Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment

ETA-19/0650 of 17 March 2022

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General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Keruing GLT Woodsfield
Product family to which the construction product belongs	Glued laminated timber made of solid hardwood
Manufacturer	Woodsfield Glulam Manufacturing Sdn. Bhd. PLO 462, Jalan Pekeliling Kasawan Perindustrian Pasir Gudang 81700 Pasir Gudang JOHOR MALAYSIA
Manufacturing plant	Werk 1, Werk 2, Werk 3 plant 1, plant 2, plant 3
This European Technical Assessment contains	7 pages including 1 annex which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 130320-00-0304 - GLUED LAMINATED TIMBER MADE OF SOLID HARDWOOD

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Specific part

1 Technical description of the product

Keruing GLT Woodsfield is glued laminated timber made of Keruing wood (*Dipterocarpus spp.*) graded according to the specification deposited at Deutsches Insitut für Bautechnik. The solid Keruing wood boards have a mean density of 820 kg/m³ and a characteristic density of 680 kg/m³. The characteristic bending strength of the Keruing wood boards is 70 N/mm² and the characteristic tensile strength is 50 N/mm².

The Keruing wood boards may be finger-jointed in accordance with EN 14080[1]. The finger-jointed laminations have a characteristic bending strength of 80 N/mm² and a characteristic tensile strength of 50 N/mm².

Adhesives of type I with the letter "w" in the designation in accordance with EN 301[2] or EN 15425[3] and to the specification deposited at Deutsches Institut für Bautechnik are used to glue the finger joints and the faces of the laminations.

Regarding geometry and beam-lay-up Keruing GLT Woodsfield complies to EN 14080. The depth h of the Keruing GLT Woodsfield is not less than 60 mm and not more than 750 mm. The width b of the Keruing GLT Woodsfield is not less than 50 mm and doesn't exceed 130 mm. The dimensions refer to a moisture content of 20 %. Deviations according to dimensional tolerance class 1 of EN 336[4] are permitted.

The dimensions of the laminations are 10 mm ≤ t ≤ 30 mm with a tolerance of ± 2 mm and 50 mm ≤ b ≤ 180 mm with b/t ≥ 4, where t is the thickness and b the width of the laminations.

The maximum thickness of the finger joint glue lines is 0.1 mm and of the face glue lines is 0.3 mm.

Glued laminated timber preservative treated against biological attack or treated with fire retardants and the use of recycled materials are not covered by this ETA.

2 Specification of the intended use in accordance with the applicable European Assessment Document

Keruing GLT Woodsfield is used in load-bearing timber structures in service classes 1 to 3 in accordance with EN 1995-1-1[5]. The performances given in Section 3 are only valid if the Keruing GLT Woodsfield is used in compliance with the specifications and conditions given in Annex 1.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the Keruing GLT Woodsfield of at least 50 years. 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 means for choosing the right products in relation to the expected economically reasonable working life of the works.

1	EN 14080:2013	Timber structures – Glued laminated timber and glued solid timber – Requirements
2	EN 301:2018	Adhesives, phenolic and aminoplastic, for load-bearing timber structures – Classification and performance requirement
3	EN 15425:2017	Adhesives – One component polyurethane (PUR) for load-bearing timber structures – Classification and performance requirements
4	EN 336:2013	Structural timber – Sizes, permitted deviations
5	EN 1995-1-1:2004 + AC:2006 +A1:2008+A2:2014	Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings

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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Bending strength of the glued laminated timber – with flatwise bending of the laminations for a reference GLT height of h = 600 mm[6]	$f_{m,g,flat,k}$ = 44 N/mm²
Bending strength of the glued laminated timber – with edgewise bending of the laminations[7]	$f_{m,g,edge,k}$ = 55 N/mm²
Tensile strength parallel to the grain of the glued laminated timber	$f_{t,0,g,k}$ = 40 N/mm²
Tensile strength perpendicular to the grain of the glued laminated timber	$f_{t,90,g,k}$ = 0.6 N/mm²
Compression strength parallel to the grain of the glued laminated timber[8]	$f_{c,0,g,k}$ = 43 N/mm²
Compression strength perpendicular to the grain of the glued laminated timber[8]	$f_{c,90,g,k}$ = 8.8 N/mm²
Shear strength of the glued laminated timber	$f_{v,g,k}$ = 3.8 N/mm²
Rolling shear strength of the glued laminated timber	$f_{r,g,k}$ = 1.2 N/mm²
Modulus of elasticity parallel to the grain of the glued laminated timber	$E_{0,g,mean}$ = 23000 N/mm² $E_{0,g,05}$ = 20000 N/mm²
Modulus of elasticity perpendicular to the grain of the glued laminated timber	$E_{90,g,mean}$ = 1500 N/mm² $E_{90,g,05}$ = 1300 N/mm²
Shear modulus of the glued laminated timber	$G_{g,mean}$ = 1400 N/mm² $G_{g,05}$ = 1200 N/mm²
Rolling shear modulus of the glued laminated timber	$G_{r,g,mean}$ = 65 N/mm² $G_{r,g,05}$ = 54 N/mm²
Density of the glued laminated timber	$\rho_{g,k}$ = 750 kg/m³
PH-value	No performance assessed
Dimensional stability	EAD clause 2.2.15

6 The strength values of beams with a larger height than 600 mm shall be and with a smaller height than 600 mm may be adjusted by the factor $k_h = \min \begin{cases} \left(\frac{600}{h}\right)^{0,3} \\ 1.1 \end{cases}$

7 The specified strength value is a base value and may be increased depending on the number n of the parallel bonded laminations by the system factor k_{sys} = 1 + 0.025 n whereby 2 ≤ n ≤ 8. For lamination numbers n > 8 the value k_{sys} is 1.2.

8 In the case that the glued laminated timber is used in service class 1 only the characteristic value may be increased by the factor 1.25.

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class D-s1, d0* in accordance with EN 13501-1:2018 Class D-s2, d0** in accordance with (EU) 2017/1227
Charring rate	β_0 = 0.50 mm/min β_n = 0.55 mm/min
* experimentally verified for the use within a distance of ≥ 80 mm to other flat adjacent (parallel adjacent) construction products, thickness ≥ 120 mm, density ≥ 720 kg/m³ ** random uses of wood with thickness ≥ 22 mm, density ≥ 380 kg/m³	

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content, emission and/or release of dangerous substances	
Formaldehyde emission	Class E1 in accordance with EN 14080
SVOC and VOC	No performance assessed
Release scenarios regarding BWR 3: IA1, IA2, IA3	

3.4 Durability aspects

Essential characteristic	Performance
Durability of bonding strength of the glued laminated timber/ Durability of bonding strength of finger joints of the lamination	Fulfilled
Mechanical durability of the glued laminated timber	The modification factor for duration of load and moisture content k_{mod} and the factor for the evaluation of creep deformation taking into account the relevant service class k_{def} shall be taken from EN 1995-1-1 for solid wood.
Durability against biological attack	The natural durability against biological attack of Keruing GLT Woodsfield (heartwood) is: – DC 3v against fungi – DC D against beetles – DC S against termites – DC S against marine borer. Keruing sapwood is regarded as not durable.

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

In accordance with EAD No. 130320-00-0304 the applicable European legal act is: 97/176/EC as amended.

The system to be applied is: 1

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 17 March 2022 by Deutsches Institut für Bautechnik

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beglaubigt:
Blümel

Deutsches Institut für Bautechnik DIBt

Annex 1 Specifications of intended use

A.1.1 Use of the Keruing GLT Woodsfield only:

- for static and quasi-static (non-fatigue) loads,
- in service classes 1 to 3 in accordance with EN 1995-1-1[1].

A.1.2 Manufacturing provisions

Keruing GLT Woodsfield is produced in accordance with EN 14080[2], Annex I, unless otherwise specified in the following and in the provisions deposited at Deutsches Institut für Bautechnik.

A.1.3 Installation provisions

EN 1995-1-1 applies for the installation.

[1] EN 1995-1-1:2004 + AC:2006 +A1:2008+A2:2014 — Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for building

[2] EN 14080:2013 — Timber structures – Glued laminated timber and glued solid timber – Requirements

Keruing GLT Woodsfield	Annex 1
Specifications of intended use	