



European Technical Assessment

ETA 23/0367
of 02/08/2024



English version prepared by Itecons

General Part

Technical Assessment Body issuing the European Technical Assessment:

Itecons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade

Trade name of the construction product	Painéis CLT – Cross Laminated Timber, marca Moodlam
Product family to which the construction product belongs	Structural Timber Products/Elements and Ancillaries Product area code: 13
Manufacturer	Carpintaria Miguel Batista, Lda. Est. 229 Cruz Alta à Lagoa n.192 Meã 3560-084 Mioma – Sátão Portugal
Manufacturing plant	Carpintaria Miguel Batista, Lda. Est. 229 Cruz Alta à Lagoa n.192 Meã 3560-084 Mioma – Sátão Portugal
This European Technical Assessment contains	14 pages including 4 Annexes which forms integral part of this ETA
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	EAD 130005-00-0304 – <i>Solid Wood Slab Element to be used as a Structural Element in Buildings</i>

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific parts

1. Technical description of the product

The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, consist of solid wood slab elements made of softwood boards of *Picea abies*. These boards, which may be finger jointed, are bonded together in order to form cross laminated timber. The assembly process involves arranging the adjacent layers of softwood boards at a perpendicular angle of 90° to each other, as depicted in Figure 1.

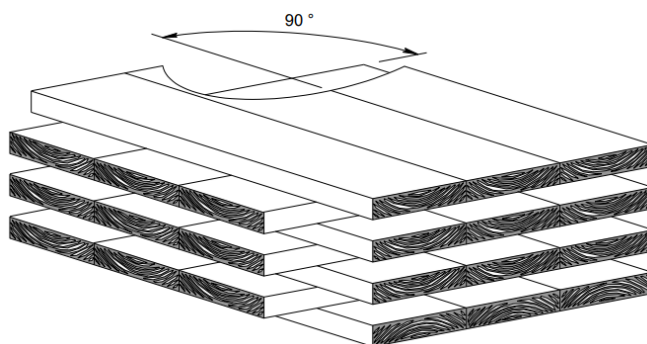


Figure 1: Principal structure of the Cross-Laminated Timber – CLT Panels

The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, are comprised of three adjacent layers. These panels are manufactured with a thickness ranging from 58 mm to 123 mm. The maximum dimensions achievable for a Cross-Laminated Timber – CLT panel, branded as Painéis CLT Moodlam, are 3.90 m in width and 15.30 m in length. Each individual layer within the panel has a thickness that ranges from 18 mm to 45 mm.

Cover layers of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, are arranged in longitudinal direction. In case of serious deviations from symmetry potential effects should be investigated.

The strength of the timber used in the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, fulfils the requirements for class C24 according to EN 338. The individual boards employed in the CLT assembly are either full length or finger jointed, in accordance with the requirements specified by the EN 14080 standard. Further details regarding the principal structure of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, can be found in Annex A1.

The adhesive for bonding the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, and the finger joints of the individual boards shall conform to EN 15425.

The application of wood preservatives and flame retardants is not subject to the European Technical Assessment.

The specification of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, and of the boards are given in Annex A2.

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

2.1. Intended use

The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, are intended to be used as a structural or non-structural element in buildings and timber structures, as walls, roofs and floors. The panels shall be subjected to static and quasi static actions only.

The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, are intended to be used in service classes 1 and 2 according to EN 1995-1-1. Members which are directly exposed to the weather shall be provided with an effective protection for the solid wood slab element in service.

According to EN 350, the durability to fungi of *Picea abies* is class 4.

The provisions made in this European Technical Assessment are based on an assumed working life of 50 years as minimum according to the EAD, provided that the conditions lay down for the installation, packaging, transport and storage as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a mean for choosing the right product in relation to the expected economically reasonable working life of the works.

2.2. Design

The European Technical Assessment only applies to the manufacture and use of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam. Verification of stability of the works including application of loads on the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, is not subject of this European Technical Assessment. The following conditions shall be observed:

- Design of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, shall follow the Eurocode (EN 1990, adequate parts of EN 1991, EN 1995-1-1 and EN 1995-1-2) and this ETA;
- Design of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam is carried out under the responsibility of an engineer experienced in such products;
- Design of the works shall account for the protection of the elements of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam;
- The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam are installed correctly.

