Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021 for:

C24 Graded, untreated kiln-dried and planed carcassing

from

Jordeson Timber

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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General information

Programme information

Programme:	The International EPD® System
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Construction products. PCR 2019;14, version 1.2. UN CPC Code: 31
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Dr. Hudai Kara, Metsims Sustainability Consulting [www.metsims.com] Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Jordeson Timber, 53 The Tannery, Lawrence St, York YO10 3WH [https://www.jordeson.co.uk/].
Contact: Ben Twaites.
Description of the organisation: Established in 1835, Jordeson Timber is an importer, wholesaler and distributor of softwood timber products, supplying large timber frame manufacturers, timber merchants and large industrial end-users throughout the UK.
Product-related or management system-related certifications: Goods are planed and strength graded to C24 in accordance with EN 14081-1:2005+A1:2011 and kiln dried. The products hold a declaration of performance according to EN 14081-1:2005+A1:2011, and a CE marking. UKCA compliant and marked. 100% PEFC Certified.
Name and location of production site(s): Derome Sawmill Group, Sweden [https://www.derome.com/] Timber is imported into Rochester, or Hull UK and distributed from there throughout the UK.

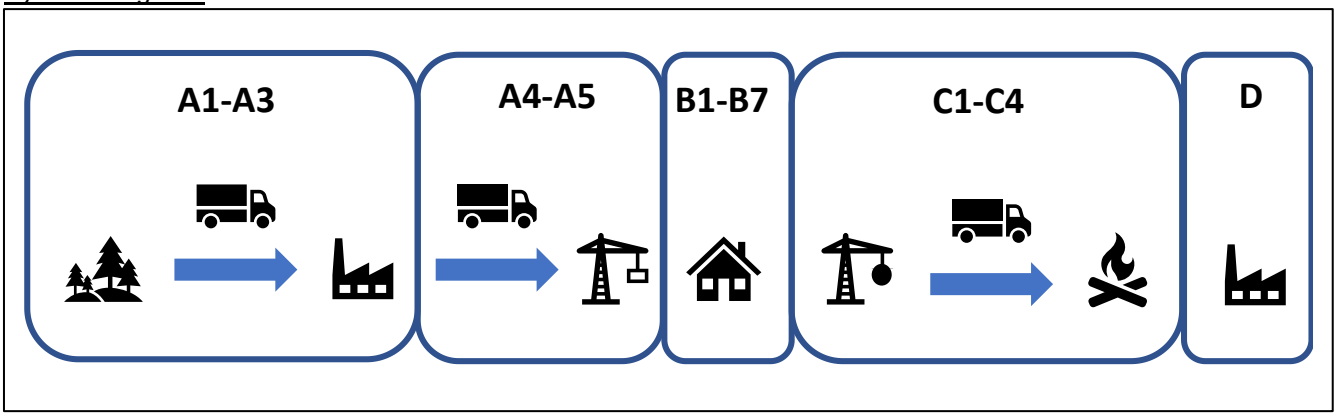
Product information

Product name: C24 Graded, untreated kiln-dried and planed carcassing.
Product description: C24 Graded, untreated kiln dried and planed carcassing produced from spruce and pine logs (*Picea abies* and *Pinus sylvestris*), planed and strength graded to C24 in accordance with EN 14081 and kiln-dried. The products hold a declaration of performance according to EN 14081-1:2005+A1:2011, and the CE marking. The products' primary application is in general construction.
UN CPC code: 31 - Products of wood, cork, straw and plaiting materials.

LCA information

Functional unit / declared unit: One cubic metre (1 m^3)
Reference service life: 60 years.
Time representativeness: 2021.
Database(s) and LCA software used: Ecoinvent 3.7 with Simapro 9.1.0.7.
Description of system boundaries: Cradle to grave and module D (A + B + C + D);

System diagram:



More information: This EPD is based upon an underlying LCA of the Jordeson Timber product manufacturing process, with operational data obtained for 2021. The declared unit is one cubic metre of timber, representing an average production mix of Spruce and Pine, with an average density of 480 kg/m^3 at a moisture content of 18%.

The underlying LCA was conducted by Dr Andrew Norton, senior consultant at Renuables Ltd [http://renuables.co.uk/]. All relevant inputs and outputs have been considered in the LCA.

