



Environmental product information for BREEAM® building certification

**Structural finger jointed solid timber according to EN 15497
GLT® – Girder longitudinally tensiletested
according to ETA-13/0644, issued on 01.04.2019**

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This document aims at the identification of linkages between environmental product information covered by EPDs and the requirements of the BREEAM® (Building Research Establishment's Environmental Assessment Method) building certification. It provides an overview of product related features based on the BREEAM® technical manual for International New Construction Version 6.0, Reference SD250 [<https://bregroup.com/products/breeam/breeam-technical-standards/breeam-new-construction/>]

.product description

Structural finger jointed solid timber and GLT® – Girders Longitudinally Tensiletested from HASSLACHER Group are industrially manufactured products for loadbearing structures. They consist of kiln-dried, finger-jointed planks and squared timber made of softwood, which are graded visually or mechanically according to their strength. PUR adhesives are used for bonding. Structural finger jointed solid timber is produced with a maximum wood moisture content of 18 %.

.application

Structural finger jointed solid timber is used as a loadbearing element in building and bridge construction.

.technical data

Structural data for structural finger jointed solid softwood timber according to *EN 15497* and GLT® – Girder Longitudinally Tensiletested according to *ETA-13/0644* are given. The products are being delivered to the market with the appropriate CE mark and Declaration of Performance.

Name	Value	Unit
Wood species according to <i>EN 1912</i> and letter codes, if any, in accordance with <i>EN 13556</i>	PCAB (Norway spruce) ABAL (Silver fir) PNSY (Scots pine)	
Mean humidity acc. to <i>EN 13183-1</i>	Approx. 15	%
Use of wood preservatives (the test rating of the wood preservative according to <i>DIN 68800-3</i> must be stated) ¹⁾	Iv, P and W	-
Characteristic value of bending strength parallel to grain acc. to <i>EN 338</i> and <i>ETA-13/0644</i>	24 24 * k _{pl}	N/mm ²
Characteristic value of compressive strength perpendicular to grain acc. to <i>EN 338</i>	2.5	N/mm ²
Characteristic value of tensile strength parallel to grain acc. to <i>EN 338</i> and <i>ETA-13/0644</i>	14 14 * k _{pl}	N/mm ²
Characteristic value of tensile strength perpendicular to grain acc. to <i>EN 338</i>	0.4	N/mm ²
Mean characteristic value of modulus of elasticity parallel to grain acc. to <i>EN 338</i> and <i>ETA-13/0644</i>	11.000 11.600	N/mm ²
Characteristic value of shear strength acc. to <i>EN 338</i>	4.0	N/mm ²
Mean characteristic value of shear modulus acc. to <i>EN 338</i>	690	N/mm ²
Dimensional deviation acc. to <i>EN 336</i>	Dimensional tolerance class 2 Width and height (< 100 mm): +/- 1 mm; Width and height (> 100 mm): +/- 1.5 mm	mm
Surface quality	Visual quality, industrial quality	-
Thermal conductivity (perpendicular to grain) acc. to <i>ISO 10456</i>	0.12	W/(mK)
Specific heat capacity acc. to <i>ISO 10456</i>	1600	J/(kgK)
Water vapour diffusion resistance factor acc. to <i>ISO 10456</i>	μ = 50 (dry) to 20 (wet)	-

¹⁾ According to *DIN 68800-1*, wood preservative treatment is only permissible if structural measures have been exhausted and is therefore unusual.

5.0 Management

Man 02 Life cycle cost and service life planning

Aim

To deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through-life maintenance and operation, and through the dissemination of capital cost reporting to promote economic sustainability. (BREEAM, 2021)

Product information for HASSLACHER solid structural timber within this credit:

