ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Glued laminated timber
Yoshimei Co., Ltd.

EPD HUB, HUB-3719
Published on 27.07.2025, last updated on 27.07.2025, valid until 26.07.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 December 2023) and JRC characterization factors EF 3.1.

Created with One Click LCA

一般情報 - GENERAL INFORMATION

メーカー

MANUFACTURER

メーカー名 Manufacturer	Yoshimei Co., Ltd.
住所 Address	1118 Atarasumi, Shimoichi-cho, Yoshino-gun, Nara, Japan
問い合わせ先 Contact details	hinkan@yoshimei.co.jp
ウェブサイト Website	https://www.yoshimei.co.jp/

EPD 規格、スコープ、認証機関

EPD STANDARDS, SCOPE AND VERIFICATION

プログラムオペレータ Program operator	EPD Hub, hub@epdhub.com
参照規格 Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
製品カテゴリ Sector	Construction product
EPD カテゴリ Category of EPD	Third party verified EPD
親 EPD 番号 Parent EPD number	-
EPD のスコープ Scope of the EPD	Cradle to gate with options, A5, and modules C1-C4, D
EPD 申請者 EPD author	Takashi Katsumura
EPD 検証 EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD 検証 EPD verifier	Sarah Curpen, as an authorized verifier acting for EPD Hub Limited.

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

製品 - PRODUCT

製品名 Product name	Glued laminated timber
追加ラベル Additional labels	-
参照製品 Product reference	-
原材料の原産地 Place(s) of raw material origin	Japan, Europe
製造地 Place of production	436 Amagi, Tawaramoto-cho, Shiki-gun, Nara, Japan
設置場所および使用場所 Place(s) of installation and use	Japan
データ取得年 Period for data	2023/01~2023/12
EPD 平均化 Averaging in EPD	No grouping
A1-A3 の GWP-fossil 変動率 Variation in GWP-fossil for A1-A3 (%)	-
国際貿易商品番号 Global Trade Item Number (GTIN)	-
ノルウェー建築製品データベース Norwegian Building Product Database (NOBB)	-

環境影響データ概要 - ENVIRONMENTAL DATA SUMMARY

宣言単位 Declared unit	1m3
宣言単位あたりの質量 Declared unit mass	400 kg
GWP-fossil, A1-A3 (kgCO2e) GWP-fossil, A1-A3 (kgCO2e)	2,64E+02
GWP-total, A1-A3 (kgCO2e) GWP-total, A1-A3 (kgCO2e)	-6,31E+02
副資材の投入(%) Secondary material, inputs (%)	0,14
副資材のアウトプット(%) Secondary material, outputs (%)	92,1
エネルギー使用量計, A1-A3 (kWh) Total energy use, A1-A3 (kWh)	3680
水使用量計、A1-A3 (m3) Net fresh water use, A1-A3 (m3)	0,71

製品とメーカー-PRODUCT AND MANUFACTURER

メーカーの概要 - ABOUT THE MANUFACTURER

Yoshimei Co., Ltd. is a comprehensive supplier of construction materials with its headquarters in Shimoichi Town, Yoshino District, Nara Prefecture. The company has 4 factories and 4 sales offices across Japan. Among the 4 factories, the Tawaramoto factory mainly produces structural glued laminated timber using Japanese cypress (Hinoki) and European red pine.
are utilized as fuel for wood drying and as raw material for wood pellets.

製品説明 - PRODUCT DESCRIPTION

Structural glued laminated timber is manufactured by laminating and bonding strength-graded lamina with their fiber directions parallel to each other. This product is JAS-certified and primarily used as structural beams and columns in residential buildings.
Further information can be found at: https://www.yoshimei.co.jp/

主な原材料構成 - PRODUCT RAW MATERIAL MAIN COMPOSITION

原材料カテゴリ Raw material category	量、質量 - % Amount, mass- %	原材料源 Material origin
金属 Metals	0	-
鉱物 Minerals	0	-
化石原料 Fossil materials	2	Japan
バイオマス原料 Bio-based materials	98	Japan, Europe

