

## Declaration of performance for the construction product (DOP)

### Binderholz CLT BBS large-format

DOP-BHBU-32-1	
Unique identification code of the product type	BBS XL Binderholz CLT „BBS large-format“ according to ETA-06/0009
Intended use	CLT BBS, multi-ply timber construction elements for wall, ceiling, roof and special construction elements for load-bearing purposes
Manufacturer	Binderholz Bausysteme GmbH · timber industry Zillertalstraße 39 · A-6263 Fügen  W03 W04 Binderholz Burgbernheim GmbH · Cross laminated timber plant Rothenburger Straße 46 · D-91593 Burgbernheim
Agent	NPD
System for assessing and inspecting constancy of performance	System 1
European Assessment Document (EAD) European Technical Assessment (ETA)	EAD 130005-00-0304 ETA 06/0009
Technical Assessment Office Notified body	Deutsches Institut für Bautechnik (DIBt) Holzforschung Austria 1359
Certification of constancy of performance certificate no.	1359-CPR-0758

Essential characteristics	Declared performance
Format	BBS large-format and large-format DQ
Number of layers	$3 \leq n \leq 15$ (max. 3 fibres running in parallel)
Thickness range	51 – 315mm
Width	$\leq 3,5\text{m}$
Length	$\leq 22\text{m}$
Adhesives used for surface bonding and finger-jointing	Typ 1 according to EN 15425  can be no-load-bearing narrow side bonded: Hotmelt, PVAC, MUF
Adhesive joint integrity as delamination test according to EN 14080, Annex C, Method B	Delamination fulfilled

Essential characteristics	Declared performance
<b>Other mechanical impacts</b>	
Dimensional stability as Tolerances according to EN 336 for thickness and width	Length tolerance: +/- 2mm Width tolerance: +/- 2mm Thickness tolerance: +/- 1mm
Dimensional stability as moisture in delivery condition	11% +/- 2%
Durability class of the untreated wood	5
Durability of wood Use classes according to EN 1995-1-1	1 or 2
Coefficient of thermal expansion according to EN 1995-1-1	$\alpha = 5 \times 10^{-6}/\text{K}$

Mechanical strength and stability			
Panel loads	Declared performance	Draft	
<b>Bending strength</b>  Characteristic bending strength parallel to the grain direction of the top layer $f_{m,k}$ Characteristic bending strength perpendicular to the grain direction of the top layer $f_{m,k}$	24 N/mm <sup>2</sup>  24 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Shear modulus</b>  Parallel to the grain direction of the top layer $G_{0,mean}$ Vertical to the grain direction of the top layer $G_{0,mean}$	690 N/mm <sup>2</sup> 690 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Rolling shear module</b>  Parallel to the grain direction of the top layer $G_{90,90,mean}$ Vertical to the grain direction of the top layer $G_{90,90,mean}$	50 N/mm <sup>2</sup> 50 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Modulus of elasticity</b>  Parallel to the grain direction of the top layer $E_{0,mean}$ Vertical to the grain direction of the top layer $E_{0,mean}$	12.000 N/mm <sup>2</sup> 12.000 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Tensile strength</b>  Vertical to the panel plane $f_{t,90,k}$	0,4 N/mm <sup>2</sup>		
		Top layer orientation: 	
<b>Compression strength</b>  Vertical to the panel plane $f_{c,90,k}$	2,5 N/mm <sup>2</sup>		
		Top layer orientation: 	
<b>Shear strength</b>  Parallel to the grain direction $f_{v,k}$	4,0 N/mm <sup>2</sup>		
		Top layer orientation: 	
<b>Rolling shear strength</b> $f_{v,90,90,k}$	1,0 N/mm <sup>2</sup>		
		Top layer orientation: 	

