RUSSWOOD

Environmental Product Declaration

Thermopine® cladding

This environmental product declaration has been produced for Russwood Thermopine® cladding in accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021.

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General information

Programme:	The International EPD® System
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
C-PCR-006 (TO PCR 2019:14) Wood and Wood-based Products for use in Construction (EN 16485:2014) UN CPC Code: 31101 Wood, sawn or chipped lengthwise, sliced or peeled, of a thickness exceeding 6 mm of coniferous wood
PCR review was conducted by: The Technical Committee of the International EPD® System. https://www.environdec.com/about-us/the-international-epd-system-about-the-system. 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. Hüdai 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: Russwood Ltd
Contact: Gareth Davies
Description of the organisation: Russwood are a leading UK supplier of high-quality, sustainable timber flooring, cladding, decking & interior products. The company has been in the timber industry for over 30 years, and operates from its site in the Scottish Highlands to supply to projects all over the UK. Russwood specialises in high grade materials, including natively grown and imported timber species. The Newtonmore based site has an extensive range of machining and coating equipment allowing for the production of a wide range of profiles, specialised surface textures, finishes, and coatings. (www.russwood.co.uk)
Product-related or management system-related certifications: ISO 9001, ISO 14001, PEFC+FSC registered.
Name and location of production site: Russwood Ltd, Station Sawmill, Newtonmore, Scotland, UK, PH20 1AR.

Product information

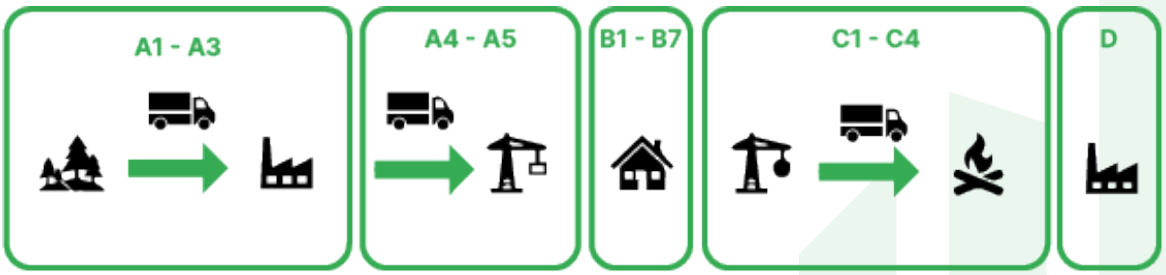
Product name: Thermopine® Profiled Cladding
Product identification: Russwood Thermopine®, Profiled Cladding
Product description: Thermopine® is a timber with enhanced stability and durability, produced by thermally modifying Scandinavian grown Scots Pine using only heat, steam and pressure. Less substrate movement means a paint coating can last up to three times longer than when applied to non-modified timbers, substantially reducing the maintenance requirement and in turn, the lifetime cost of the product. The advanced, highly controlled modification process results in a reduction of the wood's tendency to shrink and swell whilst reducing its vulnerability to wood destroying organisms.

Approximate density of 450kg/m^3.
Supplied at moisture content 7-9% for external use.
Classified as Durability Class 2 under EN 350

UN CPC code: 31101 Wood, sawn or chipped lengthwise, sliced or peeled, of a thickness exceeding 6 mm of coniferous wood.
Other codes for product classification: N/A

LCA information

Declared unit: 1 m^3
System diagram: No excluded processes



Reference service life: 60 years
Time representativeness: 2021
Database(s) and LCA software used: Ecoinvent 3.8 with Simapro 9.3.0.3
Description of system boundaries: Cradle to grave and module D (A + B + C + D);
Geographical area covered: UK
More information: LCA was performed in 2022 by Dr Andrew Norton of Renuables Ltd (www.renuables.co.uk). for the purposes of business to consumer (B2C) and business to business (B2B) communication. This EPD is based upon an underlying LCA of the Russwood timber product manufacturing process, with operational data obtained for 2021.

The declared unit is one cubic metre of timber, representing an average production of Thermopine®, with an average density of 450 kg/m^3 at an average moisture content of 8%.

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

Modules A1-A3: Timber grown, processed and treated in Scotland. The primary energy grid mix used by the sawmill is UK standard grid mix. Space heating of the sawmill site uses sawmill waste.

Modules A4-A5: Assumptions are transport to building site, truck 200 km. Installation using 8 kg of stainless 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.

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 and 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.

For characterisation factors see Version 2.0 of the default list dated 29/03/2022, which adopts the core environmental impact indicators of EN 15804:2012+A2:2019/AC:2021.
[https://www.environdec.com/resources/indicators]

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).

Biogenic carbon content of wood is calculated in line with the EN 16449:2014 standard.