生物起源 CO2 含有量 - BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

製品の生物起源 CO2 含有量、kg C Biogenic carbon content in product, kg C	191,18
梱包の生物起源 CO2 含有量、kg C Biogenic carbon content in packaging, kg C	0,002

機能単位と耐用年数 - FUNCTIONAL UNIT AND SERVICE LIFE

宣言単位 Declared unit	1m3
宣言単位あたりの質量 Mass per declared unit	400 kg
機能単位 Functional unit	-
参照耐用年数 Reference service life	-

化学物質、REACH 高懸念物質 - SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

製品のライフサイクル - PRODUCT LIFE-CYCLE

システム境界 - SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	MND	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

製造と梱包 - MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A location-based approach is used in modelling electricity mix utilized in factory

This product is made by pressing lamina with adhesive. The wood materials are sourced from Northern Europe and Japan. For Northern European wood, it is shipped to the nearest port in Japan and then transported by truck. For domestic wood, it is delivered directly by truck to the Yoshimei Tawaramoto Factory.

The main manufacturing process consists of artificial drying (for domestic wood only), cutting, finger jointing, milling, pressing, and finishing. The manufacturing process requires electricity, heat, and water to operate various equipment. The product also contains putty as an auxiliary material.

The final product is packaged with vinyl and PP bands for shipping.

Sawdust generated during processing is used as fuel for biomass boilers and for wood pellets.

Waste includes adhesives and boiler ash. The adhesive is chemically treated before disposal.

輸送と据付 - TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

This EPD excludes the transport and installation stage. However, only the calculation of packaging waste was included in A5. Due to unavailability of literature, the packaging waste scenarios are based on conservative assumptions and are as follows.

Plastic packaging wastes:
50.4% are assumed to be collected and processed for recycling. 21.3% are assumed to be incinerated and the remaining 28.3% are assumed to be landfilled. The scenario is based on the report Results of the 2018 survey on the actual status of construction by-products from Construction Recycling Promotion Plan published by Japanese Ministry of Land, Infrastructure, Transport and Tourism.

Cardboard sheet:
According to the website of Corrugated Packaging Recycling Council, 97.8% of the waste paperboard are collected at proper facilities. Therefore, EOL scenario of paperboard is assumed to be 97.8% recycled and 2.2% incinerated without energy recovery.

製品使用とメンテナンス - PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD excludes the use stage.
Air, soil, and water impacts during the use phase have not been studied.