Service life	Structural finger jointed solid timber corresponds to glued laminated timber (glulam) lamellas in its components and production. Glued laminated timber has been used for over 100 years. In addition to inhouse and external monitoring, structural finger jointed solid timber from HASSLACHER PREDING Holzindustrie GmbH is also subjected to a proof loading procedure for online quality assurance of the finger joints and the product. When used as intended, no end to its durability is known or to be expected. The service life of structural finger jointed solid timber is therefore the same as the service life of the building when used as intended.
End of life	<p>Re-use: In the case of selective deconstruction, structural finger jointed solid timber can be reused or reutilised without any problems after the end of the utilisation phase in the sense of cascading utilisation ("reuse").</p> <p>Disposal: If it is not possible to reuse or reutilise structural finger jointed solid timber, it can be thermally recycled to generate process heat and electricity due to its high calorific value of approx. 19 MJ/kg. It is impermissible to dispose of waste wood via landfills some in European countries.</p> <p>Waste classification: Classification code 17218 (Wood waste, organically treated) according to the Waste Catalogue in accordance with Annex 5 of the Austrian Waste Catalogue Ordinance; Waste Code according to the European Waste Catalogue (EWC): 17 02 01.</p>

Man 03 Responsible construction practices

Aim

To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner. (BREEAM, 2021)

Product information for HASSLACHER solid structural timber relevant to this issue:

Specific information	Evidence (quality)
Prerequisite: All timber and timber-based products are 'Legally harvested and traded timber'? YES	Programme for the Endorsement of Forest Certification Schemes (PEFC) Certificate Number HFA-COC-0209 (Multisite) Date of first issuance: 21.06.2001 Date of issuance: 01.12.2021 Valid to: 30.06.2025

Man 04 Commissioning and handover

Aim

To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants. (BREEAM, 2021)

Structural finger jointed solid timber can be processed with suitable tools commonly used in solid timber processing. On request, products can also be processed on both sides in the factory. Occupational safety instructions must also be observed during processing/assembly.

Further information can be downloaded from the website www.hasslacher.com/finger-jointed-structural-timber.

6.0 Health and wellbeing

Hea 02 Indoor air quality

Aim

To recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes. (BREEAM, 2021)

Reference to EPD (Solid structural timber. Structural finger jointed solid timber for loadbearing purposes according to EN 15497. GLT® – Girder longitudinally tensiletested according to ETA-13/0644, issued on 01.04.2019), chapter 2.11, environment and health during use, and chapter 7, requisite evidence:

Structural finger jointed solid timber is used as a loadbearing element in building and bridge construction.

Since only formaldehyde-free PUR adhesive is used for the production of structural finger jointed solid timber and GLT®, the area-specific emission rates of formaldehyde are in the range of unglued timber.

When bonding structural finger jointed solid timber, the MDI contained in the moisture-curing one-component polyurethane adhesives used reacts out completely. Cured structural finger jointed solid timber therefore emits no MDI emissions.

In tests based on the measurement methodology for determining formaldehyde emission acc. to *ISO 12460-3*, MDI emissions cannot be detected (detection limit: 0.05 µg/m³).

Testing entity	Holzforschung Austria – Österreichische Gesellschaft für Holzforschung
Place of test	Franz-Grill-Straße 7, A-1030 Vienna
Test report no.	1414/2021 HC
Test period	11.05.2021 to 28.06.2021
Test method	Measurement of the emissions of a sample with respect to VOC, formaldehyde and short-chain carbonyl compounds according to <i>EN 16516</i> .

Specific information	Evidence (quality)
AgBB result overview (28 days):	
TVOC (C6-C16) (substance spec.)	127 µg/m³
TVOC (Toluene eq.)	120 µg/m³
R (dimensionless)	0.09
Formaldehyde	3.6 µg/m³
AgBB result overview (3 days):	
TVOC (C6-C16) (substance spec.)	268 µg/m³
TVOC (Toluene eq.)	243 µg/m³
Formaldehyde	8.6 µg/m³

According to EPD chapter 2.5 all ingredients comply with REACH requirements (date 19.01.2021), no other cancerogenic, mutagenic, reprotoxic (CMR) substances of category 1A or 1B that are on the *ECHA candidate list*, above 0.1 % by mass.

Hea 04 Thermal comfort

Aim

To ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building. (BREEAM, 2021)

EPD chapter 2.3 product, table constructional data of the EPD:

Specific information	Value and evidence (quality)
Thermal conductivity (perpendicular to grain) acc. to ISO 10456	0.12 W/(mK)
Specific heat capacity acc. to ISO 10456	1600 J/(kgK)

Ranges for product specific constructional data for structural finger jointed solid timber are indicated in the table of technical data. For project specific information, please contact HASSLACHER Group directly (www.hasslacher.com).

