

Declaration of Performance

No. DoP-X-LAM-01

1. Unambiguous identification code of the product type: **X-LAM C24 Cross laminated timber according to ETA-11/0189**
2. Intended use: **X-LAM as load-bearing or non-load-bearing element in buildings or timber structures**
3. Manufacturer: **W. u. J Derix GmbH & Co.KG
Dam 63
41372 Niederkrüchten
Deutschland
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Fax: +49 (21 63) 89 88 87
www.derix.de**
4. Authorised representative: **no external authorised representative**
5. System for assessing and examining the constancy of performance: **System 1**
6. European Assessment Document: **EAD 130005-00-0304**
European Technical Assessment: **ETA-11-0189 dated 11 September 2019**
Technical Assessment Body: **German Institute for Structural Engineering (DIBt)**
Notified Body: **No. 0769 - "Karlsruhe Institute of Technology (KIT)"**
7. Declared performance:

Main characteristics	Performance
Mechanical characteristics as Strength Class Type CL24:	
Product dimensions	For all product types Number of layers $3 \leq n \leq 11$ (max. 2 fibre parallel) Widths up to 3500 mm lengths up to 16000 mm Thicknesses from 60 to 400 mm The respective product dimensions can be found in the accompanying documents.
Type of wood	Spruce; fir; pine; larch and Douglas fir
Strength class	C24 according to EN 338 ($C24 \geq 90\%$; $C16 \leq 10\%$)
Dimensional stability as tolerances according to EN 336 for thickness and width and	for thicknesses up to 200 mm ± 2 mm for widths, lengths and thicknesses > 200 mm ± 3 mm
Dimensional stability as moisture in the delivery condition and	$8 \pm 2.5\%$ up to $12 \pm 2.5\%$
Thermal expansion coefficient according to EN 1995-1-1	$\alpha = 5 \times 10^{-6}/K$

Environmental conditions as durability class of the untreated slats according to EN 350 and	DC 5
Usage class according to EN 1995-1-1	SC 1 or SC 2
Adhesive quality as Adhesives used for: Surface gluing and finger-jointing and	MUF-EN 301-I-90-GP-0.3-S
Joint integrity as delamination test according to EN 14080, Annex C, Method B	Delamination: fulfilled
Mechanical actions perpendicular to the panel	
Characteristic bending strength	$f_{m,k} = k_l \cdot 24 \text{ N/mm}^2$ [1]
Characteristic compressive strength	$f_{c,90,k} = 2.5 \text{ N/mm}^2$
Shear strength perpendicular to the grain direction of the boards (rolling shear strength)	$f_{r,k} = 1.10 \text{ N/mm}^2$
Modulus of elasticity parallel to the grain direction of the boards	$E_{0,mean} = 11,000 \text{ N/mm}^2$
Modulus of elasticity perpendicular to the grain direction of the boards	$E_{90,mean} = 370 \text{ N/mm}^2$
Shear modulus parallel to the grain direction of the boards	$G_{mean} = 690 \text{ N/mm}^2$
Shear modulus perpendicular to the grain direction of the boards (rolling shear modulus)	$G_{r,mean} = 50 \text{ N/mm}^2$
Mechanical actions in the panel level	
Characteristic bending strength	$f_{m,k} = k_l \cdot 24 \text{ N/mm}^2$ [1]
Characteristic compressive strength parallel to the grain direction of the boards	$f_{c,0,k} = 21.0 \text{ N/mm}^2$
Characteristic tensile strength parallel to the grain direction of boards subjected to stress parallel to the grain	$f_{t,0,k} = 14.5 \text{ N/mm}^2$
Characteristic tensile strength perpendicular to the grain direction of the boards	$f_{t,90,k} = 0.40 \text{ N/mm}^2$
Shear strength for the dimensioning with the gross section	$f_{v,k}$ according to Table A.3.2 from Annex 3 of ETA 11/00189
Modulus of elasticity parallel to the grain direction of the boards	$E_{0,mean} = 11,000 \text{ N/mm}^2$
Shear modulus parallel to the grain direction of the boards	$G_{mean} = 690 \text{ N/mm}^2$
Characteristic rolling shear strength	$f_{r,k} = 1.1 \text{ N/mm}^2$
Mean value of the shear modulus and	$G_{xz,mean} = 690 \text{ N/mm}^2$
Characteristic torsional shear strength of the crossing surfaces	$f_{v,tor,k} = 2.5 \text{ N/mm}^2$
Average rolling shear modulus	$G_{r,mean} = 50 \text{ N/mm}^2$
Other mechanical actions	
Perforation strength as maximum of the perforation depth	according to EN 1995-1-1
Creep and load duration as modification coefficients k_{mod} and deformation coefficients k_{def} according to EN 1995-1-1	k_{def} and k_{mod} according to EN 1995-1-1

Resistance to fire	
Reaction to fire	D-s2, d0 according to Commission Decision 2005/610/EC dated 09 August 2005
Resistance to fire	according to Table A.3.1 of Annex 3 of ETA 11/00189
Charring rate	$\beta_0 = 0.65 \text{ mm/min}$
Hygiene, health and environmental protection as	
Formaldehyde emission according to EN 717-1 for a load of $1 \text{ m}^2/\text{m}^3$ as formaldehyde emission class and	E1
other dangerous ingredients and	No performance established (NPD)
Water vapour diffusion resistance as water vapour diffusion resistance factor μ of the surface (including joints) according to EN ISO 10456:	No performance established (NPD)
Safety and accessibility when used as	
Impact resistance to a soft body	Fulfilled
Sound insulation as	
airborne sound insulation according to EN ISO 717-1 and	No performance established (NPD)
footstep sound insulation according to EN ISO 717-2 and	No performance established (NPD)
sound absorption according to EN ISO 11654	No performance established (NPD)
Energy saving and thermal insulation as	
Thermal conductivity according to EN ISO 10456	$\lambda = 0.12 \text{ W/(m/K)}$
Air permeability as air volume flow coefficient C according to EN ISO 12114	Class 4 according to EN 12207
Thermal inertia as specific heat storage capacity c_p according to EN ISO 10456	$c_p = 1,600 \text{ J/(kg/K)}$
[1] k_1 See Annex 4 of the ETA 11/00189	

The performance of the above product corresponds to the performances declared. The above-mentioned manufacturer is solely responsible for drawing up the declaration of performance in accordance with Regulation (EU) No. 305/2011.

Signed for and on behalf of the manufacturer by:

W. u. J. Derix GmbH & Co.KG

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(Niederkrüchten, 07.10.2019)

Markus Derix (Managing Director)