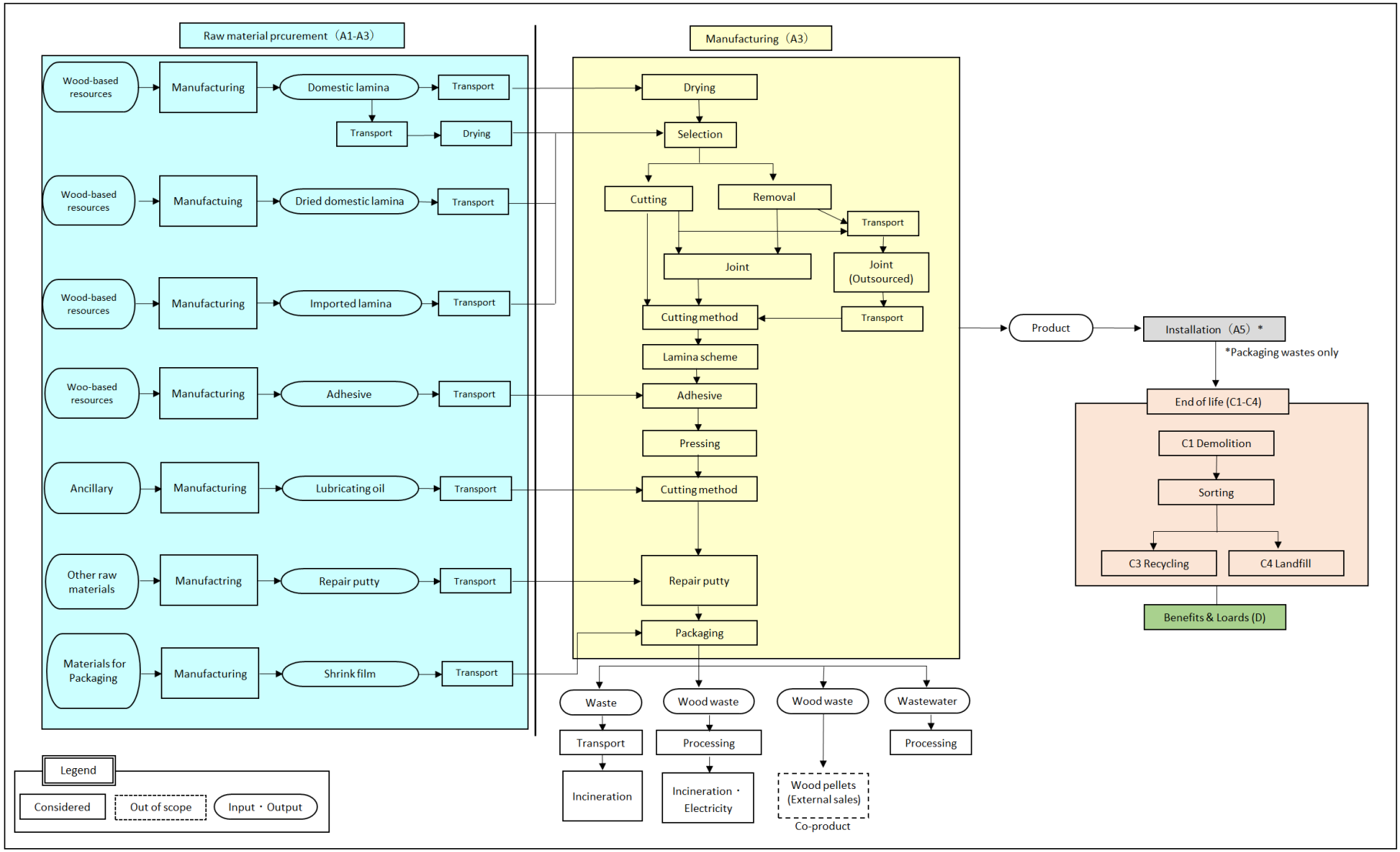
製品の廃棄・リサイクル段階 - PRODUCT END OF LIFE (C1-C4, D)

It is assumed that 0.00265 L/kg of diesel fuel will be consumed for demolition (C1). This scenario is based on Revised New Demolition Methods and Estimation published by Economic Research Association in April 2017. Transportation distance and methods to the treatment facilities (C2) are assumed to be 50km by a truck in all scenarios.

C3-C4:
At the end of its lifetime, a timber product can have several end of life scenario options. Because of the uncertainties surrounding waste disposal practices in the future, exact methods of disposal at the end of life is hard to determine. In this EPD, 92.1% of product wastes are assumed to be chipped for the future use as fuel, 6.3% are assumed to be incinerated without energy recovery, and 1.6% are assumed to be landfilled. The scenario is based on the results of a Survey of construction by-products in 2018 published by the Ministry of Land, Infrastructure and Transport, with the assumption of no material recycled between construction sites.

Based on EOL scenarios, the benefits and loads are considered in D for cases where there is recycling, reuse and energy recovery.

製造プロセス - MANUFACTURING PROCESS



ライフサイクルアセスメント - LIFE-CYCLE ASSESSMENT

カットオフ基準 - CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

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データの検証- VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

配分、推定 - ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

データタイプ - Data type	配分 - Allocation
原材料 - Raw materials	Allocated by mass or volume
梱包材 - Packaging materials	Allocated by mass or volume
補助材料 - Ancillary materials	Not applicable
製造エネルギーと廃棄物 - Manufacturing energy and waste	Allocated by mass or volume

製品と製造拠点のグループ化 - PRODUCT & MANUFACTURING SITES GROUPING

グループ化の種類 - Type of grouping	No grouping
グループ化方法 - Grouping method	Not applicable
A1-A3 における GWP-fossil の変動率 - Variation in GWP-fossil for A1-A3 (%)	-

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LCA ソフトウェアと参考文献 - LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.10.1 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2’.

