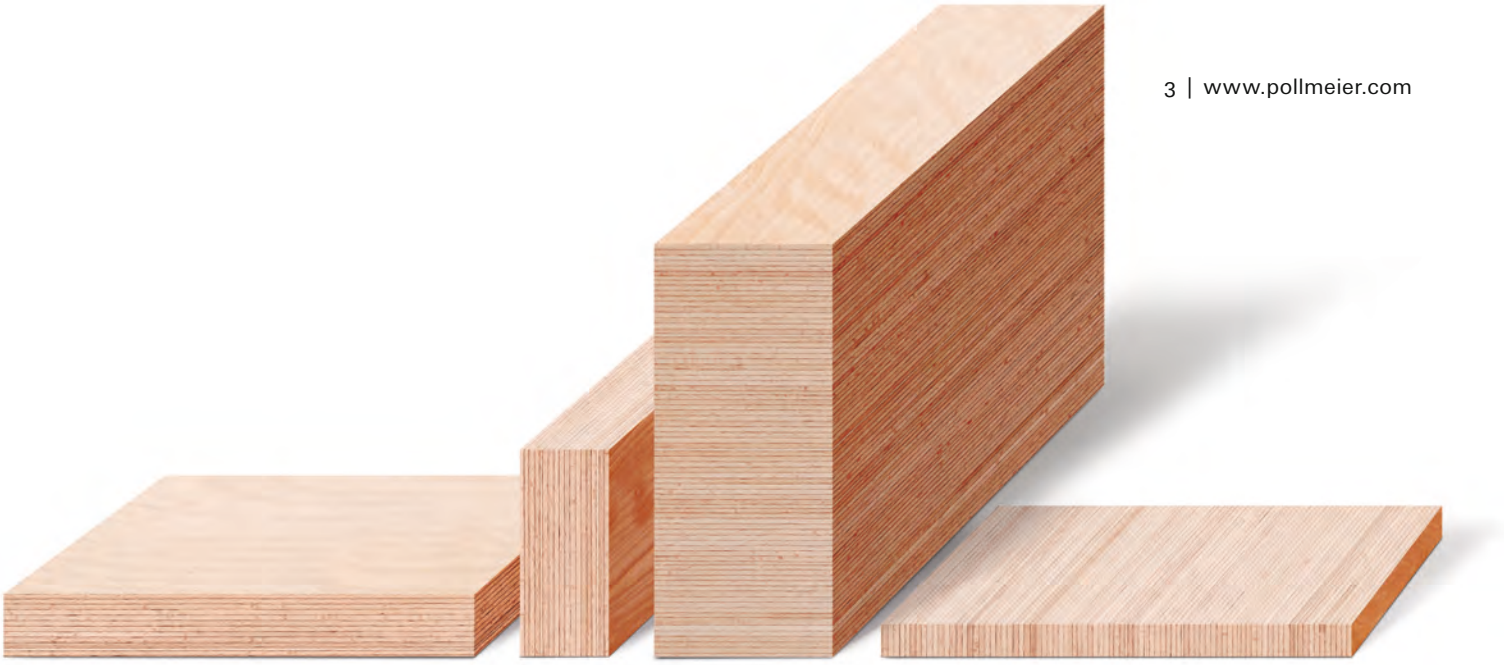
BauBuche

Wood as a building material has recently been experiencing a well-deserved revival. Its versatility as a material has long been known but its significance as a renewable resource has only been re-discovered in recent years.
Until now almost exclusively softwoods were used in timber construction. To process hardwoods as building material used to be too complicated and too expensive. At Pollmeier, we have changed that. With the aid of applied science we were able to develop a completely new process technology, which allows us to economically produce top-quality laminated veneer lumber from European beech for structural applications. We call it "BauBuche" and we use only raw materials from local and sustainably managed forests in its production. The tree is rotary peeled in one of the most modern production facilities in Europe and transformed into a high-tech material with hardly any loss in value of the material. This is carried out in production line precision: on the one side a whole tree trunk is fed in, on the other side out comes BauBuche. BauBuche includes boards and beams for structural timber construction as well as panels for furniture and interior design.
With its exceptionally high strength BauBuche allows structures with significantly slimmer dimensions, compared to softwood materials. The high surface quality makes BauBuche ideally suited for visible construction elements. And the cost-efficient manufacturing technology places structures using BauBuche at the same price level as conventional softwood structures.

