





## WOOD, AN INTELLIGENT RAW MATERIAL

Wood is a fascinating, versatile and at the same time intelligent material that plays an important role for us human beings in many ways. The young tree in the forest already fulfils a valuable purpose in addition to its important functions for our wellbeing, nature protection and as a useful material. It removes harmful CO<sub>2</sub> from the air, binds carbon C and releases oxygen O<sub>2</sub> to the atmosphere.

Due to the many fascinating applications of the raw material, we come into contact with wood every day. Be it as a simple cooking spoon, a musical instrument, an art object, furniture, heat and energy supplier or as a high-tech product for solid wood construction. The properties of this intelligent material are reflected, for example, in its load-bearing capacity durability, stability and fire resistance. Wood also has a positive effect on people's well-being and thus on their health.



## ADVANTAGES OF CLT BBS CONSTRUCTION

uncomplicated | fast | dry

The massive CLT BBS wood construction combines all the known advantages of solid constructions such as sound insulation, fire protection, solid construction, value resistance and more, with the ecological advantages of the sustainable raw material wood.

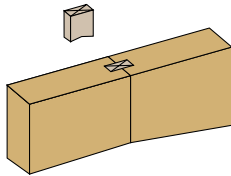
CLT BBS • residential comfort • **solid construction** • sustainable • fast • wood • **summer heat protection** • ecological • beautiful • natural • sound insulation • little waste • **film-free construction** • nature in architecture • short construction times • **2-axle load transfer** • **storage-effective mass** • 100-percent added value • **visible quality** • uncomplicated • natural product • **warm surface** • room gain • **open to diffusion** • dry • high shape stability • steam brake • low noise exposure • **simple connection details** • value-resistant • **fire protection** • **high insulation value** • rainproof after a few days • wood mass • low temperature flow • high prefabrication • **low construction strengths** • no drying times





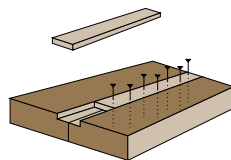
## BINDERHOLZ CLT BBS

CLT BBS is multi-layered and completely made of solid wood. By gluing longitudinal and transverse layers, the "working" of the wood is reduced to a minimum. This way, the requirements to modern building material are safely met. CLT BBS is solid finished wood that insulates heat while transferring loads. It is fire-resistant and has good sound-insulating features. It can be quickly assembled in a dry state and has a positive effect on the well-being of humans. With 99.4% wood and 0.6% adhesive, CLT BBS is a monolithic building material. Thanks to the combined application of the CLT BBS 125, CLT BBS 120 or CLT BBS 4ft system format and the large-format CLT BBS XL panel, handlers and planners can work even more flexibly with CLT BBS and thus make targeted use of the advantages of each individual format.



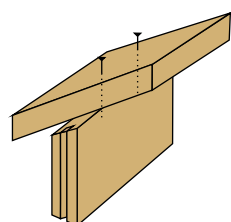
### CLT BBS WALL

CLT BBS wall elements meet all requirements of statics, stiffening, fire protection and building physics safely and solidly. CLT BBS constructions achieve all the usual thermal insulation values, which are state-of-the-art, and create a comfortable and balanced indoor climate due to the diffusion-open structure and the ability to dampen peak values of the room humidity.



### CLT BBS CEILING

The design of ceilings with CLT BBS not only provides structural advantages such as a self-supporting and dry construction, disc effect, shape-stable components, sufficient fire and sound insulation, but also finished visible surfaces as well as a high degree of residential comfort due to the positive effect of the wood mass on the indoor climate.



### CLT BBS ROOF

CLT BBS is suitable for any roof shape. This allows for rapid rain tightness and a finished visible surface on the inside. CLT BBS roof constructions meet all static, fire protection and sound engineering requirements safely and solidly. Since CLT BBS insulates heat well and stores it excellently at the same time, it not only contributes to a pleasantly warm room temperature in winter, but also to optimal protection against overheating of the building in summer (summer heat protection).



## ENGINEERING | TECHNICAL ADVICE

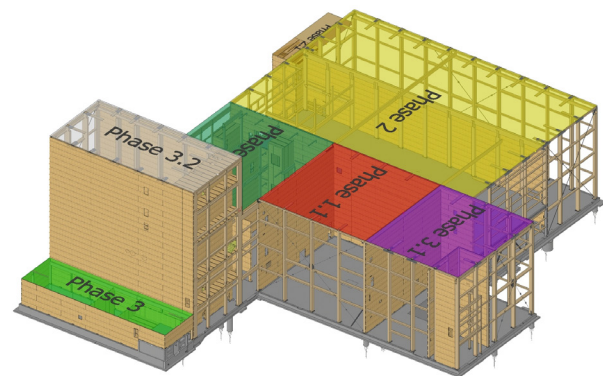
As a binderholz customer, you benefit from comprehensive advice and well-founded service. This is ensured by the experienced experts of our high-performance technical department. Our qualified engineers and construction technicians provide you with competent support in all questions of statics and construction, building physics and fire protection. Thanks to many years of experience and intensive research and development work, they are always one step ahead and not just at the latest state of the art.