環境影響データ - ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

主な環境影響指標 - CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	-8,13E+02	1,19E+02	6,30E+01	-6,31E+02	MND	5,22E-02	MND	MND	MND	MND	MND	MND	MND	3,98E+00	3,12E+00	8,37E+02	7,12E+01	-1,24E+01
GWP – fossil	kg CO_2e	8,22E+01	1,19E+02	6,30E+01	2,64E+02	MND	5,22E-02	MND	MND	MND	MND	MND	MND	MND	3,98E+00	3,12E+00	1,23E+01	4,64E-01	-1,23E+01
GWP – biogenic	kg CO_2e	-8,96E+02	0,00E+00	-7,74E-03	-8,96E+02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,25E+02	7,08E+01	0,00E+00
GWP – LULUC	kg CO_2e	5,17E-01	6,02E-02	1,83E-02	5,95E-01	MND	1,03E-05	MND	MND	MND	MND	MND	MND	MND	4,08E-04	1,42E-03	5,56E-02	1,54E-04	-5,56E-02
Ozone depletion pot.	kg $CFC_{-11}e$	1,00E-05	1,71E-06	1,72E-06	1,34E-05	MND	8,55E-11	MND	MND	MND	MND	MND	MND	MND	6,09E-08	4,54E-08	9,72E-08	6,24E-09	-9,72E-08
Acidification potential	mol H^+e	5,56E-01	2,39E+00	2,96E-01	3,24E+00	MND	5,55E-05	MND	MND	MND	MND	MND	MND	MND	3,59E-02	1,42E-02	6,43E-02	4,57E-03	-6,43E-02
EP-freshwater[2)]	kg Pe	1,72E-02	5,64E-03	1,31E-02	3,59E-02	MND	2,45E-06	MND	MND	MND	MND	MND	MND	MND	1,15E-04	2,48E-04	4,60E-03	2,25E-04	-4,60E-03
EP-marine	kg Ne	1,74E-01	5,93E-01	5,97E-02	8,26E-01	MND	3,94E-05	MND	MND	MND	MND	MND	MND	MND	1,67E-02	5,32E-03	1,69E-02	4,51E-03	-1,69E-02
EP-terrestrial	mol Ne	1,83E+00	6,58E+00	5,80E-01	8,99E+00	MND	1,81E-04	MND	MND	MND	MND	MND	MND	MND	1,82E-01	5,80E-02	1,76E-01	2,28E-02	-1,76E-01
POCP ("smog")[3)]	kg NMVOCe	5,91E-01	1,85E+00	1,86E-01	2,62E+00	MND	6,03E-05	MND	MND	MND	MND	MND	MND	MND	5,44E-02	2,00E-02	5,96E-02	6,06E-03	-5,96E-02
ADP-minerals & metals[4)]	kg Sbe	1,46E-03	2,12E-04	8,30E-05	1,76E-03	MND	8,41E-08	MND	MND	MND	MND	MND	MND	MND	1,43E-06	1,00E-05	1,62E-05	9,62E-07	-1,62E-05
ADP-fossil resources	MJ	1,25E+03	1,52E+03	8,16E+02	3,59E+03	MND	1,04E-01	MND	MND	MND	MND	MND	MND	MND	5,20E+01	4,44E+01	1,52E+02	5,05E+00	-1,52E+02
Water use[5)]	m^3e depr.	3,26E+01	5,20E+00	9,04E+00	4,69E+01	MND	2,67E-03	MND	MND	MND	MND	MND	MND	MND	1,30E-01	2,13E-01	2,32E+00	8,29E-01	-2,32E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