"Sustainability, innovation, aesthetics and cost-efficiency come together beautifully in BauBuche."
Ralf Pollmeier



Board S and Board Q | S-board beams | Beams made of bonded lamellas | Panel

BauBuche Board S/Q
The laminated veneer lumber is available as boards bonded parallel to the grain (S-board) as well as with approximately 20 % cross-layers (Q-board). BauBuche S-board is mainly used to produce bar-shaped components. BauBuche Q-board is used for elements of surface structures such as load-bearing wall panels and for all applications where large-format boards are needed due to the high resistance to warping resulting from the cross-layers. The premium-quality beechwood surface is sanded and can be finished for a visually pleasing look.

Board S and Board Q
Thickness 40, 60, 80 mm
Width 100 – 1.850 mm
Length up to 18 m *

BauBuche Beam
The high strength of the beams made of beech laminated veneer lumber bonded parallel to the grain allows the production of slim structures for large spans and heavy load conditions. Strips of BauBuche S-board can be used as beams with "small" cross-sections up to 80 mm in width. The sides show the top-quality hardwood surface and the veneer layers are visible on the top and the bottom. Beams with cross-sectional widths of 50 to 300 mm are manufactured by bonding 40 mm thick strips of S-board. In these beams the sides show the appealing veneer layers and the top and the bottom the hardwood surface pattern. BauBuche Beams are sanded for a visually pleasing look.

S-board beams
Width 40, 60, 80 mm
Height 100 – 1.000 mm
Length up to 18 m *

Beams made of bonded lamellas
Width 50 – 300 mm
Height 120 – 600 mm
Height up to 1.360 mm on request
Length up to 18 m *

BauBuche Panel
The veneer layers of BauBuche Panel are bonded perpendicular to the surface, and can be used as table tops and sturdy work surfaces as well as ceiling and wall cladding, steps for stairs and elegant wood flooring with the hardness of industrial flooring. BauBuche Panels can be machined like solid hardwood for a visually pleasing look. The surfaces sanded on all sides are ideal for further finishing.

BauBuche Panel
Thickness 3 – 50 mm
Width 80 – 680 mm
Length up to 8 m *

* longer lengths on request

Ingenious hardwood
BauBuche

BauBuche uses local raw materials from sustainable forests with PEFC certification. — **BauBuche** is beneficial both to the environment and people because at its source in the forest it produces oxygen and binds CO_2. — Applying precise engineering technology, **BauBuche** preserves the morphology and strength of the natural wood. — **BauBuche** carries higher loads than softwood products. — **BauBuche** has a wide range of applications – from the smallest component up to 18-meter-long boards and beams. — The load-bearing capacity of **BauBuche** reduces dimensions and cross-sections in timber construction – more space and less material consumption. — **BauBuche** is distinguished by its 3.7 mm veneer layer precision and exceptional surface quality. — **BauBuche** is as easy to work with as solid wood, and is ideally suited for use in visible construction elements. — **BauBuche** revitalized the possibilities of laminated veneer lumber with top-quality aesthetics and unmatched strength. — The high density and uniformity of **BauBuche** saves on fasteners and thus costs. — **BauBuche** is price competitive through efficient manufacturing and economical use of materials.