This European Technical Assessment is based on the assumption that all plans needed have been made correctly according to the regulations valid on the building site.

2.3. Execution of construction works

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary. This advice should be followed by the user of the product.

The elements of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, shall be installed on the basis of a specific structural design for each installation. Installation shall be made by appropriately qualified personnel, following an installation plan and relevant construction details worked out for each individual building project.

The completed building (the works) shall comply with the building regulations (regulations on the works) applicable in the Member States in which the building is to be constructed. The procedures foreseen in the Member State for demonstrating compliance with the building regulations shall also be followed by the entity held responsible for this act. An ETA for a solid wood slab element does not amend this process in any way.

3. Performance of the product and references to the methods used for its assessment

The assessment of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, according to the Basic Work Requirements (BWR) was carried out in compliance with EAD 130005-00-0304. The characteristics of the components shall correspond to the respective values laid down in the technical documentation of this ETA, checked by Itecons.

A summary of the assessed characteristics can be found in Table 1 and in the following sections there is detailed information regarding the methods of assessment and test results.

Table 1: Assessed characteristics of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam

Basic requirements and essential characteristics	Performance
BWR 1: Mechanical resistance and stability	
Bending	See section 3.1.1
Tension and compression	See section 3.1.2
Shear	See section 3.1.3
Embedment strength	See section 3.1.4
Creep and duration of the load	See section 3.1.5
Dimensional stability	See section 3.1.6
In-service environment	See section 3.1.7
Bond integrity	See section 3.1.8
BWR 2: Safety in case of fire	
Reaction to fire	See section 3.2.1
Resistance to fire	See section 3.2.2
BWR 3: Hygiene, health and the environment	
Content, emission and/or release of dangerous substances	See section 3.3.1
Water vapour permeability – water vapour transmission	See section 3.3.2
BWR 4: Safety and accessibility in use	
Impact resistance	See section 3.4.1
BWR 5: Protection against noise	
Airborne sound insulation	See section 3.5.1
Impact sound insulation	See section 3.5.2
Sound absorption	See section 3.5.3
BWR 6: Energy economy and heat retention	
Thermal conductivity	See section 3.6.1

Basic requirements and essential characteristics	Performance
Air permeability	See section 3.6.2
Thermal inertia	See section 3.6.3

3.1. Mechanical resistance and stability (BWR 1)

3.1.1. Bending

The characteristic value of bending strength and mean value of modulus of elasticity are presented in Table A3.1.

3.1.2. Tension and compression

The characteristic values of tension and compression are presented in Table A3.1.

3.1.3. Shear

The characteristic value of shear strength and mean value of shear modulus are presented in Table A3.1.

3.1.4. Embedment strength

Embedment strength of fasteners may be calculated according to EN 1995-1-1. The direction of grain of the cover layer shall be taken as reference.

3.1.5. Creep and duration of the load

Factors k_{mod} and K_{def} according to EN 1995-1-1 for glued laminated timber.

3.1.6. Dimensional stability

Tolerances of dimensions

The tolerances of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, are presented in Table 2.

Table 2: Tolerances of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam

Dimension	Tolerances
Thickness (h)	± 2 mm
Width (b)	± 3 mm
Length (l)	± 3 mm

Stability of dimensions

The dimensional changes of the solid wood slab due to varying moisture content shall not have inadmissible effects on its performance and stability.

The moisture content at time of shipping the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, is 12%.

Thermal expansion

For timber structures in buildings, thermal expansion is normally not relevant, as it interferes with much larger moisture effects.

If not proven otherwise, the thermal expansion coefficient parallel to the grain as given in EN 1991-1-5 shall be used. Normally, thermal expansion is not relevant for timber structures.

3.1.7. In-service environment

The adequacy of the use class according to EN 335 for the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, is presented in the Table 3.