### Our offered services

- Advice on all constructive binderholz solid wood products and their application possibilities
- Static, building physics and fire engineering construction solutions and component evaluations based on our Solid Timber Manual 2.0
- Individual project consulting by highly qualified employees in the back-office and in the field with technical project consulting, who will also visit your site if required
- Advice on supplementary construction, sealing and connection materials
- Product-specific support for creating performance directories
- We draw and work on state-of-the-art 3D CAD-CAM systems
- Optimised planning process through Building Information Modeling BIM

### Our services subject to payment

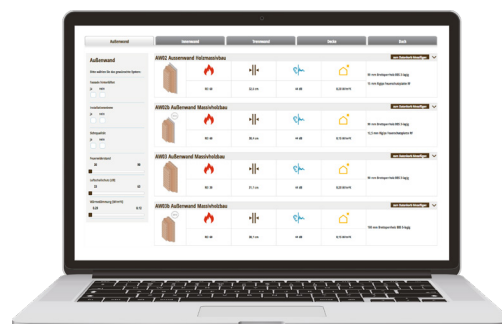
- Work plans based on submission or polishing plans include the following services:
  - Supportive coordination and communication with other trades or executing companies
  - Incorporation of execution details according to building statics such as component dimensions, details of attachment and connection tools, etc.
  - Incorporation of building physics details such as soundproof bearings, etc.
  - Induction of electrical and building technology planning, etc. on 2D or 3D plan basis
  - Output of floor plans and cross-sections
- Assembly plans for the construction of the solid wood shell (floor plans and cross-sections, 2D and 3D representations)
- 3D representations of the individual construction phases (axonometry)
- Loading plans for solid wood components



## SOLID TIMBER MANUAL 2.0

The Solid Timber Manual 2.0 is a detailed reference work for architects, planners, builders as well as performers and investors interested in solid wood construction solutions. In the new version, the components were not only evaluated for sound technology, but also the sound inroads via flanked components and component connections were taken into account.

All superstructures as well as a sophisticated selection procedure can be found in our online database at [www.massivholzhandbuch.com/en](http://www.massivholzhandbuch.com/en). There you will also find detailed documents as well as drawings for the desired selection.





## TESTED QUALITY

### PEFC

All binderholz products are PEFC-certified and controlled. The implementation of the strict PEFC criteria and permanent internal self-monitoring of the movements of round and sawn timber in combination with annual external monitoring on site is ensured.



### EPD

Institut Bauen und Umwelt e.V. (IBU) has issued the certificate Environmental Product Declaration (EPD) for all binderholz solid wood products. This certificate includes all the environmental and resource-saving features of the tested product throughout its whole lifecycle.



### APPROVED THROUGHOUT EUROPE

binderholz CLT BBS is a building material with CE marking, approved throughout Europe. Already in 2006, CLT BBS received the European Technical Approval ETA-06/0009 as well as the French approval DTA 3.3/19-1007\_V1.

### USA APPROVAL ICC-ES ESR-4081

binderholz CLT BBS is approved for the US market in the formats CLT BBS 125, CLT BBS 120, CLT BBS 4ft and CLT BBS XL according to the requirements of the International Building Code IBC. The certification was carried out by the International Code Council Evaluation Service ICC-ES and assigned the approval number ESR-4081. The basis for this is the US standard ANSI/APA PRG-320-2019.



## STATICS AND CONSTRUCTION

CLT BBS is nationally and internationally certified and approved in Europe via the European Technical Assessment ETA-06/0009. Recognised European testing institutes regularly monitor all binderholz production sites. binderholz provides free programmes for the static design of binderholz CLT BBS to planners, engineers and customers.

### binderholz DC statics **Statik**

The software company Dietrich's developed this company-specific version of a design program for solid wood construction with binderholz. binderholz DC Statics is free of charge for our customers. In addition to project management features, the program contains various input interfaces for designing CLT BBS ceilings, roofs, walls and beams. Due to the extensive material data supplied, the intuitive tools and the automatic determination of the loads, there is no need to search for information in other sources. Automatic generation of the evidence documents, in a clear gradation, ensures the verifiability of the evidence.



Download

### Wallner Mild construction software

With this Excel-based program, binderholz CLT BBS components such as walls, ceilings, roofs and beams can be easily sized. The calculations are carried out in accordance with Eurocode 5 (EN 1995-1) taking into account the country-specific national appendices and documented in a component-related expression.