Bending strength, density, and modulus of elasticity of BauBuche laminated veneer lumber in comparison with other materials.

characteristic bending strength N/mm²	characteristic density kg/m³	specific bending strength Nm/g	modulus of elasticity N/mm²	
70	**680**	**103**	**16.800**	**BauBuche**
48	480	100	13.800	laminated veneer lumber from spruce
24	470	51	11.600	glulam from spruce (GL24h)
120	2.700	44	70.000	aluminium
235	7.850	30	210.000	steel (S235)

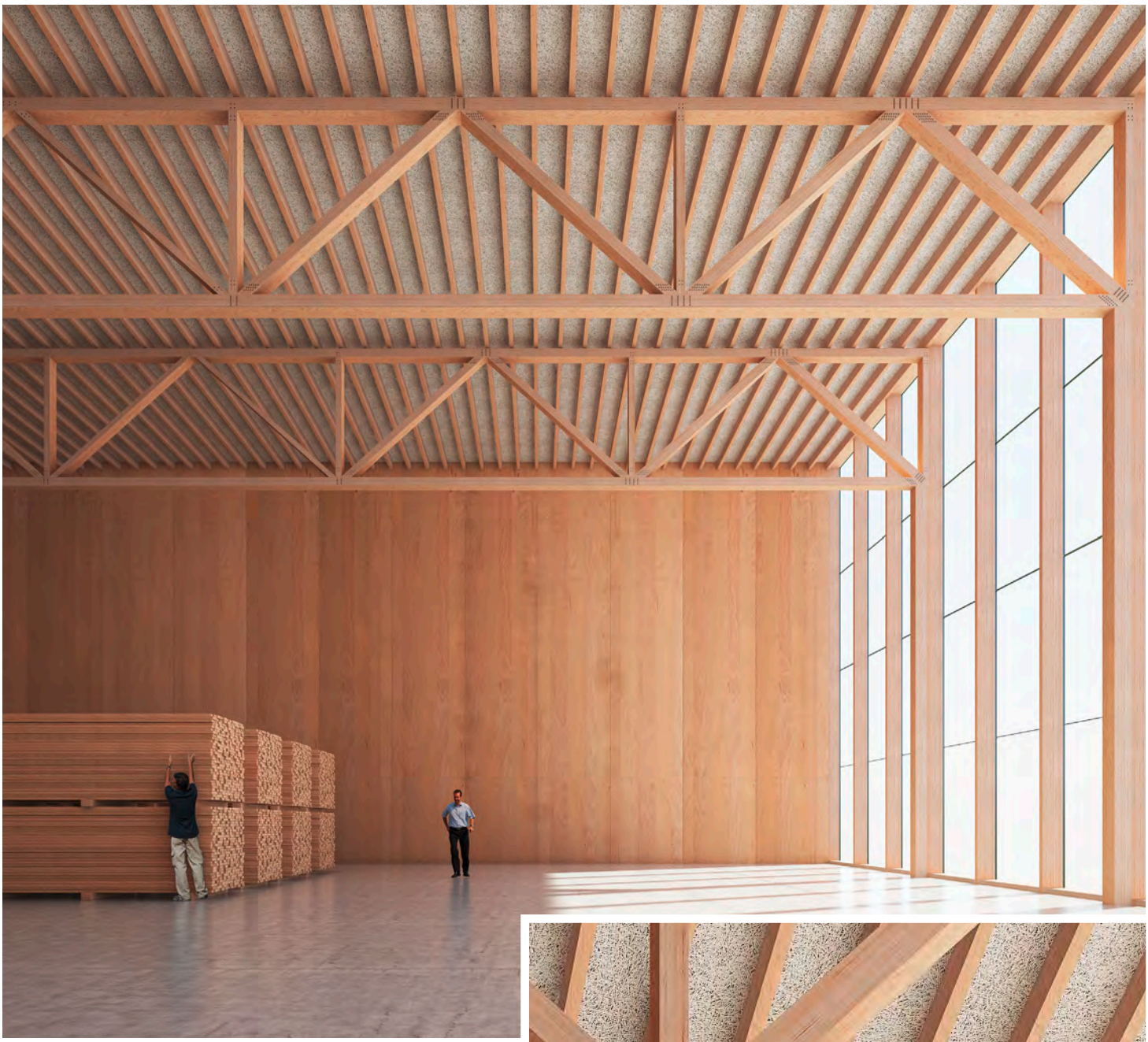
BauBuche laminated veneer lumber.
Performance in case of fire, wood moisture content and formaldehyde class:

