



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

STRUCTURAL PLYWOOD (Head office plant, Third plant, Kohoku plant)
NISSHIN CO., LTD.



EPD HUB, HUB-7285

Published on 21.08.2026, last updated on 21.08.2026, valid until 20.08.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) 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	NISSHIN CO.,LTD.
住所 Address	100 Nishikogyodanchi, Sakaiminato City, Tottori Prefecture
問い合わせ先 Contact details	nss@nissin.gr.jp
ウェブサイト Website	https://www.nissin.gr.jp/

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.

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 , ISO 14025
PCR PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
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 modules C1-C4, D
EPD 申請者 EPD author	Yasuhiro Kuramoto (NISSHIN HOLDINGS CO.,LTD. NS WOOD SCIENCE R&D CENTER)
EPD 検証 EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD 検証者 EPD verifier	Afzal khan Peerukhan as an authorized verifier for EPD Hub

製品 - PRODUCT

製品名 Product name	STRUCTURAL PLYWOOD (Head office plant,Third plant,Kohoku plant)
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,North America
製造地 Place of production	100 Nishikogyodanchi, Sakaiminato City, Tottori Prefecture, Japan
設置場所および使用場所 Place(s) of installation and use	Japan
データ取得期間 Period for data	2024/04/01-2025/03/31
EPD 平均化 Averaging in EPD	Multiple factories
A1-A3 の GWP-fossil 変動率 Variation in GWP-fossil for A1-A3 (%)	4.5
国際標準商品識別コード 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)	-
A1-A3 特定データ(%) A1-A3 Specific data (%)	71.7

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

宣言単位 Declared unit	1m3 of Structural plywood
宣言単位あたりの質量 Declared unit mass	500 kg
梱包材の質量 Mass of packing	0.0339 kg
GWP-fossil, A1-A3 (kgCO2e)	309
GWP-total, A1-A3 (kgCO2e)	-411
GWP-total, A1-A3 (kgCO2e) 二次材料の投入(%)	0.09
Secondary material, inputs (%)	
エネルギー使用量計, A1-A3 (kWh)	3640
Total energy use, A1-A3 (kWh)	
水使用量計, A1-A3 (m3)	1.95
Net fresh water use, A1-A3 (m3)	

製品とメーカー

- PRODUCT AND MANUFACTURER

メーカーの概要 - ABOUT THE MANUFACTURER

The Nisshin Group is a corporate group that engages in activities ranging from forestation, timber harvesting, procurement, and development and manufacturing of plywood and lumber products, to sales. Particularly in the manufacturing of plywood, which is essential for wooden house construction, the group holds approximately 30% of the domestic market share.

Nisshin Co., Ltd. operates six factories throughout the Chugoku-Shikoku region and Mie Prefecture, where it develops and manufactures high-quality and diverse plywood products.

製品説明 - PRODUCT DESCRIPTION

Structural plywood is a wood-based panel material used in structurally critical components of wooden buildings to ensure seismic resistance and durability.

○Product Standards

Complies with various standards stipulated in the Japanese Agricultural Standard (JAS), including ""bending tests,"" ""adhesive strength tests,"" and ""formaldehyde emission tests.""

○Technical and Functional Characteristics

✦Cross-laminated structure: Three or more veneers are bonded with their grain directions perpendicular to one another, reducing anisotropy in in-plane shear and bending performance.

✦Superior mechanical performance: High nail-holding capacity and rigidity, functioning as load-bearing walls and structural diaphragms that resist horizontal forces during earthquakes.

○Technical Data

✦Standard product dimensions: Width 910–1,230 mm × Length 1,820–3,030 mm, etc.

✦Thickness: 9 mm, 12 mm, and 15 mm for floor and wall underlays; 24 mm and 28 mm for joist-free flooring systems.

✦Strength grade: Grade 2 and Grade 1

• Adhesive durability: Phenolic resin adhesive is used, achieving the highest JAS classification of ""Special Class (Toku-rui)"" for water and moisture resistance.