Download

## BINDERHOLZ CLT BBS | SURFACES

### Non-visible C

Non-visible quality is mainly used in construction for subsequent covering on site, e.g. with plasterboard. The lamellas are quality sorted and kiln dried. No optical requirements are attached to these CLT BBS elements. Discoloration as well as different types of wood are permitted.



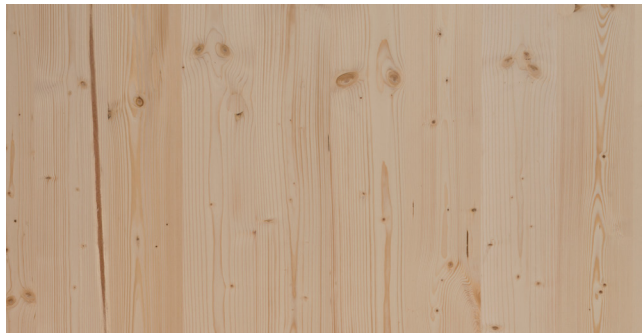
### Industrial visible BC

This quality is intended for use in commercial and industrial buildings. The cover layer made of spruce is optionally sanded or brushed on one side.



### Residential visible AB

Residential visible quality is used in residential, school and office construction, among others. The top layer of spruce is either sanded on both sides or brushed on one side. The wood types pine, larch or Douglas fir are sanded.



Other surfaces:



Pine



Larch



Douglas fir



# BINDERHOLZ CLT BBS | SORTING OF THE COVER LAYER

**The change in the wood moisture and thus the effect on the optics of visual surfaces is divided into 3 steps:**

**Production:** The cross-gluing of the kiln dried lamellas (wood moisture 11% +/- 2%) reduces the natural shrinkage and swelling of CLT BBS to a minimum.

**Shell construction and assembly:** CLT BBS is exposed to natural, seasonal climate changes during the assembly and shell construction period. Thus, wood moisture can change depending on the prevailing climatic conditions.

**Building use:** During a period of up to 3 heating seasons, CLT BBS will level out at an average wood moisture content of approx. 8 - 10%. This adjustment of the wood moisture can lead to optical changes, such as cracks or joints in CLT BBS with visible surfaces. This does not affect the static properties of CLT BBS.

Even the most careful production or low wood moisture fluctuations of CLT BBS cannot completely exclude the formation of cracks and joints. In visible quality, their appearance can be enhanced by opaque coatings.

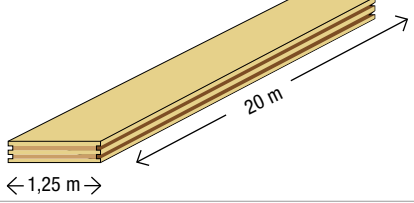
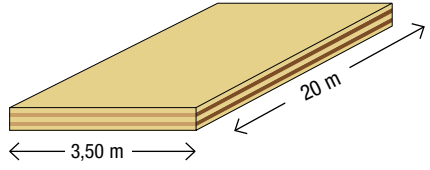
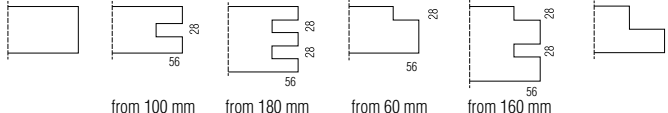
Exposed external positions of CLT BBS have a generally positive effect on the load-supporting behaviour, but on the other hand lead to a stronger shrinkage and swelling and thus to increased cracking and/or joint formation.

| Surface CLT BBS*                           |   |   |                                    |
|--|---|---|------------------------------------|
| Characteristics                            | Residential visible AB  | Industrial visible BC   | Non-visible C                      |
| <b>Branches</b>                            | Healthy branches firmly grown together: allowed<br>Black branches: occasionally allowed | Allowed   | Allowed                            |
| <b>Compression wood</b>                    | Allowed   | Allowed   | Allowed                            |
| <b>Dowels &amp; repaired resin pockets</b> | Allowed   | Allowed   | Allowed                            |
| <b>Appearance</b>                          | Balanced  | No requirements   | No requirements                    |
| <b>Resin pockets</b>                       | Only up to 3 mm x 50 mm allowed   | Allowed   | Allowed                            |
| <b>Insect infestation</b>                  | Not allowed   | Not allowed   | Occasionally allowed               |
| <b>Pith</b>                                | Occasionally allowed  | Allowed   | Allowed                            |
| <b>Quality of surface treatment</b>        | Occasional small flaws are allowed, e.g. small tears caused by wood plane               | Occasional small flaws are allowed, e.g. small tears caused by wood plane | Faults allowed                     |
| <b>Ingrown bark</b>                        | Occasionally allowed  | Occasionally allowed  | Allowed                            |
| <b>Cracks</b>                              | Occasional surface cracks allowed   | Occasionally allowed  | Allowed                            |
| <b>Discoloration</b>                       | Slight discoloration allowed  | Allowed   | Allowed                            |
| <b>Bonding</b>                             | Occasional open joints up to max. 1 mm allowed  | Occasionally open joints up to max. 2 mm allowed                          | Open joints up to max.4 mm allowed |
| <b>Wane</b>                                | Not allowed   | Not allowed   | Allowed                            |