Performance in case of fire
Fire class:
Class E acc. EN 13501:2007 + A1:2009
Mass burning rate according to DIN EN 1995-1-2:
β0 = 0,65 mm/min
βn = 0,7 mm/min

Formaldehyde class
Class E1 acc. EN 13986 Appendix B

Wood moisture content between 8 – 10 %
Swell and shrinkage behaviour per 1 %
change of moisture content:
parallel to the grain 0,01 (longitudinal)
perpendicular to the grain 0,32 (longitudinal)
Utilisation class according to
DIN EN 1995-1-2: 1 und 2

Project example / apartment visualization
Tier of beams from BauBuche S-board, soffit from BauBuche Board,
floating stairs, kitchen corner and table from BauBuche Panel.
Design: Architects Hermann Kaufmann ZT GmbH



Project example / hall visualization

Half-timbering, purlins, posts from BauBuche Beam, shear walls from BauBuche Board

Design: Architects Hermann Kaufmann ZT GmbH, Dimensioning: merz kleypartner ZT GmbH

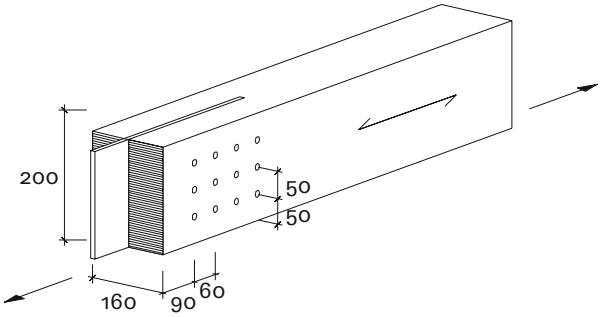
Comparison between BauBuche and spruce glulam when used in a lattice girder.
Due to higher rigidity and higher density BauBuche allows for considerably slimmer components when at the exposure to the same load.

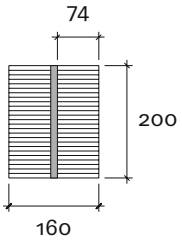
Fastener comparison of BauBuche beams with spruce glulam GL28h. Fasteners for BauBuche (beech laminated veneer lumber) must be dimensioned in compliance with section 4.2 according to EN 1995-1-1 in conjunction with EN 1995-1-1/NA with the equations for solid wood.

N_d = 300 kN, tensile splice double shear,
internal steel plate

Utilisation ratio of the bolts:
100 %

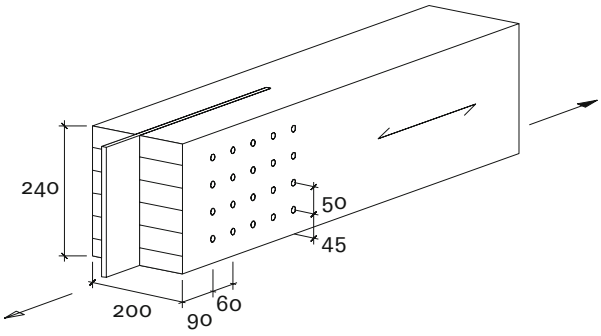
BauBuche Beam 12 bolts ø12

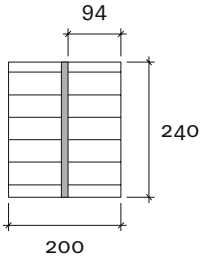




A = 32.000 mm²

Spruce glulam GL28h 20 bolts ø12





A = 48.000 mm²

Static calculation: Pirmin Jung Ingenieure für Holzbau

Characteristic strength values and rigidity values in N/mm² and characteristic density values in kg/m³ for "laminated veneer lumber with longitudinal layers" and "laminated veneer lumber with crosswise layers" according to the manufacturer's declaration of performance.