追加(オプション)の環境影響指標 - ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,27E-05	4,95E-06	1,25E-06	1,89E-05	MND	2,30E-09	MND	MND	MND	MND	MND	MND	MND	1,02E-06	2,99E-07	7,29E-07	5,70E-08	-7,29E-07
Ionizing radiation[6)]	kBq U235e	3,33E+00	8,99E-01	4,35E+00	8,58E+00	MND	3,14E-04	MND	MND	MND	MND	MND	MND	MND	2,31E-02	3,78E-02	9,32E-01	5,50E-03	-9,32E-01
Ecotoxicity (freshwater)	CTUe	1,47E+03	1,67E+02	1,78E+02	1,81E+03	MND	3,30E-01	MND	MND	MND	MND	MND	MND	MND	2,87E+00	6,99E+00	3,24E+01	3,41E+00	-3,24E+01
Human toxicity, cancer	CTUh	2,66E-07	2,33E-08	1,97E-08	3,09E-07	MND	1,78E-11	MND	MND	MND	MND	MND	MND	MND	4,09E-10	7,63E-10	2,65E-09	7,51E-10	-2,65E-09
Human tox. non-cancer	CTUh	2,72E-06	5,65E-07	5,34E-07	3,82E-06	MND	6,00E-10	MND	MND	MND	MND	MND	MND	MND	6,48E-09	3,06E-08	7,72E-08	5,08E-08	-7,72E-08
SQP[7)]	-	8,13E+04	3,66E+02	2,05E+02	8,19E+04	MND	1,05E-01	MND	MND	MND	MND	MND	MND	MND	3,65E+00	3,32E+01	1,04E+04	4,68E+00	-1,04E+04

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

天然資源の利用 - USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	9,14E+03	1,55E+01	7,57E+01	9,23E+03	MND	-3,91E+00	MND	MND	MND	MND	MND	MND	MND	3,30E-01	6,30E-01	-2,27E+03	-5,35E+02	2,27E+03
Renew. PER as material	MJ	7,36E+03	0,00E+00	0,00E+00	7,36E+03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-6,78E+03	-5,82E+02	0,00E+00
Total use of renew. PER	MJ	1,65E+04	1,55E+01	7,57E+01	1,66E+04	MND	-3,91E+00	MND	MND	MND	MND	MND	MND	MND	3,30E-01	6,30E-01	-9,06E+03	-1,12E+03	2,27E+03
Non-re. PER as energy	MJ	1,19E+03	1,52E+03	7,68E+02	3,48E+03	MND	-2,61E+00	MND	MND	MND	MND	MND	MND	MND	5,20E+01	4,44E+01	1,52E+02	5,05E+00	-1,52E+02
Non-re. PER as material	MJ	7,72E+01	0,00E+00	1,29E+01	9,01E+01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-7,76E+01	-1,25E+01	0,00E+00
Total use of non-re. PER	MJ	1,27E+03	1,52E+03	7,81E+02	3,57E+03	MND	-2,61E+00	MND	MND	MND	MND	MND	MND	MND	5,20E+01	4,44E+01	7,46E+01	-7,45E+00	-1,52E+02
Secondary materials	kg	5,64E-01	7,01E-01	1,18E-01	1,38E+00	MND	2,57E-04	MND	MND	MND	MND	MND	MND	MND	2,16E-02	1,98E-02	8,31E-02	8,69E-03	-8,31E-02
Renew. secondary fuels	MJ	1,21E-02	3,93E-03	5,39E+02	5,39E+02	MND	1,67E-06	MND	MND	MND	MND	MND	MND	MND	5,65E-05	2,51E-04	1,60E-03	3,00E-05	-1,60E-03
Non-ren. secondary fuels	MJ	7,82E-02	0,00E+00	0,00E+00	7,82E-02	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	3,87E-01	1,39E-01	1,80E-01	7,06E-01	MND	-4,41E-05	MND	MND	MND	MND	MND	MND	MND	3,44E-03	6,24E-03	5,84E-02	-1,86E-02	-5,84E-02

8) PER = Primary energy resources.