\* Based on DIN EN 13017-1:2000-01 and in compliance with the strength sorting EN 14081-1 (S10); Delivery state



## BINDERHOLZ CLT BBS | TECHNICAL DATA

|                             |                               | CLT BBS 125   CLT BBS 120   CLT BBS 4ft  | CLT BBS XL  |
|-----------------------------|-------------------------------|--|---|
|                             |                               |   |   |
| <b>Composition</b>          |                               | Cross laminated timber   3 and 5 layers  | Cross laminated timber   3 and 5 layers   |
| <b>Format</b>               |                               | System format  | Large format  |
| <b>Width   Length</b>       |                               | 1,25 m   up to 20 m (BBS 125), 1,20 m   up to 20 m (BBS 120)<br>1,219 m   up to 20 m (BBS 4ft)* *USA unit of measurement 'foot'  | maximum 3,50 m   up to 16 m resp. up to 20 m on request   |
| <b>Strength</b>             |                               | 60 to 280 mm   | 60 to 280 mm  |
| <b>Moisture content</b>     |                               | 11% +/- 2% on delivery   |   |
| <b>CLT BBS dead load</b>    |                               | 480 kg/m <sup>3</sup>  |   |
| <b>Slats</b>                |                               | Thickness 20, 30 or 40 mm   Softwood, kiln dried, quality sorted   |   |
| <b>Quality of Top layer</b> |                               | Classification according to DIN EN 13017-1   |   |
|                             |                               | AB - Residential visible quality as a single-layer panel   BC - Industrial visible quality as a single-layer panel<br>C - Non-visible quality  |   |
| <b>Top layer</b>            | <b>Residential visible AB</b> | Cover layer longitudinally (DL)<br>sanded or brushed as a single-layer panel<br>wood species: spruce   | Cover layer longitudinal (DL) as single-layer panel (finger jointed lamellas)   cover layer transverse (DQ)<br>sanded as a single-layer panel<br>wood species: spruce, pine |
|                             | <b>Industrial visible BC</b>  | Cover layer longitudinal (DL)<br>sanded or brushed as a single-layer panel<br>wood species: spruce   | Cover layer longitudinal (DL) as a single-layer panel (finger jointed lamellas)   Cover layer transverse (DQ)<br>sanded as a single-layer panel<br>wood species: spruce     |
|                             | <b>Non-visible C</b>          | Cover layer longitudinal (DL) planed as a single-layer panel, wood species: coniferous wood  | Cover layer longitudinal (DL)   Cover layer transverse (DQ)<br>planed, wood species: coniferous wood  |
| <b>Finger jointing</b>      |                               | General finger joint   | Slats partially finger joint  |
| <b>Clearing widths</b>      |                               | 0,625 and 1,25 m (BBS 125), 0,600 and 1,20 m (BBS 120)<br>0,610 and 1,22 m (BBS 4ft)   | 2,20   2,40   2,45   2,50   2,60   2,75   2,85   2,95   3,20   3,50 m   |
| <b>Machining</b>            |                               | CNC processing possible  |   |
| <b>Longitudinal margins</b> |                               |  <p>from 100 mm    from 180 mm    from 60 mm    from 160 mm    Special profiles on request</p>   |   |
| <b>Bonding</b>              |                               | CLT BBS surface and general finger joint 1K-PUR according to EN 15425 + EN 14080:2013, formaldehyde-free bonding, narrow side bonding of the cover layers (MUF, PVAc and Hotmelt)  |   |
| <b>Shape change</b>         |                               | On panel level: 0.01% shape change per % change of humidity<br>Right angle to panel level: 0.24% per % change in humidity  |   |
| <b>Thermal insulation</b>   |                               | Thermal conductivity according to EN ISO 10456: $\lambda_R = 0.12$ W/mK   specific heat capacity $c = 1600$ J/kgK<br>U-values for construction superstructures: see binderholz Solid Wood Construction Manual  |   |
| <b>Soundproofing</b>        |                               | High sound insulation capability due to solid construction   Expert opinion on request<br>See binderholz Solid Wood Construction Manual  |   |
| <b>Fire protection</b>      |                               | According to EN 13501: D, s2, d0   Expert opinion for REI 30 - 120 as well as classification reports and ABPs on request<br>Tested burning rates at 90 minutes fire duration: walls 0.75 mm/min, ceilings 0.90 mm/min<br>Fire protection coating (surface B-s1, d0 according to EN 13501-1) on request |   |
| <b>Diffusion resistance</b> |                               | Without diffusion barrier, with vapour retarder   $\mu = 40 - 70$ (depending on wood moisture and number of glue joints)   |   |
| <b>Airtightness</b>         |                               | Airtight from 3-layer composition, expert opinion on request   |   |
| <b>Usage classes</b>        |                               | Approved for use classes 1 or 2 in accordance with EN 1995-1-1   |   |
| <b>Impregnations</b>        |                               | Impregnation Class 2 for protection against fungal and insect infestation according to DIN 68800, CTB P+ certificate   |   |
| <b>Approvals</b>            |                               | European Technical Approval ETA-06/0009   CE marking<br>French DTA approval 3.3/19-1007_V2   US approval ICC-ES ESR-4081 according to ANSI/APA PRG-320-2019  |   |