Loading direction	**BauBuche Board S** laminated veneer lumber longitudinal layers	**BauBuche Board Q** laminated veneer lumber crosswise layers
Nominal thickness in mm	20 ≤ B ≤ 120	20 ≤ B ≤ 100
Strength values		
Flatwise bending		
Bending $f_{m\,o,k}$	65	45
Compression $f_{c,90,k}$	10	10
Shear (Roll) $f_{v,k}$	3,3	3,3
Edgewise bending		
Bending [a] $f_{m,k}$	70	60
Tension || to grain $f_{t,o,k}$	70	40
Tension ⊥ to grain $f_{t,90,k}$	1,5	17
Compression || to grain $f_{c,o,k}$	41,6	24,2
Compression ⊥ to grain $f_{c,90,k}$	14	14
Shear $f_{v,k}$	9	9
Rigidity values		
Modulus of elasticity $E_{o,mean}$	16.800	11.800
Modulus of elasticity $E_{o,05}$	14.900	10.700
Modulus of elasticity $E_{90,mean}$	470	3.700
Modulus of shear, edge G_{mean}	760	890
Modulus of shear, flat G_{mean}	850	430
Density ρ_k	680	680

a) Values apply for h ≤ 300 mm. For 300 < h ≤ 1.000 mm, the characteristic strength must be multiplied by the coefficient $k_h = (300/h)^{0,12}$. h is the decisive dimension in mm for the bending load of the overall cross-section.

Characteristic strength, rigidity and density values for glulam made of laminated beech veneer lumber (BauBuche Beam made of bonded lamellas).

Strength Class		GL 70
Characteristic strength (N/mm²)		
$f_{m,y,k}$	Characteristic bending strength value for flatwise bending of the glulam lamellas	70 a)
$f_{m,z,k}$	Characteristic bending strength values for edgewise bending of the glulam lamellas	70
$f_{t,0,k}$	Characteristic strength value for tension parallel to grain	55 b)
$f_{t,90,k}$	Characteristic strength value for tension perpendicular to grain	1,2
$f_{c,0,k}$	Characteristic strength value for compression parallel to grain	49,5 c), d)
$f_{c,90,k}$	Characteristic strength value for compression perpendicular to grain	8,3 c)
$f_{v,k}$	Characteristic strength value for shear	4,0 e)
Rigidity Values (N/mm²)		
$E_{0,mean}$	Average elasticity modulus value parallel to grain	16.700
$E_{0,05}$	5 % quantile value of the elasticity modulus parallel to grain	15.300
$E_{90,mean}$	Average elasticity modulus value perpendicular to grain	470
$E_{90,05}$	5 % quantile value of the elasticity modulus perpendicular to grain	40
G_{mean}	Average value of shear modulus	850
G_{05}	5 % quantile value of shear modulus	760
Density Values (kg/m³)		
ρ_k	Characteristic density value	680

a) Under flatwise bending stress of the glulam lamellas the characteristic value of the bending strength may be multiplied by the coefficient of $k_{h,m} = (600/h)^{0,14}$. h = the height of the glulam cross section in mm.

b) The value of the characteristic tensile strength parallel to the grain may be multiplied by the coefficient of $k_{h,t} = (600/h)^{0,10}$. h = greater lateral length of the glulam cross section at a right angle to the longitudinal axis in mm.

c) The characteristic strength value for compression may be increased by the factor 1.2 in the case of exclusive use of the glulam under service class 1.

d) The characteristic strength value for compression parallel to the grain may be increased by the factor of $k_{c,0}$ = min (0,0009 x h + 0,892; 1,18) in case of more than three lamellas of laminated veneer lumber are being used in the glulam beam. h = height of the glulam section in mm.

e) The characteristic strength value for shear may be multiplied by the coefficient of $k_{h,v} = (600/h)^{0,25}$. h = height of the glulam beam in mm.