Table 3: Use class according to EN 335

Type of component	Use class
External components	2
Internal components	1

The natural durability according to EN 350 is presented in Table 4.

Table 4: Natural durability according to EN 350

Species	Fungi	Hylotrupes	Anobium	Termites
<i>Picea abies</i>	4	S	S	S

The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, are intended to be used in service classes 1 and 2 according to EN 1995-1-1.

3.1.8. Bond integrity

The bond integrity of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, fulfils the requirements specified in section 2.2.1.8 of the EAD 130005-00-0304.

3.2. Safety in case of fire (BWR 2)

3.2.1. Reaction to fire

The reaction to fire was tested according to ISO 11925-2 and EN 13823 and classified according to EN 13501-1. The thickness of the panel tested was 87 mm (27+33+27).

The Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, tested meet the requirements of class D-s1, d0.

3.2.2. Resistance to fire

The resistance to fire was tested and classified according to EN 13501-2. The tested specimen was composed of a wall panel with a thickness of 87 mm (27+33+27) and dimensions of 3.0 m x 2.95 m.

The resistance to fire classification of the tested wall configuration, made of Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, is REI 60, with an applied load of 34.32 kN/m.

3.3. Hygiene, health and the environment (BWR 3)

3.3.1. Content, emission and/or release of dangerous substances

The content, emission and/or release of dangerous substances was assessed taking into account the release scenarios applicable:

- IA1: Product with direct contact to indoor air.

The emission of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) of the Painéis CLT Moodlam was assessed according to EN 16516. The loading factor considered was $L = 0.93 \text{ m}^2/\text{m}^3$. The results are presented in Table 5.

Table 5: Emissions of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) after 28 days of exposure of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam

Compound	CAS	Concentration (µg/m ³)	Compound	CAS	Concentration (µg/m ³)
1,1,2,2-Tetrachloroethane	79-34-5	< 1	Cyclohexane	110-82-7	< 1
1,1,1-Trichloroethane	71-55-6	< 1	Cyclohexanone	108-94-1	< 1
1,1,2-Trichloroethane	79-00-5	< 1	Dibromochloromethane	124-48-1	< 1
1,2,4-Trichlorobenzene	120-82-1	< 1	Ethyl acetate	141-78-6	< 1
1,2,4-Trimethylbenzene	95-63-6	< 1	Ethylbenzene	100-41-4	< 1
1,2-Dibromoethane	106-93-4	< 1	Formaldehyde	50-00-0	9
1,2-Dichlorobenzene	95-50-1	< 1	Hexachloro-1,3-butadiene	87-68-3	< 1
1,2-Dichloroethane	107-06-2	< 1	Methyl iso-butyl ketone (MIBK)	108-10-1	< 1
1,2-Dichloropropane	78-87-5	< 1	Methyl n-butyl ketone	591-78-6	< 1
1,3,5-Trimethylbenzene	108-67-8	< 1	m-Xylene	108-38-3	2
1,3-Dichlorobenzene	541-73-1	< 1	n-Heptane	142-82-5	< 2
1,4-Dichlorobenzene	106-46-7	< 1	n-Hexadecane	544-76-3	< 1
1,4-Dioxane	123-91-1	< 2	n-Hexane	110-54-3	< 1
1-Ethyl-4-methyl benzene	622-96-8	< 1	o-Xylene	95-47-6	1
2-Butoxyethanol	111-76-2	< 1	Phenol	108-95-2	< 5
Acetaldehyde	75-07-0	< 3	p-Xylene	106-42-3	2
Benzene*	71-43-2	< 1	Styrene	100-42-5	< 1
Benzyl chloride	100-44-7	< 2	Tetrachloroethene	127-18-4	< 1
Bromodichloromethane	75-27-4	< 1	Tetrahydrofuran	109-99-9	< 2
Bromoform	75-25-2	< 1	Toluene	108-88-3	< 2
Butylacetate	123-86-4	< 1	trans-1,3-Dichloropropene	10061-02-6	< 1
Carbon tetrachloride	56-23-5	< 1	Trichloroethylene*	79-01-6	< 1
Chlorobenzene	108-90-7	< 1	TVOC	---	101
Cis-1,2-Dichloroethene	156-59-2	< 1	Bis(2-ethylhexyl)phthalate*	117-81-7	< 1
Cis-1,3-Dichloropropene	10061-01-5	< 1	Dibutylphthalate*	84-74-2	< 1
Cloroform	67-66-3	< 2	TSVOC	---	< 5