For indicator values: CML baseline for the GWP, AP, ADP-elements, ADP-fossil resources, ReCiPe for POCP and EP, CED for Primary energy resources renewable/non-renewable used as energy carrier, AWARE for water scarcity potential. Lower heating value was used for all calculations involving primary energy resources including PERM, PENRM and recovered energy from wastes and end of life (see https://www.environdec.com/resources/indicators for more information).

Cut-off criteria were based upon input flows being less than 1% of the total individually, subject to the sum of all flows being less than 5% of the total, and subject to verification that the impacts associated with such flows were not of a magnitude to affect the reported data significantly (less than 5% in total).

The underlying LCA is based upon the following information and assumptions:

Modules A1-A3: Timber grown and processed in Sweden. The primary energy grid mix used by the sawmill is Wind 42.2%, Hydro 57.5%, Solar 0.3%. Space heating of the sawmill site uses waste vegetable oil and sawmill waste. Shipping from Varberg (SE) to Rochester or Hull (UK).

Modules A4-A5: Assumptions are transport to building site, truck 200km. Installation using 8 kg of steel screws. No timber waste on site assumed. Waste packaging assumed sent to landfill, assumed 10 km distance.

Modules B1-B7: No maintenance, energy use, or water use is assumed during product lifetime. All modules therefore have nil entries and are not included in the tables for clarity, although all modules are included in this EPD. A reference life of 60 years is quoted, but actual reference service lives depend on many factors, including design building lifetime and potential for re-purposing of the building.

Modules C1-C4: Manual deconstruction is assumed, with wastes transported 10 km. Preparation of inert waste for disposal assumed in C3 with oxidation assumed in module C4 to with stored biogenic carbon released back to the atmosphere to meet the requirements of EN15804:2012+A2:2019/AC:2021.

Module D: Incineration of wood, substituting for gas use in a heating plant.

The scenarios included are currently in use and are considered representative.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared*	AGG	AGG	AGG	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	SWE	SWE	SWE	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Less than 10% between Rochester or Hull					-	-	-	-	-	-	-	-	-	-	-	-

*AGG = aggregated.

Content information

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Wood (1 m^3)	480	N/A	480
TOTAL	480	N/A	480
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Polyethylene	0.55	0.115	
TOTAL	0.55	0.115	

Dangerous substances from the candidate list of SVHC for Authorisation	**EC No.**	**CAS No.**	**Weight-% per functional or declared unit**
None present	N/A	N/A	N/A

Environmental Information

This EPD contains information about environmental impact, use of resources and waste production in the form of quantitative indicators. The following abbreviations and have been used in the tables which quantify environmental performance:

Indicator	Abbreviation
Global warming potential (Fossil, biogenic, land use and transformation (LUT))	GWP
Depletion potential of the stratospheric ozone layer	ODP
Acidification potential	AP
Eutrophication potential	EP
Formation potential of tropospheric ozone	POCP
Abiotic depletion potential – Elements	ADPE
Abiotic depletion potential – Fossil resources	ADPF
Water scarcity potential	WSP
Primary energy resources – Renewable (use as energy carrier)	PERE
Primary energy resources – Renewable (use raw materials)	PERM
Primary energy resources – Renewable (total)	PERT
Primary energy resources – Non-renewable (use as energy carrier)	PENRE
Primary energy resources – Non-renewable (use raw materials)	PENRM
Primary energy resources – Non-renewable (total)	PENRT
Secondary material	SM
Renewable secondary fuels	RSF
Non-renewable secondary fuels	NRSF
Net use of fresh water	NUFW
Hazardous waste disposed	HWD
Non-hazardous waste disposed	NHWD
Radioactive waste disposed	RWD
Components for re-use	CFR
Material for recycling	MFR
Materials for energy recovery	MFER
Exported energy, electricity	EE-E
Exported energy, thermal	EE-T

All environmental data is given for the declared unit which is 1 m^3 of timber with packaging.