10.0 Materials

Mat 01 Life cycle impacts

Aim

To recognise and encourage the use of robust and appropriate life cycle assessment tools and consequently the specification of construction materials with a low environmental impact (including embodied carbon) over the full life cycle of the building. (BREEAM, 2021)

General information of environmental product declarations of HASSLACHER solid structural timber:

Material category	1. Timber or timber-based products acc. to table 46 of Mat03 Responsible sourcing of construction products (BREEAM, 2021)
Owner of the declaration	HASSLACHER Holding GmbH
Programme holder & publisher	Institut Bauen und Umwelt e.V. (IBU)
Mutual recognition with BRE	yes
ECO-EPD at ECO platform	yes
Author of the LCA	Daxner & Merl GmbH
Software & database	GaBi software-system and database for life cycle engineering GaBi 10, database 2020.2 [see documentation]
Third-party verification	Completed; Type III declaration in compliance with ISO 14025
External verifier	Matthias Klingler
Declaration number	EPD-HAS-20210170-IBD1-EN (Solid structural timber Structural finger jointed solid timber for loadbearing purposes according to EN 15497 GLT® – Girder longitudinally tensiletested according to ETA-13/0644, issued on 01.04.2019)
System boundaries	Cradle-to-gate with modules (A1-A3; C1-C4 and D)
PCR	Solid wood products
Issue date	10.09.2021
Valid to	02.08.2026
Declaration type	Manufacturer's declaration of an average product according to EN 15804

Declared unit	1 m ³ HASSLACHER solid structural timber with an average density of 470 kg/m ³ at 15 % moisture at delivery, manufactured by the HASSLACHER group at the production site in Preding (Austria).
Conversion factor [mass/declared unit]	HASSLACHER solid structural timber: 470
Reference period	Structural finger jointed solid timber corresponds to glued laminated timber (glulam) lamellas in its components and production. Glued laminated timber has been used for over 100 years. In addition to inhouse and external monitoring, structural finger jointed solid timber from HASSLACHER PREDING Holzindustrie GmbH is also subjected to a proof loading procedure for online quality assurance of the finger joints and the product. When used as intended, no end to its durability is known or to be expected. The service life of structural finger jointed solid timber is therefore the same as the service life of the building when used as intended.
End of life scenario	The product reaches the end of its waste status after removal from the building, transport to processing and chipping of the product. For the end of life of the HASSLACHER solid wood products, energy recovery as secondary fuel in a biomass power plant is assumed. As the main sales market for HASSLACHER products is concentrated in the European region, plant-specific characteristic values correspond to a European average scenario (EU28). The scenario considers a reprocessing rate of 100 % for the solid wood products after removal from the building. This assumption has to be adjusted accordingly when applying the results in the building context. At the end-of-life of the product, the equilibrium moisture is comparable to the moisture content at delivery. This value can vary depending on the storage of the product before energy recovery.

.results of the LCA – environmental impacts acc. to EN 15804+A2

Declared unit: 1m ³ solid structural timber (470 kg/m ³)							
Declared life cycle stage		Product stage		End of life stage			Benefits and loads beyond the system boundary
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ -eq.]	-6.96E+02	0.00E+00	1.42E+00	7.59E+02	0.00E+00	-4.19E+02
GWP-fossil	[kg CO ₂ -eq.]	5.67E+01	0.00E+00	1.41E+00	3.4E+00	0.00E+00	-4.08E+02
GWP-biogenic	[kg CO ₂ -eq.]	-7.53E+02	0.00E+00	-1.67E-03	7.56E+02	0.00E+00	-1.08E+01
GWP-luluc	[kg CO ₂ -eq.]	4.63E-01	0.00E+00	1.15E-02	5.29E-03	0.00E+00	-3.19E-01
ODP	[kg CFC11-eq.]	1.34E-06	0.00E+00	2.77E-16	8.95E-14	0.00E+00	-5.32E-12
AP	[mol H ⁺ - eq.]	4.55E-01	0.00E+00	4.66E-03	7.78E-03	0.00E+00	3.05E-01
EP-freshwater ¹	[kg P- eq.]	1.81E-03	0.00E+00	4.17E-06	1.00E-05	0.00E+00	-6.05E-04
EP-marine	[kg N- eq.]	1.94E-01	0.00E+00	2.14E-03	1.85E-03	0.00E+00	5.77E-02
EP-terrestrial	[mol N- eq.]	1.93E+00	0.00E+00	2.39E-02	1.94E-02	0.00E+00	6.98E-01
POCP	[kg NMVOC-eq.]	5.23E-01	0.00E+00	4.20E-03	5.01E-03	0.00E+00	2.62E-01
ADPE	[kg Sb-eq.]	2.53E-05	0.00E+00	1.25E-07	1.10E-06	0.00E+00	-7.47E-05
ADPF	[MJ]	7.46E+02	0.00E+00	1.87E+01	6.65E+01	0.00E+00	-7.17E+03
WDP	[m ³ World- eq. deprived]	1.06E+01	0.00E+00	1.30E-02	6.00E-01	0.00E+00	-1.05E+01