✦Low formaldehyde emissions: F☆☆☆☆ grade (highest grade).

○Applications and Usage in Buildings

✦Wall underlays and load-bearing walls in traditional wooden post-and-beam construction and platform frame construction (2×4 method).

✦Floor underlays using thick plywood (24 mm or more), allowing floor panels to be fastened directly without the need for joists.

✦Roof underlays (sheathing boards): Used as base boards to support roofing materials such as roof tiles and slate.

○Features of the Head Office Plant

✦The Head Office Plant commenced operations in 2000 and serves as the core plant of the Nisshin Group, specializing in the production of long-length plywood (2,400 mm or more in length).

✦In addition to standard Grade 2 structural products widely distributed in the market, the plant also produces Grade 1 products used in structurally critical components such as load-bearing walls.

Further information can be found at:

<https://www.nisshin.gr.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- %	原材料の原産地 Material origin
金属 Metals	-	-
鉱物 Minerals	2	Japan
化石原料 Fossil materials	8	Japan
生物由来原料 Bio-based materials	90	Japan, North America

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	200.892857
梱包材の生物起源 CO2 含有量、kg C Biogenic carbon content in packing, kg C	0.000297

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

宣言単位 Declared unit	1m3 of Structural plywood
宣言単位あたりの質量 Mass per declared unit	500 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	ND	ND	ND	ND	ND	ND	ND	ND	ND		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

Not declared = ND.

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 market-based approach is used in modelling the electricity mix utilized in the factory.

This product is manufactured by peeling logs into veneers, then bonding multiple veneers together with adhesive, with each layer's grain direction oriented perpendicular to the adjacent layers.

○Transportation of Raw Materials

Wood materials are primarily sourced domestically within Japan (with some from Canada) and delivered to the factory by truck or vessel.

Auxiliary materials such as adhesives, as well as packaging materials such as PP bands, are all sourced domestically within Japan and transported by truck.

○Manufacturing Process and Energy Consumption

The main manufacturing processes include log peeling, veneer drying, adhesive application, pressing, cutting, and sanding. Depending on the product, anti-rot and anti-termite treatments or water-repellent finishing may also be applied. During the manufacturing process, electricity, light oil, LPG, and steam from a woody biomass boiler are used to operate each piece of equipment.

In addition, the Head Office Plant plans to introduce solar power generation facilities from 2026 as part of its efforts to transition to non-fossil energy sources.

○Packaging Materials and Auxiliary Materials Included in the Assessment

Auxiliary materials include raw materials for adhesives (resin, wheat flour, sodium carbonate, calcium carbonate, and water), anti-rot and anti-termite agents, as well as ink used for product labeling. Packaging materials are limited to strapping bands for bundling loads, kept to the minimum necessary for product transportation.

○Manufacturing By-products and Waste

Approximately 70% of the procured wood volume is converted into products, while the remaining approximately 30% of wood waste is

recycled for effective utilization. Of the wood waste, approximately 80% is used as fuel for the in-house woody biomass boiler, and the remaining approximately 20% is sold as wood chip fuel.

Waste generated from the factory includes adhesive residue and ash from the woody biomass boiler. These are transported by truck to waste treatment facilities located within the region where the factory is situated (within a 50 km radius). Treatment facilities are selected from those equipped with heat recovery incineration systems, cement solidification facilities, and composting facilities, with every effort made to maximize recycling.

輸送と設置 - TRANSPORT AND INSTALLATION (A4-A5)

This EPD excludes the A4-A5 stage. Therefore, packaging wastes are considered in the end-of-life stage.

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

This EPD excludes the use stage.

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

For demolition (C1), it is postulated that 0.00265L/kg of diesel fuel is consumed.

This scenario is based on "Revised New Demolition Work Estimation" issued by the Economic Research Association in April 2017.