Potential environmental impact per m^3 of timber– mandatory indicators according to EN 15804

Indicator	Unit	Tot.A1-A3	A4	A5	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	4.73E+01	8.39E+00	4.24E+01	4.20E-01	2.58E+00	0.00E+00	-7.62E+02
GWP-biogenic	kg CO_2 eq.	-7.46E+02	4.99E-03	1.45E+00	2.49E-04	3.27E-03	7.46E+02	7.83E-02
GWP-luluc	kg CO_2 eq.	1.96E+00	2.83E-03	1.02E-01	1.42E-04	7.98E-04	0.00E+00	-1.18E-01
GWP-total	kg CO_2 eq.	-6.97E+02	8.40E+00	4.39E+01	4.20E-01	2.58E+00	7.46E+02	-7.62E+02
GWP-GHG	kg CO_2 eq	4.92E+01	8.40E+00	4.39E+01	4.20E-01	2.58E+00	0.00E+00	-7.62E+02
ODP	kg CFC 11 eq.	8.92E-06	2.05E-06	2.27E-06	1.03E-07	1.04E-06	0.00E+00	-1.05E-04
AP	mol H^+ eq.	5.46E-01	2.69E-02	2.57E-01	1.35E-03	2.40E-02	0.00E+00	-7.97E-01
EP-freshwater	kg P eq.	4.89E-02	1.54E-03	2.57E-02	7.70E-05	1.31E-03	0.00E+00	-4.72E-02
EP-marine	kg N eq.	1.75E-01	6.04E-03	5.03E-02	3.02E-04	8.31E-03	0.00E+00	-1.85E-01
EP-terrestrial	mol N eq.	1.90E+00	6.58E-02	5.10E-01	3.29E-03	9.10E-02	0.00E+00	-1.98E+00
POCP	kg NMVOC eq.	9.22E-01	2.57E-02	1.54E-01	1.29E-03	2.64E-02	0.00E+00	-7.46E-01
ADP-minerals&metals*	kg Sb eq.	3.42E-03	1.38E-04	2.08E-03	6.92E-06	2.42E-05	0.00E+00	-1.60E-03
ADP-fossil*	MJ	8.22E+02	1.36E+02	4.26E+02	6.78E+00	7.06E+01	0.00E+00	-1.11E+04
WDP*	m^3	1.27E+01	4.69E-01	1.18E+01	2.34E-02	3.18E+00	0.00E+00	-1.02E+01

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Use of resources

Indicator	Unit	Tot.A1-A3	A4	A5	C2	C3	C4	D
PERE	MJ	1.46E+04	1.81E+00	1.08E+02	9.03E-02	6.06E-01	0.00E+00	-7.24E+01
PERM	MJ	1.03E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.49E+04	2.16E+00	1.21E+02	1.08E-01	7.34E-01	0.00E+00	-8.03E+01
PENRE	MJ	8.34E+02	1.33E+02	5.48E+02	6.66E+00	6.94E+01	0.00E+00	-1.14E+04
PENRM	MJ.	2.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	8.34E+02	1.33E+02	5.48E+02	6.66E+00	6.94E+01	0.00E+00	-1.14E+04
SM	kg	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	6.21E-01	1.26E-02	2.52E-01	6.32E-04	7.47E-02	0.00E+00	-3.34E-01

Waste production and output flows

Waste production

Indicator	Unit	Tot.A1-A3	A4	A5	C2	C3	C4	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radioactive waste disposed	kg	3.69E-04	4.68E-06	5.87E-07	5.85E-05	1.37E-06	0.00E+00	-1.28E-04

Output flows

Indicator	Unit	Tot.A1-A3	A4	A5	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.80E+02
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.60E+03

Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**QUANTITY (kg C)**	**QUANTITY (kg CO_2e)**
Biogenic carbon content in product	-203.5	-746.2
Biogenic carbon content in packaging	0.0	0.0

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2. Biogenic carbon calculated according to EN16449.

Additional information

As importers and buyers of timber and timber products, we apply every best endeavour to establish and ensure that supplies sold and sourced through our services have originated from responsible sawmills and exporters who themselves have adopted a forestry and production program that is in harmony with both our aims for ecologically friendly and sustainable timber trade practices, and who operate under internationally recognised certification bodies.

To achieve this aim, we are members of the Timber Trade Federation, and operate chain of custody (CoC) schemes with both FSC® (Forest Stewardship Council®) and PEFC (Programme for the Endorsement of Forest Certification). Membership of the aforementioned schemes is subject to an independent annual audit conducted by Woodmark – the Soil Association's certification scheme for Forest Management and Chain of Custody for forest products.