* CRM - Carcinogenic, mutagenic and reprotoxic substances

3.3.2. Water vapour permeability – water vapour transmission

The water vapour resistance of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, is 50 for dry conditions and 20 for wet conditions, according to EN ISO 10456.

3.4. Safety and accessibility in use (BWR 4)

3.4.1. Impact resistance

According to section 2.2.4.1 of the EAD 130005-00-0304 the soft body resistance is assumed to be fulfilled for walls with a minimum of 3 layers and minimum thickness of 60 mm.

3.5. Protection against noise (BWR 5)

3.5.1. Airborne sound insulation

The airborne sound insulation of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT

Moodlam, was carried out in accordance with EN ISO 10140-2 considering EN ISO 10140-1 and EN ISO 10140-5 and declaration of results according EN ISO 717-1.

The panel tested had a thickness of 87 mm (27+33+27). The dimensions of the test specimen were 3140 x 3140 mm² with a central joint covered with a hybrid sealant and single-sided tape. The perimeter of the test specimen was sealed using mineral wool. The test area had standardized dimensions of 10 m² (3160 x 3160 mm²).

The weighted apparent sound reduction index of the tested solution is $R_w = 30$ dB.

3.5.2. Impact sound insulation

No performance assessed.

3.5.3. Sound absorption

No performance assessed.

3.6. Energy economy and heat retention (BWR 6)

3.6.1. Thermal conductivity

According to EN ISO 10456 the design value of thermal conductivity of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, to be used in design calculations is $\lambda = 0.12$ W/(m.K). This value can be used for calculations of thermal resistance according to EN ISO 6946, in Annex A4 is presented an example of calculation for a constructive solution composed with the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam.

3.6.2. Air permeability

The air permeability of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, was tested according to EN 12114. The results are presented in Table 5.

Table 5: Air permeability of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam

Pressure P (Pa)	Positive pressures		Negative pressures	
	Air flow V_x (m ³ /h)	Air flow at reference conditions V_0 (m ³ /h)	Air flow V_x (m ³ /h)	Air flow at reference conditions V_0 (m ³ /h)
50	0.10	0.10	0.11	0.11
100	0.55	0.55	0.14	0.14
150	0.61	0.61	0.26	0.26
200	0.74	0.74	0.33	0.33
250	0.81	0.82	0.40	0.40
300	0.85	0.86	0.42	0.42
450	1.16	1.17	0.45	0.45
600	1.59	1.60	0.48	0.48

3.6.3. Thermal inertia

According to EN ISO 10456 the design value of specific heat capacity of the cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, to be used in design calculations is $c_p = 1600$ J/(kg.K).

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the Decision 97/176/EC of European Commission, as amended by 2001/596/EC, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) applicable is 1.

The tasks to be performed by the manufacturer and the notified body are detailed in section 1.2 of Annex of the Commission Delegated Regulation (EU) No 568/2014 of 18 February 2014 amending Annex V to Regulation (EU) No 305/2011 of the European Parliament and of the Council as regards the assessment and verification of constancy of performance of construction products.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

The ETA is issued on the basis of agreed data/information deposited at Itecons, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the product are appropriately informed of specific conditions laid down in this ETA.

Changes to the product or its production process, should be notified to the Itecons before the changes are introduced. Itecons will decide whether or not such changes affect the ETA and, if so, whether further assessment or changes to the ETA are necessary.

5.1. Tasks of the manufacturer

5.1.1. Factory production control

The manufacturer shall exercise permanent internal control of production of the concerned product. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results obtained. This production control system shall ensure that the product is in conformity with this ETA. The incoming raw materials shall be subjected to verifications by the manufacturer before acceptance.