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-
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Less than 10% between sawn and moulded cladding					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	N/A					-	-	-	-	-	-	-	-	-	-	-	-

Product components	Weight, KG	Renewable material, weight - %	Moisture content %
Thermopine	450	100	8
TOTAL	450	100	8

Packaging materials	Weight, kg	% of product weight
Polyethylene	1.70	0.31
Polyester	0.25	0.05
TOTAL	1.95	0.35

Environmental Information

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

Indicator	Abbreviation
Global warming potential	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

Potential environmental impact – mandatory indicators according to EN 15804 (results per m^3)

Indicator	Unit	Tot.A1-A3	A4	A5	B2	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.98E+02	4.67E+00	4.24E+01	0.00E+00	4.67E-01	2.82E+00	0.00E+00	-7.04E+02
GWP-biogenic	kg CO_2 eq.	-7.42E+02	2.78E-03	1.45E+00	0.00E+00	2.78E-04	3.58E-03	7.70E+02	-2.57E-01
GWP-luluc	kg CO_2 eq.	1.03E+00	1.58E-03	1.02E-01	0.00E+00	1.58E-04	8.74E-04	0.00E+00	-1.95E-01
GWP - total	kg CO_2 eq.	-5.42E+02	4.68E+00	4.39E+01	0.00E+00	4.68E-01	2.83E+00	7.70E+02	-7.04E+02
GWP-GHG	kg CO_2 eq.	1.99E+02	4.67E+00	4.25E+01	0.00E+00	4.67E-01	2.82E+00	0.00E+00	-7.04E+02
ODP	kg CFC 11 eq.	2.91E-05	1.14E-06	2.28E-06	0.00E+00	1.14E-07	1.16E-06	0.00E+00	-8.03E-05
AP	mol H+ eq.	1.63E+00	1.50E-02	2.57E-01	0.00E+00	1.50E-03	2.67E-02	0.00E+00	-1.40E+00
EP- freshwater	kg P- eq.	7.23E-02	8.57E-04	2.57E-02	0.00E+00	8.57E-05	1.43E-03	0.00E+00	-1.56E-02
EP- marine	kg N eq.	5.35E-01	3.36E-03	5.03E-02	0.00E+00	3.36E-04	9.25E-03	0.00E+00	-1.49E-01
EP-terrestrial	mol N eq.	5.86E+00	3.66E-02	5.10E-01	0.00E+00	3.66E-03	1.01E-01	0.00E+00	-1.54E+00
POCP	kg NMVOC eq.	1.57E+00	1.43E-02	1.54E-01	0.00E+00	1.43E-03	2.94E-02	0.00E+00	-8.43E-01
ADP-minerals&metals*	kg Sb eq.	1.35E-03	7.70E-05	2.08E-03	0.00E+00	7.70E-06	2.69E-05	0.00E+00	-2.34E-04
ADP-fossil*	MJ	3.27E+03	7.55E+01	4.26E+02	0.00E+00	7.55E+00	7.86E+01	0.00E+00	-9.81E+03
WDP	m^3	-7.54E+00	2.61E-01	1.18E+01	0.00E+00	2.61E-02	3.54E+00	0.00E+00	-1.64E+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	B2	C2	C3	C4	D
PERE	MJ	3.08E+03	1.00E+00	1.09E+02	0.00E+00	1.00E-01	6.74E-01	0.00E+00	-1.00E+02
PERM	MJ	9.56E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.36E+04	1.20E+00	1.21E+02	0.00E+00	1.20E-01	8.17E-01	0.00E+00	-1.00E+02
PENRE	MJ	3.28E+03	7.41E+01	5.48E+02	0.00E+00	7.41E+00	7.72E+01	0.00E+00	-1.11E+04
PENRM	MJ.	9.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.32E+03	7.41E+01	5.48E+02	0.00E+00	7.41E+00	7.72E+01	0.00E+00	-1.11E+04
SM	kg	0.00E+00	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	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	0.00E+00
FW	m^3	2.23E+00	7.03E-03	2.52E-01	0.00E+00	7.03E-04	8.32E-02	0.00E+00	0.00E+00

Waste production and output flows

Waste production

Indicator	Unit	Tot.A1-A3	A4	A5	B2	C2	C3	C4	D
HWD	kg	3.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.08E-02
NHWD	kg	3.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.88E+00
RWD	kg	1.73E-04	2.61E-06	5.85E-05	0.00E+00	2.61E-07	1.52E-06	0.00E+00	-4.03E-03

Output flows

Indicator	Unit	Tot.A1-A3	A4	A5	B2	C2	C3	C4	D
CFR	kg	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
MFER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-E	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-T	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+04

Information on biogenic carbon content

BIOGENIC CARBON CONTENT	kgC	$kgCO_2e$
Biogenic carbon content in product	210	770
Biogenic carbon content in packaging	0	0

Note: 1kg biogenic carbon is equivalent to 44/12 kg CO_2

Additional information

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.

According to EN15804:2012+A2:2019/A2:2021 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 biogenic carbon is therefore declared in module C4 of the EPD in the entry for climate change – biogenic. This entry shows 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.

Information related to Sector EPD
N/A

Differences versus previous versions
Rebranded 09/06/2023

References

General Programme Instructions of the International EPD® System. Version 3.01.
PCR 2019:14 Construction products, Version 1.2
C-PCR-006 (TO PCR 2019:14) Wood and Wood-based Products for use in Construction (EN 16485:2014)
EN 15804:2012 + A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations -Core rules for the product category of construction products.
EN 15942:2012 Sustainability of construction works - Environmental product declarations -Communication format business-to-business.
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 14025:2010 Environmental labels and declarations. Type III environmental declarations. Principles and procedures.
ISO 14044:2006 Environmental management. Life Cycle Assessment. Requirements and guidelines.
Environmental Product Declaration for Lunawood Thermowood® of Nordic Pine and Spruce Issue date: 24.5.2022 RTS EPD nr: RTS 180 22