Our main supply areas are the well-managed Scandinavian and Northern European coniferous forests that are primarily used for house building, commercial construction, general joinery, furniture and outdoor uses.

Jordeson Timber is a longstanding member of the Timber Trade Federation. The TTF provides technical expertise and guidance to support members to implement the RPP (Responsible Purchasing Policy). The RPP conforms to the UK Timber Regulation (UKTR) which makes it illegal to place illegally harvested timber and timber products on the UK market.

Biogenic Carbon

Biogenic carbon stored in the wood is declared in module A1, where this is reported as under the entry for climate change – biogenic. This includes both emissions of biogenic carbon due to processing and the atmospheric carbon stored in the wood, which is reported as a negative flow.

The biogenic carbon content is calculated according to the methodology described in EN 16449:2014. The following parameters were used: a density of 480 kg/m^3, a moisture content of 18% and a carbon fraction of 0.5.

According to EN15804:2012+A2:2019/AC:2021 the reporting of biogenic carbon should be treated as follows:

'The degradation of a product's biogenic carbon content in a solid waste disposal site, declared as GWP-biogenic, shall be calculated without time limit. Any remaining biogenic carbon is treated as an emission of biogenic CO_2 from the technosphere to nature.'

The emission of the biogenic carbon in the wood is therefore declared in module C4 of the EPD in the entry for climate change – biogenic. This entry declares the total biogenic carbon stored in the product as carbon dioxide equivalents, where it is reported as a positive flow.

The use of materials containing biogenic carbon in long-life products can be used as a climate change mitigation strategy. The benefit of the storage of atmospheric carbon in such products is greater as the lifetime of the product is extended. However, the time effect of storage of atmospheric carbon is not included in any standards describing the methodology for LCA calculations to be used for EPDs. The different methods of calculating the temporal aspects of carbon storage are reviewed by Tellnes et al. (2017).

The IPCC uses a stocks and flows approach to reporting stored biogenic carbon, where the inflows and outflows of biogenic carbon are reported for each year and the biogenic carbon stocks determined accordingly. Annual inputs of biogenic carbon into the built environment carbon pool can be determined from statistical data, but the quantities of biogenic carbon exiting the pool (as carbon dioxide) are generally not known and have to be calculated using a decay function. The default decay function is exponential decay with recommended half-lives, other methods can be used. The use of timber in construction will ensure that the sequestered atmospheric carbon will be stored for the lifetime of the building, using the timber in other wood products (e.g., particleboard) after demolition will ensure that this carbon is stored for longer. After several product lifetimes, the timber can be burnt with energy recovery, returning the stored atmospheric carbon to the atmosphere. Other scenarios are possible, such as the creation of biochar.

In order to show the GWP indicator solely as the result of the release of greenhouse gases associated with production, transport, maintenance, etc., an additional entry is included (GWP-GHG) where the value of biogenic carbon has been set to zero.

Information related to Sector EPD

Not applicable

Differences versus previous versions

Not applicable.

References

General Programme Instructions of the International EPD® System. Version 3.01.

PCR 2019:14, version 1.2 Construction products.

C-PCR-006 Wood and wood-based products for use in construction (EN 16485:2014).

BS 8417:2011+A1:2014 Preservation of wood. Code of practice.

EN 14081-1:2005+A1:2011 Timber structures. Strength graded structural timber with rectangular cross section - Part 1: General requirements.

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

EN 16449:2014 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.

EN 16485:2014 Round and sawn timber. Environmental Product Declarations. Product category rules for wood and wood-based products for use in construction.

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations - Principles and procedures.

ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services

EN 351-1:2007 Durability of wood and wood-based products - Preservative-treated solid wood - Part 1: Classification of preservative penetration and retention.

Tellnes, L., Ganne-Chedeville, C., Dias, A., Dolezal, F., Hill, C., Escamilla, E. (2017) Comparative assessment for biogenic carbon accounting methods in carbon footprint of products: a review study for construction materials based on forest products. iForest, 10, 815-823 [DOI: 10.3832/ifor2386-010].

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