Caption

GWP – total = Global warming potential – total; GWP-fossil - Global warming potential - fossil fuels; GWP-biogenic - Global warming potential – biogenic; GWP-luluc - GWP from land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential; accumulated exceedance; EP-freshwater - Eutrophication, fraction of nutrients reaching freshwater end compartment; EP-marine - Eutrophication, fraction of nutrients reaching marine end compartment; EP-terrestrial - Eutrophication, accumulated exceedance; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE - Abiotic depletion potential for non-fossil resources; ADPF - Abiotic depletion potential for fossil resources; WDP - Water (user) deprivation potential, deprivation-weighted water consumption (WDP)

¹ Disclaimer: This indicator has been calculated as [kg P-equiv.] according to the characterization model of the JRC and Environmental Footprint Initiative.

.results of the LCA – resource use acc. to EN 15804+A2

Declared unit: 1m ³ solid structural timber (470 kg/m ³)							
Declared life cycle stage		Product stage		End of life stage			Benefits and loads beyond the system boundary
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.00E+03	0.00E+00	1.08E+00	7.68E+03	0.00E+00	-1.83E+03
PERM	[MJ]	7.65E+03	0.00E+00	0.00E+00	-7.65E+03	0.00E+00	0.00E+00
PERT	[MJ]	9.65E+03	0.00E+00	1.08E+00	3.06E+01	0.00E+00	-1.83E+03
PENRE	[MJ]	7.13E+02	0.00E+00	1.88E+01	6.65E+01	0.00E+00	-7.17E+03
PENRM	[MJ]	3.37E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.47E+02	0.00E+00	1.88E+01	6.65E+01	0.00E+00	-7.17E+03
SM	[kg]	1.22E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.65E+03
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	8.10E-01	0.00E+00	1.23E-03	2.98E-02	0.00E+00	-1.20E+00

Caption

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

.results of the LCA – output flows acc. to EN 15804+A2

Declared unit: 1m ³ solid structural timber (470 kg/m ³)							
Declared life cycle stage		Product stage		End of life stage			Benefits and loads beyond the system boundary
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.00E-06	0.00E+00	9.90E-10	1.76E-08	0.00E+00	-1.61E-06
NHWD	[kg]	1.80E+00	0.00E+00	2.95E-03	4.72E-02	0.00E+00	2.72E-01
RWD	[kg]	1.61E-02	0.00E+00	3.41E-05	9.90E-03	0.00E+00	-5.89E-01
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	4.70E+02	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electric energy, EET = Exported energy, thermal energy

Mat 03 Responsible sourcing of construction products

Aim

To recognise and encourage the specification and procurement of responsibly sourced construction products. (BREEAM, 2021)

HASSLACHER solid structural timber matches the BREEAM material category **1. Timber or timber-based products** in accordance with table 46 (BREEAM, 2021).