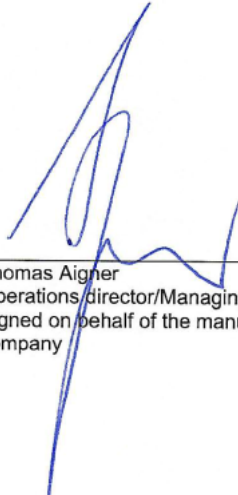
Mechanical strength and stability			
Slab loads	Declared performance	Draft	
<b>Bending strength</b>  Parallel to the grain direction of the top layer $f_{m,k}$ Vertical to the grain direction of the top layer $f_{m,k}$	24 N/mm <sup>2</sup> 24 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Modulus of elasticity</b>  Parallel to the grain direction of the top layer $G_{90,90,mean}$ Vertical to the grain direction of the top layer $G_{90,90,mean}$	12.000 N/mm <sup>2</sup> 12.000 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Tensile strength</b>  Parallel to the grain direction of the top layer $f_{t,0,k}$ Vertical to the grain direction of the top layer $f_{t,0,k}$	14,5 N/mm <sup>2</sup> 14,5 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Compression strength</b>  Global, parallel to the grain direction of the boards $f_{c,0,k}$	21 N/mm <sup>2</sup>		
		Top layer orientation: 	Top layer orientation: 
<b>Shear strength</b>  Independent of the load-bearing direction, per adhesive joint $f_{v,K,k}$ (shear flow) Parallel to the grain direction of the boards $f_{v,k}$ (shear stress)	to be calculated according to ETA point 1.4.1		
		Top layer orientation: 	Top layer orientation: 
		$f_{v,k} = \min \begin{cases} 3,5 \\ 8,0 \frac{D_{tot}}{D} \\ 2,5 \frac{(n-1)(a^2 + b^2)}{6 D b} \end{cases} \quad \text{in [N/mm}^2\text{]}$ <p>where D element thickness (see Annex 1) D<sub>tot</sub> total thickness of longitudinal or cross layers within the element; the smaller value applies n number of layers within the element, adjacent layers with parallel lamellae shall be considered as one layer and a, b width of the boards in the longitudinal or cross layers, where b &gt; a (If a and b is unknown, the minimum value must be applied for b.)</p>	
<b>Other characteristics for plate and slab loading</b>	Top / longitudinal layers (running in the grain direction of the top layers) Solid wood according to EN 338:C24  Traverse layers (layers running at right angles to the direction of the fibres in the top layer) Solid wood according to EN 338: C24  Top / longitudinal / traverse layers  Solid wood panel according to EN13986 / EN 13353 up to max. 50% of the cross-section Characteristic properties according to ETA-06/0009, tables 1 and 2		

Essential characteristics	Declared performance				
Fire protection as					
Fire behaviour	Wooden components except floors   Euroclass D-s2, d0				
Fire resistance	assembly situation	ceiling	ceiling	wall	wall
	Fire duration	up to 30min	31 to 120min	up to 30min	31 to 120min
	Burning rate*	0,74 mm/min	0,90 mm/min	0,71 m/min	0,75 m/min
	Burning rate with HB-X surface bonding ≤ 0.70 mm/min				
	* Burning rate with HB-S surface bonding, burning of more layers than the top layer				
Hygiene, health and environmental protection as					
Content and/or release of hazardous substances as formaldehyde emission	Formaldehyde emission class E1 according to EN 14080; no release of other hazardous substances				
Other hazardous substances	NPD				
Water vapour diffusion resistance as water vapour diffusion resistance number μ of the surface (including joints) according to EN ISO 10456	open to diffusion, vapour-barrier   μ = 40 - 70 (depending on wood moisture and number of glue joints)				

Essential characteristics	Declared performance
<b>Safety and accessibility when used as</b>	
Impact resistance with a soft body	Fulfilled
<b>Sound insulation as</b>	
Airborne sound insulation according to EN ISO 717-1	NPD
Impact sound insulation according to EN ISO 717-2	NPD
Sound absorption according to EN ISO 11654	NPD
<b>Energy saving and thermal insulation as a</b>	
Thermal conductivity according to EN ISO 10456	0,12 W/mK
Air permeability as air volume flow coefficient C according to EN ISO 12114	NPD
Thermal inertia as specific heat storage capacity $c_p$ according to EN ISO 10456	1600 J/(kg K)

The performance of the product identified above is in conformity with the declared performance. The manufacturer identified above is solely responsible for producing the Declaration of Performance in accordance with Regulation (EU) No. 305/2011.

Burgbernheim, 22.11.2022



Thomas Aigner  
Operations/director/Managing director  
Signed on behalf of the manufacturing company