The factory production control shall be in accordance with the Control Plan which is a part of technical documentation of this European Technical Assessment. The control plan has been agreed between the manufacturer and Itecons and is laid down in context of the factory production control system operated by the manufacturer and deposited at Itecons. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

5.2. Tasks for the Notified Body (bodies)

5.2.1. Initial inspections of factory and of factory production control

The Notified Body shall ascertain that, in accordance with the Control Plan, the manufacturing plant of the single product manufacturer, in particular the personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, according to the specifications mentioned in this ETA.

5.2.2. Continuous surveillance, assessment and evaluation of factory production control

Within the scope of continuous surveillance, assessment and evaluation of factory production control, the Notified Body (bodies) shall make provisions to verify that the factory production control is maintained in accordance with the provisions laid down in the control plan.

Care should be taken regarding the reaction to fire classification of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, due to the fact that this characteristic shows an improvement regarding smoke emission (from S2 to S1), in relation to the performance, of this type of products, foreseen in Commission Decision of 9 August 2005, that establishes the classes of reaction-to-fire performance for these products. The Notified Body shall carry out periodically verification of the reaction to fire of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, as foreseen in the control plan.

In cases where the provisions of the ETA and its control plan are no longer fulfilled, the Notified Body shall withdraw the certificate of conformity and inform Itecons without delay.

Issued in Coimbra on 02.08.2024

By

Technical Assessment Unit of

Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade



Andreia Gil
Senior Official

(Technical Assessment Unit Coordinator)



Validated document

(Administration)

Annex A1 – Construction of the Cross-Laminated Timber – CLT panels

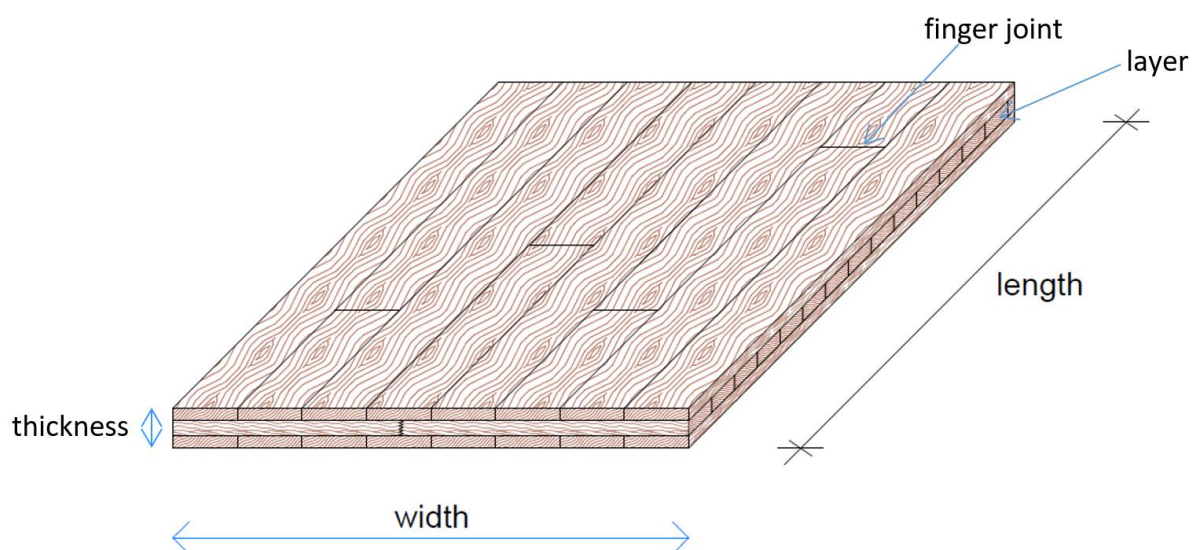


Figure A1 – Principal structure of the Cross-laminated Timber panels (three layers)

Annex A2 – Dimensions and specifications of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam, and the boards