Type of scheme	Specification of implemented scheme	Scope by material category
RSCS ²	Programme for the Endorsement of Forest Certification Schemes (PEFC) Certificate Number HFA-COC-0209 (Multisite) Date of first issuance: 21.06.2001 Date of issuance: 01.12.2021 Valid to: 30.06.2025	PEFC ST 2002:2013 Chain of Custody of Forest Based Products. Round timber, sawn timber, sawmill by-products, glued wood construction products, wood fuels, pallets: Percentage based method, physical separation (certified material, other material, neutral material)

Mat 05 Designing for durability and resilience

Aim

To recognise and encourage adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation. (BREEAM, 2021)

According to table 47 (BREEAM, 2021) of 'Mat 05 Designing for durability and resilience', depending on project specific situation HASSLACHER solid structural timber may be applicable to the following building elements for which material degradation effects are to consider:

1. Foundation, substructure, lowest floor, retaining walls
2. External walls
3. Roof or balconies
6. Railings or balusters (where exposed to external environment)
7. Cladding (where exposed to external environment)
8. Staircases or ramps (where exposed to external environment)

Section 2 of the environmental product declaration describes the prefabricated product:

Structural finger jointed solid timber is highly dimensionally stable, especially due to stricter specifications regarding cutting and wood moisture content, and therefore tends to crack less than standard solid timber. Structural finger jointed solid timber can be produced with increased surface requirements compared to standard finger-jointed or non-jointed sawn timber.

Production is subject to inhouse and external monitoring in accordance with *EN 15497*.

Structural finger jointed solid timber from HASSLACHER Preding Holzindustrie GmbH is subjected to a proof loading procedure and a test load is applied as part of this. Incorrect bonding in the finger joint as well as defects in the grading, which lead to low strength, can thus be detected through breakage and reliably eliminated.

GLT[®] – Girders Longitudinally Tensiletested are subjected to a tensile test stress of $st,proof = 0.6 \cdot ft, 0, k$. This higher tensile test stress enables more favourable dimensioning. The product, the internal and external monitoring as well as the dimensioning are regulated according to *ETA-13/0644*.

Performance data of the product structural finger jointed solid timber in accordance with the declaration of performance with respect to its essential characteristics according to *ÖNORM EN 15497:2014-10-*

² BREEAM recognised responsible sourcing certification scheme

15, *Structural finger jointed solid timber - Performance requirements and minimum production requirements* (not part of CE marking).

Performance data of the product GLT® – Girder Longitudinally Tensiletested in accordance with the declaration of performance with respect to its essential characteristics according to *ETA-13/0644, Strength graded finger-jointed structural timber GLT®* (not part of CE marking).

Section 2.12 indicates the service life of structural finger jointed solid timber that corresponds to glued laminated timber (glulam) lamellas in its components and production. Glued laminated timber has been used for over 100 years. In addition to inhouse and external monitoring, structural finger jointed solid timber from HASSLACHER PREDING Holzindustrie GmbH is also subjected to a proof loading procedure for online quality assurance of the finger joints and the product.

When used as intended, no end to its durability is known or to be expected. The service life of structural finger jointed solid timber is therefore the same as the service life of the building when used as intended.

Section 2.13 lists the technical data regarding fire (D, s2, d0, according to *EN 13501-1*), water (no risk) and mechanical deconstruction (the break pattern of structural finger jointed solid timber shows an appearance typical of solid timber).

Further project specific technical information of the products as well as specifications for dimensioning, planning and construction are available at www.hasslacher.com.

Mat 06 Material Efficiency

Aim

To recognise and encourage measures to optimise material efficiency in order to minimise the environmental impact of material use and waste without compromising on structural stability, durability or service life of the building. (BREEAM, 2021)

Characteristics of HASSLACHER solid structural timber when it comes to material efficiency:

Recycled content	No secondary wood is used to produce HASSLACHER solid structural timber.
Replacement	Structural finger jointed solid timber corresponds to glued laminated timber (glulam) lamellas in its components and production. Glued laminated timber has been used for over 100 years. In addition to inhouse and external monitoring, structural finger jointed solid timber from HASSLACHER PREDING Holzindustrie GmbH is also subjected to a proof loading procedure for online quality assurance of the finger joints and the product. When used as intended, no end to its durability is known or to be expected. The service life of structural finger jointed solid timber is therefore the same as the service life of the building when used as intended.
End of life	Re-use: In the case of selective deconstruction, structural finger jointed solid timber can be reused or reutilised without any problems after the end of the utilisation phase in the sense of cascading utilisation ("reuse"). If it is not possible to reuse or reutilise structural finger jointed solid timber, it can be thermally recycled to generate process heat and electricity due to its high calorific value of approx. 19 MJ/kg. Disposal: It is impermissible to dispose of waste wood via landfills in some European countries. Waste classification: Classification code 17218 (Wood waste, organically treated) according to the Waste Catalogue in accordance with Annex 5 of the Austrian Waste Catalogue Ordinance; Waste Code according to the European Waste Catalogue (EWC): 17 02 01.

11.0 Waste

Wst 01 Construction waste management

Aim:

To promote resource efficiency via the effective and appropriate management of construction waste. (BREEAM, 2021)

HASSLACHER solid structural timber represents a suitable target for diversion of resources from landfill, as it is impermissible to dispose of waste wood via landfills in some European countries, see section 2.15 of the environmental product declaration.

HASSLACHER solid structural timber may contribute to the BREEAM target rates for diversion from landfill, applying re-use or thermal recycling according to chapter 2.14.

Section 2.8 of the environmental product declaration of HASSLACHER solid structural timber presents details for the product's construction phase. In addition, section 2.14 indicates the product's re-use phase.

Referring information are compliant with the intent to promote resource efficiency via the effective and appropriate management of construction waste. According to table 49 (*BREEAM, 2021*), HASSLACHER solid structural timber may contribute to target rates for diversion from landfill. The following aspects described in the EPDs should be considered:

EPD | chapter 2.8 | product processing/installation

Structural finger jointed solid timber can be processed with suitable tools commonly used in solid timber processing. On request, products can also be processed on both sides in the factory.

EPD | chapter 2.14 | re-use phase

In the case of selective deconstruction, structural finger jointed solid timber can be reused or reutilised without any problems after the end of the utilisation phase in the sense of cascading utilisation ("reuse"). If it is not possible to reuse or reutilise structural finger jointed solid timber, it can be thermally recycled to generate process heat and electricity due to its high calorific value of approx. 19 MJ/kg.

Disclaimer: The content of, and results shown in this fact sheet are based on data and information submitted by the client. Therefore, Daxner & Merl GmbH makes no representation or warranty in regard of the correctness or completeness of the content of this document or the results shown.

.references

AgBB, board for the health evaluation of building products, German Federal Environmental Agency, Wörlitzer Platz 1, 06844 Dessau-Roßlau.

BREEAM, 2021. BREEAM® technical manual for International New Construction SD250 (December 2021).

DIN 68800-1:2019-06, Wood preservation – Part 1: General. Wood preservation – Part 2: Preventive constructional measures in buildings.

DIN 68800-2:2012-02, Wood preservation – Part 2: Preventive constructional measures in buildings.

DIN 68800-3:2020-03, Wood preservation – Part 3: Preventive protection of wood with wood preservatives.

ECHA Candidate List: List of substances of very high concern considered for approval (status 19.01.2021) according to Article 59 para. 10 of the REACH Regulation. European Chemicals Agency.

EN 336: ÖNORM EN 336:2013-11-15, Structural timber – Sizes, permitted deviations.

EN 338: ÖNORM EN 338:2016-06-01, Structural timber – Strength classes.

EN 1912: ÖNORM EN 1912:2013-10-15, Structural timber – Strength classes – Assignment of visual grades and species.

EN 13183-1: ÖNORM EN 13183-1:2004-02-01, Moisture content of a piece of sawn timber – Part 1: Determination by oven dry method.

EN 13501-1: ÖNORM EN 13501-1:2020-01-15, Fire classification of construction products and building elements Part 1: Classification using data from reaction to fire tests.

EN 13556: ÖNORM EN 13556:2003-09-01, Round and sawn timber. Nomenclature of timbers used in Europe.

EN 15497: ÖNORM EN 15497:2014-10-15, Structural finger jointed solid timber – Performance requirements and minimum production requirements.

EN 15804: DIN EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

EN 16516: DIN EN 16516:2020-10, Construction products: Assessment of release of dangerous substances – Determination of emissions into indoor air.

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