The transport distance and method to processing facilities (C2) is postulated to be 50km by truck for all scenarios.

In this EPD, end-of-life (EOL) scenarios have been developed for each material category.

Wooden waste:

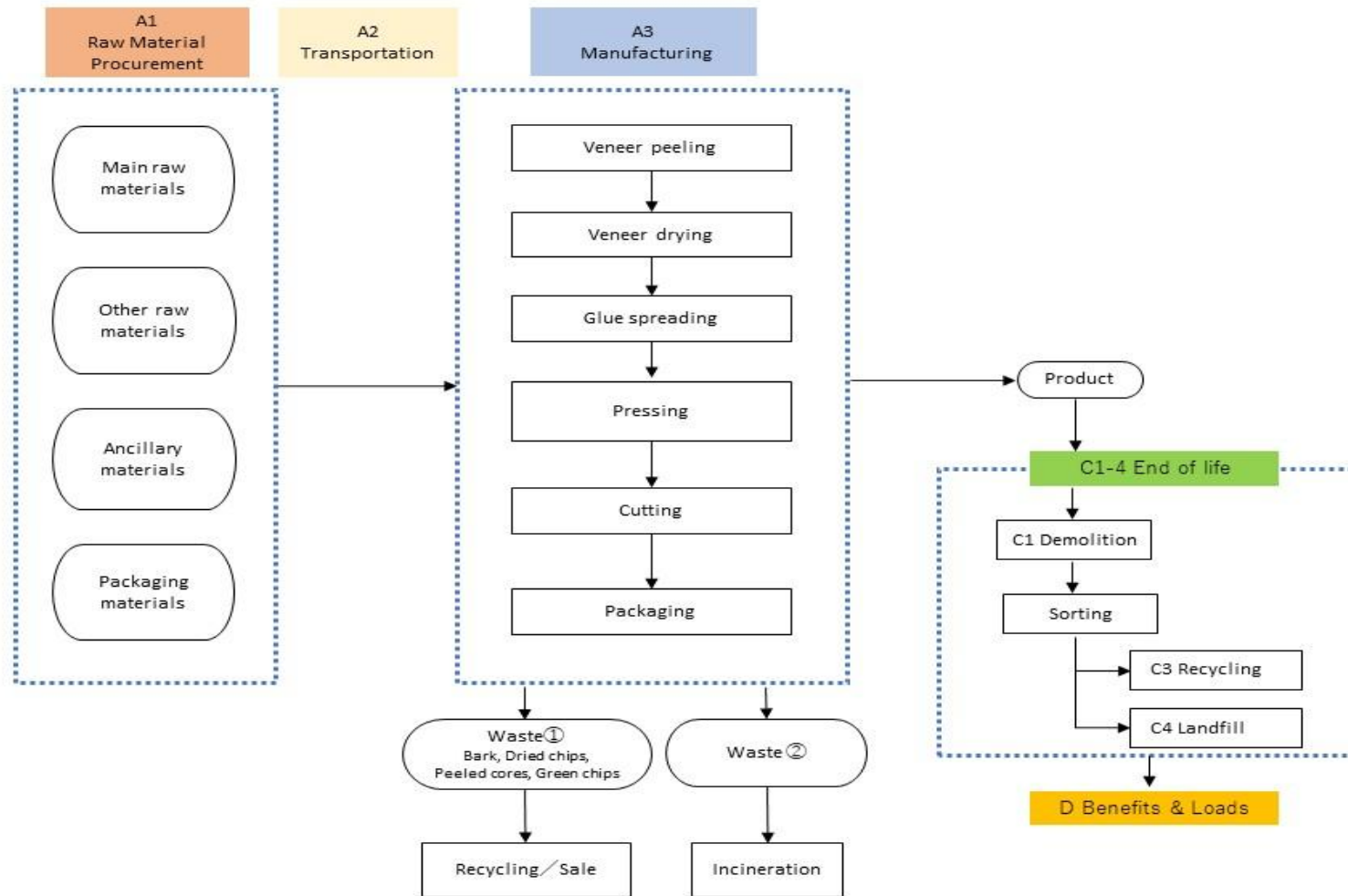
At the end of its lifetime, a timber product can have several end of life scenario options.