# BINDERHOLZ CLT BBS I CHARACTERISTIC VALUES

Net cross-sectional values for CLT BBS

| Layers | Thickness (mm) | Structure (mm)* |    |    |    |    | Characteristic values  |                        |                        |                       |
|--------|----------------|-----------------|----|----|----|----|------------------------|------------------------|------------------------|-----------------------|
|        |                | S1              | S2 | S3 | S4 | S5 | A <sub>net</sub> (cm²) | W <sub>net</sub> (cm³) | I <sub>net</sub> (cm⁴) | i <sub>net</sub> (cm) |
| 3      | 60             | 20              | 20 | 20 |    |    | 400                    | 578                    | 1733                   | 4,3                   |
|        | 80             | 30              | 20 | 30 |    |    | 600                    | 1050                   | 4200                   | 7,0                   |
|        | 90             | 30              | 30 | 30 |    |    | 600                    | 1300                   | 5850                   | 9,8                   |
|        | 100            | 30              | 40 | 30 |    |    | 600                    | 1560                   | 7800                   | 13,0                  |
|        | 120**          | 40              | 40 | 40 |    |    | 800                    | 2311                   | 13867                  | 17,3                  |
|        | 160**          | 60              | 40 | 60 |    |    | 1200                   | 4200                   | 33600                  | 28,0                  |
| 5      | 100            | 20              | 20 | 20 | 20 | 20 | 600                    | 1320                   | 6600                   | 11,0                  |
|        | 120            | 30              | 20 | 20 | 20 | 30 | 800                    | 2111                   | 12667                  | 15,8                  |
|        | 140**          | 40              | 20 | 20 | 20 | 40 | 1000                   | 3019                   | 21133                  | 21,1                  |
|        | 160**          | 40              | 20 | 40 | 20 | 40 | 1200                   | 3800                   | 30400                  | 25,3                  |
|        | 180**          | 60              | 20 | 20 | 20 | 60 | 1400                   | 5207                   | 46867                  | 33,5                  |
|        | 200**          | 60              | 20 | 40 | 20 | 60 | 1600                   | 6293                   | 62933                  | 39,3                  |
|        | 220**          | 60              | 30 | 40 | 30 | 60 | 1600                   | 7358                   | 80933                  | 50,6                  |
|        | 240**          | 80              | 20 | 40 | 20 | 80 | 2000                   | 9289                   | 111467                 | 55,7                  |
|        | 260**          | 80              | 30 | 40 | 30 | 80 | 2000                   | 10667                  | 138667                 | 69,3                  |
|        | 280**          | 80              | 40 | 40 | 40 | 80 | 2000                   | 12076                  | 169067                 | 84,5                  |

I<sub>net</sub> ... Moment of Inertia | A<sub>net</sub> ... Cross-sectional area net (longitudinal layers only) | i<sub>net</sub> ... Radius of Inertia | W<sub>net</sub> ... Section modulus

\*Quality of the top layer according to DIN EN 13017-1:

AB ... One-side/double-side residential visible quality | BC ... One-side/double-side industrial visible quality | NH-C ... Non-visible

\*\*CLT BBS one-side residential visible quality AB uses the proven double longitudinal layer consisting of a 20 mm thick visible cover layer glued in parallel with a second at least 20 mm thick longitudinal layer.

| Type of stress                      |                     | EN 1995-1-1   EN 338   N/mm²             |            |
|-------------------------------------|---------------------|--|------------|
|                                     |                     | CLT BBS 125   CLT BBS 120<br>CLT BBS 4ft | CLT BBS XL |
| E-module single layers              | E <sub>0,mean</sub> | 12.000                                   | 12.000     |
| Modulus of shear                    | G <sub>mean</sub>   | 690                                      | 690        |
| Modulus of rolling shear            | G <sub>r,mean</sub> | 50                                       | 50         |
| Bending perpendicular to plane      | f <sub>m,k</sub>    | 18                                       | 24         |
| Rolling shear from transverse force | f <sub>R,k</sub>    | 1  | 1          |
| Compression in plane                | f <sub>c,0,k</sub>  | 21                                       | 21         |
| Compression perpendicular to plane  | f <sub>c,90,k</sub> | 2,5                                      | 2,5        |
| Tension in plane                    | f <sub>t,0,k</sub>  | 10,15                                    | 14,5       |