Table A2.1 – Dimensions and specifications

Characteristic	Dimensions and specifications
Cross-laminated timber panels – CLT panels, branded as Painéis CLT Moodlam	
Thickness [mm]	58 to 123
Width [mm]	≤ 3900
Length [mm]	≤ 15300
Number of layers	3
Density [kg/m ³]	450
Boards	
Thickness [mm]	18, 22, 27, 33 or 45
Width [mm]	142
Ratio width to thickness [-]	≥ 4 : 1 for t = 18, 22, 27 and 33 mm < 4 : 1 for t = 45 mm
Strength class of the boards with CE marking acc. to EN 14081-1	C24 acc. to EN 338
Surface	Planed
Gaps between adjacent boards [mm]	Max. 8 mm
Finger joints	Acc. to EN 14080
Adhesive	Acc. to EN 15425

Annex A3 – Mechanical properties of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam

Table A3.1 – Mechanical properties of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam

Characteristic	Standard	Characteristic value [MPa]
Actions perpendicular of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam		
Modulus of elasticity		
– Parallel to the grain of the boards $E_{0,mean}$	EN 408	11000
– Perpendicular to the grain of the boards $E_{90,mean}$	EN 338	370
Bending strength $f_{m,k}$	EN 408	24
Compression strength $f_{c,90,k}$	EN 338	2.5
Shear strength perpendicular to the grain of the boards $f_{v9090,k}$	EN 408	1.1 [for boards with t = 18, 22, 27 and 33 mm and w = 142 mm] 0.7 (for boards with t = 45 mm and w = 142 mm)
Shear modulus		
– modulus parallel to the grain of the boards $G_{090,mean}$	EN 338	690
– modulus perpendicular to the grain of the boards $G_{9090,mean}$	EN 408	60
Actions in plane of the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam		
Modulus of elasticity		
– Parallel to the grain of the boards $E_{0,mean}$	EN 338	12500
Bending strength $f_{m,k}$	EN 408	24
Tensile strength $f_{t,0,k}$	EN 338	14.5
Tensile strength $f_{t,90,k}$	EN 338	0.4
Compression strength $f_{c,0,k}$	EN 338	21
Shear strength parallel to the grain of the boards $f_{v,090,k}$	EN 408	4.5
Shear modulus parallel to the grain of the boards $G_{090,mean}$	EN 408	400

Annex A4 – Examples of thermal resistance calculations

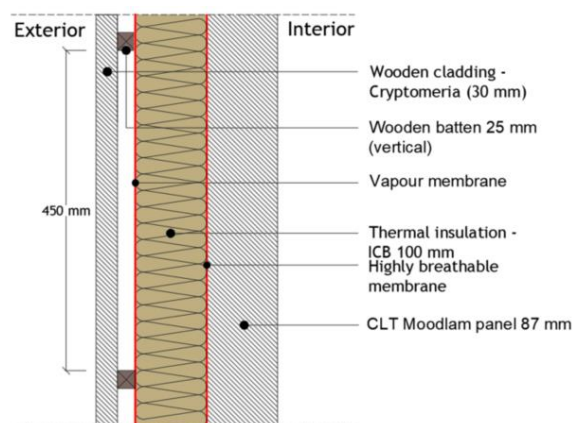


Figure A4.1 – Constructive solution with the Cross-Laminated Timber – CLT panels, branded as Painéis CLT Moodlam incorporated

Table A4.1 – Values of thermal conductivity

Material	λ (W/(m.K))
Cryptomeria	0.12
Wooden batten	0.18
Cross-laminated timber panel, CLT Moodlam	0.12
ICB	0.039

The thermal resistance and thermal transmission coefficient of the two constructive solutions illustrated in Figure A4.1 were determined according to ISO 6946 by application of two-dimensional numerical calculation model according to ISO 10211. The results are presented in Table A4.2.

Table A4.2 – Values of thermal resistance and thermal transmission coefficient of the constructive solution illustrated in Figure A4.1

Constructive solution	R_{tot} (m ² .K)/W	U W/(m ² .K)
Cross-Laminated Timber – CLT panel, branded as Painéis CLT Moodlam, 87 mm thickness (3 layers)	3.88	0.26