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.

製造プロセス

- SYSTEM DIAGRAM



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.

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	Physical Properties
梱包材 - Packaging materials	Physical Properties
補助材料 - Ancillary materials	Physical Properties
製造エネルギーと廃棄物 - Manufacturing energy and waste	Physical Properties

製品と製造拠点の平均化 - PRODUCT & MANUFACTURING SITES GROUPING

平均化の種類 - Type of grouping	Multiple factories
平均化の方法 - Grouping method	Based on a representative product
A1-A3 における GWP-fossil の変動率 - Variation in GWP-fossil for A1-A3 (%)	4.5

This product is manufactured at three plants, Head office plant, Third plant and Kohoku plant.

Since the raw materials and production processes are the same at all plants, the Head office plant, which is the main plant, is used as the representative case in this EPD.

The environmental impact among the three plants differs slightly; at

most, the GWP-fossil (A1–A3) per m³ is 4.5% lower at the Kohoku plant compared with Head office plant, due to differences in the amounts of adhesives and purchased electricity used.

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 for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.11 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent3.11 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 ₂ e	-1.08E+03	5.24E+01	6.22E+02	-4.11E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.09E+00	4.02E+00	6.42E+02	9.31E+01	-8.48E+02
GWP – fossil	kg CO ₂ e	8.62E+01	5.24E+01	1.70E+02	3.09E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.09E+00	4.02E+00	1.49E+01	5.79E-01	-1.49E+01
GWP – biogenic	kg CO ₂ e	-1.17E+03	1.21E-03	4.52E+02	-7.20E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.70E-04	9.37E-08	6.27E+02	9.26E+01	-8.34E+02
GWP – LULUC	kg CO ₂ e	8.33E-01	2.68E-02	9.25E-02	9.52E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.21E-04	1.86E-03	6.71E-02	1.87E-04	-6.72E-02
Ozone depletion pot.	kg CFC ₁₁ e	3.08E-06	7.11E-07	1.37E-06	5.17E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.56E-08	5.34E-08	1.13E-07	7.62E-09	-1.13E-07
Acidification potential	mol H ⁺ e	4.03E-01	4.76E-01	2.03E+00	2.91E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.55E-02	1.84E-02	7.89E-02	5.69E-03	-7.90E-02
EP-freshwater ²⁾	kg Pe	1.91E-02	4.73E-03	1.18E-01	1.42E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.64E-04	4.46E-04	5.49E-03	2.87E-04	-5.49E-03
EP-marine	kg Ne	1.24E-01	1.09E-01	7.33E-01	9.66E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.12E-02	6.79E-03	2.09E-02	5.54E-03	-2.09E-02
EP-terrestrial	mol Ne	1.17E+00	1.20E+00	7.97E+00	1.03E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.32E-01	7.40E-02	2.18E-01	2.85E-02	-2.18E-01
POCP (“smog”) ³⁾	kg NMVOCe	4.41E-01	3.94E-01	2.01E+00	2.84E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.94E-02	2.55E-02	7.26E-02	7.56E-03	-7.27E-02
ADP-minerals & metals ⁴⁾	kg Sbe	6.17E-04	1.47E-04	2.03E-04	9.68E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.83E-06	1.32E-05	2.10E-05	1.18E-06	-2.10E-05
ADP-fossil resources	MJ	1.66E+03	6.99E+02	1.91E+03	4.27E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.63E+01	5.65E+01	1.88E+02	6.27E+00	-1.89E+02
Water use ⁵⁾	m ³ e depr.	6.26E+01	3.34E+00	3.32E+01	9.91E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.71E-01	3.17E-01	2.90E+00	1.14E+00	-2.90E+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	4.76E-06	3.03E-06	1.63E-05	2.41E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.30E-06	3.77E-07	9.08E-07	7.13E-08	-9.09E-07