## BINDERHOLZ CLT BBS | TOP LAYER

For years we have been using the **proven double-length layer** for **CLT BBS residential visible quality AB**. This always consists of a 20 mm thick visible cover layer glued together with a second at least 20 mm thick longitudinal layer. In the same grain direction, we combine the best visible quality and high dimensional stability of the cover layer with a high load-bearing capacity of the element. The real value of CLT BBS visible quality becomes usually clear after 1 to 3 heating seasons.

**Use our experience to your advantage.**



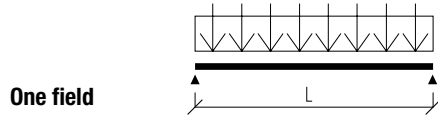


# BINDERHOLZ CLT BBS | PRE-MEASUREMENT

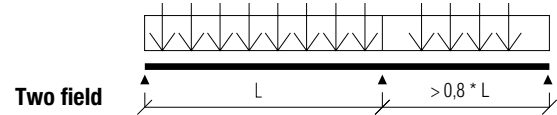
## CEILING DESIGN IN MULTI-STOREY BUILDING CONSTRUCTION (DKL 1)

DKL 1 (ceiling class 1)

- Ceilings between different usage units (also continuous)
- Use as apartment partitions in multi-family dwellings
- Ceilings in offices with PC use or meeting rooms
- Corridors with short spans



| Load<br>(kN/m)   |                | Span   |       |       |       |       |       |
|------------------|----------------|--------|-------|-------|-------|-------|-------|
| g <sub>1,k</sub> | n <sub>k</sub> | 3,5 m  | 4,0 m | 4,5 m | 5,0 m | 5,5 m | 6,0 m |
| 1,0              | 2,0            | 120-5s | 160   | 160   | 180   | 180   | 220   |
| 1,5              | 2,0            | 120-5s | 160   | 160   | 180   | 200   | 220   |
| 2,0              | 2,0            | 120-5s | 160   | 160   | 180   | 200   | 240   |
| 2,5              | 2,0            | 120-5s | 160   | 160   | 200   | 220   | 240   |
| 2,0              | 3,0            | 120-5s | 160   | 160   | 180   | 200   | 240   |
| 2,5              | 3,0            | 120-5s | 160   | 160   | 200   | 220   | 240   |
| 2,0              | 4,0            | 140    | 160   | 160   | 180   | 200   | 240   |
| 3,0              | 2,0            | 120-5s | 160   | 180   | 200   | 220   | 240   |
| 3,0              | 4,0            | 140    | 160   | 180   | 200   | 220   | 240   |



| Load<br>(kN/m)   |                | Span   |        |       |       |       |       |
|------------------|----------------|--------|--------|-------|-------|-------|-------|
| g <sub>1,k</sub> | n <sub>k</sub> | 3,5 m  | 4,0 m  | 4,5 m | 5,0 m | 5,5 m | 6,0 m |
| 1,0              | 2,0            | 120-5s | 120-5s | 160   | 160   | 180   | 180   |
| 1,5              | 2,0            | 120-5s | 120-5s | 160   | 180   | 180   | 200   |
| 2,0              | 2,0            | 120-5s | 120-5s | 160   | 180   | 180   | 200   |
| 2,5              | 2,0            | 120-5s | 140    | 160   | 180   | 180   | 200   |
| 2,0              | 3,0            | 120-5s | 120-5s | 160   | 180   | 180   | 200   |
| 2,5              | 3,0            | 120-5s | 140    | 160   | 180   | 180   | 200   |
| 2,0              | 4,0            | 120-5s | 140    | 160   | 180   | 180   | 200   |
| 3,0              | 2,0            | 120-5s | 160    | 160   | 180   | 180   | 200   |
| 3,0              | 4,0            | 120-5s | 160    | 160   | 180   | 180   | 200   |

3s ... 3-layer | 5s ... 5-layer

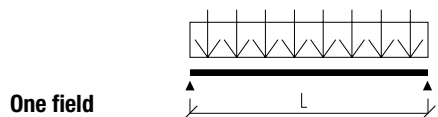
R30 R60 R90 R120

The length of the shorter field is between 80% and 100% of the longer field.