廃棄・リサイクル段階 — 廃棄 - END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	5,12E+00	2,24E+00	6,83E+00	1,42E+01	MND	1,33E-03	MND	MND	MND	MND	MND	MND	MND	5,79E-02	7,77E-02	1,03E+00	1,66E-01	-1,03E+00
Non-hazardous waste	kg	1,12E+02	3,58E+01	3,00E+02	4,48E+02	MND	1,57E-01	MND	MND	MND	MND	MND	MND	MND	7,90E-01	1,46E+00	2,11E+01	5,77E+01	-2,11E+01
Radioactive waste	kg	1,92E-03	2,20E-04	1,20E-03	3,34E-03	MND	7,72E-08	MND	MND	MND	MND	MND	MND	MND	5,66E-06	9,27E-06	2,26E-04	1,36E-06	-2,26E-04

廃棄・リサイクル段階 — 出力フロー - END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	1,97E-03	0,00E+00	0,00E+00	1,97E-03	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,41E-01	0,00E+00	4,61E+01	4,63E+01	MND	2,74E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,68E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	9,93E-02	0,00E+00	3,37E+01	3,38E+01	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	1,14E+00	0,00E+00	0,00E+00	1,14E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

環境影響 - ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	7,86E+01	1,18E+02	6,27E+01	2,60E+02	MND	6,64E-02	MND	MND	MND	MND	MND	MND	MND	3,96E+00	3,10E+00	1,23E+01	8,27E-01	-1,23E+01
Ozone depletion Pot.	kg CFC_{-11}e	1,23E-05	1,36E-06	1,38E-06	1,51E-05	MND	7,09E-11	MND	MND	MND	MND	MND	MND	MND	4,83E-08	3,63E-08	8,12E-08	5,12E-09	-8,12E-08
Acidification	kg SO_2e	3,90E-01	1,91E+00	2,46E-01	2,55E+00	MND	4,27E-05	MND	MND	MND	MND	MND	MND	MND	2,53E-02	1,05E-02	5,13E-02	3,21E-03	-5,13E-02
Eutrophication	kg PO_4^3e	1,31E-01	2,18E-01	4,30E-02	3,93E-01	MND	2,11E-05	MND	MND	MND	MND	MND	MND	MND	5,90E-03	2,58E-03	1,08E-02	1,38E-03	-1,08E-02
POCP (“smog”)	kg C_2H_4e	4,66E-02	9,81E-02	1,40E-02	1,59E-01	MND	8,97E-06	MND	MND	MND	MND	MND	MND	MND	1,89E-03	8,74E-04	4,48E-03	3,36E-04	-4,48E-03
ADP-elements	kg Sbe	1,42E-03	2,07E-04	7,44E-05	1,70E-03	MND	8,30E-08	MND	MND	MND	MND	MND	MND	MND	1,39E-06	9,75E-06	1,58E-05	8,20E-07	-1,58E-05
ADP-fossil	MJ	1,13E+03	1,51E+03	7,58E+02	3,40E+03	MND	9,95E-02	MND	MND	MND	MND	MND	MND	MND	5,17E+01	4,38E+01	1,38E+02	4,96E+00	-1,38E+02

環境影響 - ENVIRONMENTAL IMPACTS – ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Radioactive waste, high	kg	2,09E-04	6,54E-05	1,76E-04	4,50E-04	MND	2,47E-08	MND	MND	MND	MND	MND	MND	MND	1,62E-06	2,75E-06	7,18E-05	3,94E-07	-7,18E-05
Radioactive waste, int/low	kg	1,18E-03	1,54E-04	7,36E-04	2,07E-03	MND	5,25E-08	MND	MND	MND	MND	MND	MND	MND	4,04E-06	6,52E-06	1,54E-04	9,69E-07	-1,54E-04

検証報告 - THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Sarah Curpen, as an authorized verifier acting for EPD Hub Limited

27.07.2025