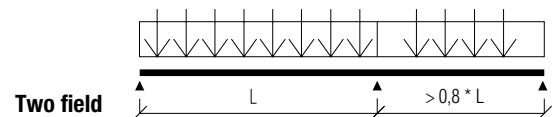
## CEILING DESIGN IN SINGLE-FAMILY HOMES (DKL 2)

DKL 2 (ceiling class 2)

- Ceilings within one unit of use
- Ceilings in single-family homes with normal use



| Load<br>(kN/m)   |                | Span   |        |       |       |       |       |
|------------------|----------------|--------|--------|-------|-------|-------|-------|
| g <sub>1,k</sub> | n <sub>k</sub> | 3,5 m  | 4,0 m  | 4,5 m | 5,0 m | 5,5 m | 6,0 m |
| 1,0              | 2,0            | 100-5s | 120-5s | 140   | 140   | 140   | 160   |
| 1,5              | 2,0            | 100-5s | 120-5s | 140   | 140   | 160   | 180   |
| 2,0              | 2,0            | 120-5s | 120-5s | 140   | 160   | 180   | 200   |
| 2,5              | 2,0            | 120-5s | 140    | 140   | 160   | 180   | 200   |
| 2,0              | 3,0            | 120-5s | 140    | 140   | 160   | 180   | 200   |
| 2,5              | 3,0            | 120-5s | 140    | 140   | 160   | 180   | 200   |
| 2,0              | 4,0            | 120-5s | 140    | 140   | 160   | 180   | 200   |
| 3,0              | 2,0            | 120-5s | 140    | 140   | 160   | 180   | 200   |
| 3,0              | 4,0            | 120-5s | 140    | 160   | 180   | 200   | 200   |



| Load<br>(kN/m)   |                | Span   |        |        |        |       |       |
|------------------|----------------|--------|--------|--------|--------|-------|-------|
| g <sub>1,k</sub> | n <sub>k</sub> | 3,5 m  | 4,0 m  | 4,5 m  | 5,0 m  | 5,5 m | 6,0 m |
| 1,0              | 2,0            | 100-5s | 100-5s | 120-5s | 120-5s | 140   | 160   |
| 1,5              | 2,0            | 100-5s | 100-5s | 120-5s | 120-5s | 160   | 180   |
| 2,0              | 2,0            | 100-5s | 100-5s | 120-5s | 120-5s | 160   | 180   |
| 2,5              | 2,0            | 100-5s | 100-5s | 140    | 140    | 160   | 180   |
| 2,0              | 3,0            | 100-5s | 120-5s | 120-5s | 140    | 160   | 180   |
| 2,5              | 3,0            | 100-5s | 120-5s | 140    | 140    | 160   | 180   |
| 2,0              | 4,0            | 100-5s | 120-5s | 120-5s | 140    | 160   | 180   |
| 3,0              | 2,0            | 120-5s | 120-5s | 140    | 140    | 160   | 180   |
| 3,0              | 4,0            | 120-5s | 120-5s | 140    | 160    | 160   | 180   |

3s ... 3-layer | 5s ... 5-layer

R30 R60 R90 R120

The length of the shorter field is between 80% and 100% of the longer field.

### Requirements:

Usage class NKL 1 (interior rooms  $k_{\text{def}} = 0.8$ ), permanent load  $g_{1k}$ : permanent structural load without net weight of CLT BBS (this has already been taken into account in the calculation)

Live load  $n_k$ : categories A and B (residential and office space:  $\psi_0 = 0.7$   $\psi_1 = 0.5$   $\psi_2 = 0.3$  load duration medium,  $k_{\text{mod}} = 0.8$ )

Fire design according to EN 1995-1-2 and expert opinion IBS-319072401-1 (charring rate for ceilings  $\beta_n = 0.9$  mm/min)

Vibration requirements subdivided according to DKL 1 and DKL 2.

### Cross-sectional values:

Calculation of CLT BBS cross-sections according to EN 1995-1 using the gamma method (flexible composite). For continuous beams  $l_{\text{eff}} = 4/5 \cdot$

! These tables are used for pre-measurement of CLT BBS and do not replace static calculations. The characteristic loads have been applied as uniformly distributed loads.

# BINDERHOLZ CLT BBS | GENERAL NOTES

## CNC Processing

CLT BBS is machined with automatic profiling and CNC-controlled cutting systems. These machining devices are equipped with tools for the processing of raw material.



## Lifting systems

On request, we can already install various lifting systems at the factory. Dependant on the component size and use, you can choose from the following systems:

- T-Lift screw for lifting system
- Lifting slings in lengths of 0.8 m | 1.0 m | 1.5 m | 2 m
- Lifting slings with steel bar
- Through-holes and blind holes for Pitzl Power Clamp or Siga Pick



## Transport sealing and packaging

During transport, CLT BBS elements are protected from weather impact. For this purpose, the CLT BBS elements are either combined to individual packages or loaded directly onto semi-trailers at the factory, and the entire load is sealed off as one package protected from weather conditions. In coordination with the customer, as far as possible, the sequence of deliveries and package sizes are agreed on, under consideration of the legal transport regulations.

CLT BBS ceiling and roof elements are packed with the "visible side down, except the bottom element" in each package. This way we ensure the protection of the high-quality CLT BBS visible surfaces from contamination and damage during loading and unloading, transport and intermediate storage.



## Transport and loading

In principle, the CLT BBS elements are transported lying down, regardless of whether they are delivered by truck, train or ship. However, on request, it is also possible to load the CLT BBS elements in an upright position.

The delivery of special orders with custom lengths and/or widths is also part of our daily responsibilities and is gladly offered taking into account legal and country-specific transport regulations. Long-distance transport of CLT BBS by rail can be an attractive alternative to truck transport. It is environmentally friendly, CO<sub>2</sub>-saving and suitable for large volumes. Whether transported by truck or train, goods are loaded by forklift or crane. CLT BBS elements for ship transport can be ideally loaded into containers at the factory by means of a special loading device.

For more details, please ask our sales representatives.



## Unloading aids

On request, lifting loops can be attached to the CLT BBS packages at the factory. This ensures fast and safe unloading of the truck.





### Temporary sealing for the construction period

On request, a full-surface temporary sealing for the construction period can be offered at the factory. It can be applied for up to 4 weeks as temporary construction time sealing for ceilings and roofs and allows the goods to be exposed to outdoor weathering (rain and UV exposure). The processing instructions of the manufacturer of the sealing membrane as well as the instructions of the company binderholz regarding the temporary construction time sealing must be observed and adhered to. For more details, please ask our sales representatives.



### Prefabricated wall elements

On request, we offer the prefabrication of CLT BBS wall elements with one-sided or double-sided plasterboard cladding. The cladding can be carried out either single-layer, multi-layer or as an attachment shell. We process 12.5 mm, 15 mm and 18 mm thick plasterboard. The wall elements are protected from weathering during delivery.



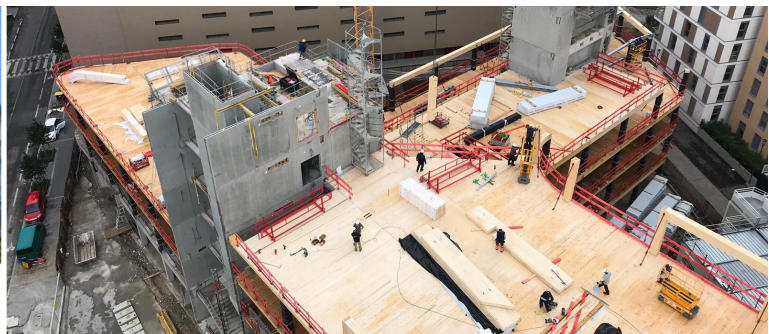
### Dip impregnation

For protection against fungal and insect infestations, CLT BBS can be dip-impregnated in the factory on request. This procedure meets country-specific requirements for wood protection. The immersible impregnation meets the French "Classe 2" requirements.



### Hilti fire foreclosures

Existing fire protection solutions with Hilti cable and pipe sleeves (grommets) in combination with CLT BBS have been proven to guarantee safe sealing against fire, smoke and extreme temperature. For this purpose, binderholz and Hilti have carried out extensive fire resistance tests on CLT BBS wall and ceiling elements. For more details, please ask our sales representatives.











# BINDERHOLZ CLT BBS | MASS TIMBER SOLUTIONS

Single-family house  
Residential building  
Public | Municipal  
Commercial | Industrial  
Tourism

Details on [www.binderholz.com/en-us](http://www.binderholz.com/en-us)  
mass timber solutions | top references



binderholz office building  
in Baruth | Germany



Train station and town hall  
'Stadshus', Växjö | Sweden



Quartier Prinz-Eugen-Park,  
Munich | Germany



Hotel MalisGarten,  
Zell am Ziller | Austria



Seethalerhuette at the  
Dachstein | Austria



Coffee Production Plant Johannson,  
Vestby | Norway



Single-family house,  
Uderns | Austria



Water Park Rulantica,  
Rust | Germany



Private semi-detached house  
Mut zur Lücke, Innsbruck | Austria



Student Dormitory 'Adohi Hall',  
Arkansas | USA

## SALES | CONTACT

[bbs@binderholz.com](mailto:bbs@binderholz.com)

**binderholz** ■

**Binderholz Bausysteme GmbH · CLT BBS**

Solvay-Halvic-Strasse 46 · A-5400 Hallein  
fon +43 6245 70500 · fax +43 6245 70500-17001  
[bbs@binderholz.com](mailto:bbs@binderholz.com) · [www.binderholz.com](http://www.binderholz.com)



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