Ionizing radiation ⁶⁾	kBq U235e	2.06E+00	5.17E-01	3.45E+00	6.03E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.82E-02	4.78E-02	1.13E+00	6.52E-03	-1.14E+00
Ecotoxicity (freshwater)	CTUe	3.32E+03	7.22E+02	1.18E+04	1.58E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.79E+01	6.54E+01	3.83E+02	1.45E+01	-3.83E+02
Human toxicity, cancer	CTUh	5.51E-08	9.42E-09	8.37E-08	1.48E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.19E-10	9.68E-10	3.08E-09	9.34E-10	-3.08E-09
Human tox. non-cancer	CTUh	7.53E-07	3.63E-07	3.33E-06	4.44E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.16E-09	3.87E-08	9.20E-08	6.29E-08	-9.20E-08
SQP ⁷⁾	-	7.67E+04	3.07E+02	2.18E+02	7.72E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.38E+00	4.16E+01	1.24E+04	5.82E+00	-1.24E+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	7.10E+03	9.08E+00	-5.39E+03	1.72E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.16E-01	8.11E-01	-2.90E+03	-6.69E+02	2.90E+03
Renew. PER as material	MJ	6.14E+03	0.00E+00	0.00E+00	6.14E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-5.65E+03	-4.85E+02	-4.99E+03
Total use of renew. PER	MJ	1.32E+04	9.08E+00	-5.39E+03	7.85E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.16E-01	8.11E-01	-8.55E+03	-1.15E+03	-2.09E+03
Non-re. PER as energy	MJ	1.09E+03	6.99E+02	1.90E+03	3.68E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.63E+01	5.65E+01	1.88E+02	6.03E+00	-1.89E+02
Non-re. PER as material	MJ	1.70E+02	0.00E+00	1.28E+00	1.71E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-1.57E+02	-1.36E+01	-3.20E-01
Total use of non-re. PER	MJ	1.26E+03	6.99E+02	1.90E+03	3.85E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.63E+01	5.65E+01	3.01E+01	-7.61E+00	-1.89E+02
Secondary materials	kg	4.39E-01	3.30E-01	4.32E-01	1.20E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.74E-02	2.47E-02	1.04E-01	1.08E-02	-1.04E-01
Renew. secondary fuels	MJ	3.88E-03	3.10E-03	7.70E+03	7.70E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.19E-05	3.20E-04	1.99E-03	4.65E-05	-2.00E-03
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	1.49E+00	8.40E-02	3.74E-01	1.95E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.25E-03	7.99E-03	6.65E-02	-2.34E-02	-6.66E-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	6.55E+00	1.46E+00	1.56E+01	2.37E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.44E-02	1.28E-01	1.35E+00	2.07E-01	-1.35E+00
Non-hazardous waste	kg	9.56E+01	2.70E+01	5.75E+02	6.98E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.08E+00	2.48E+00	2.77E+01	5.36E+01	-2.77E+01
Radioactive waste	kg	5.07E-04	1.27E-04	8.37E-04	1.47E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.93E-06	1.17E-05	2.74E-04	1.62E-06	-2.75E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	4.60E+02	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	4.82E+02	4.82E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	1.93E-02	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	5.40E-01	0.00E+00	0.00E+00
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	8.00E-02	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	4.60E-01	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 ₂ e	8.64E+01	5.21E+01	1.70E+02	3.08E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.07E+00	4.00E+00	1.49E+01	1.03E+00	-1.49E+01
Ozone depletion Pot.	kg CFC ₁₁ e	2.44E-06	5.71E-07	1.10E-06	4.11E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.02E-08	4.30E-08	9.44E-08	6.27E-09	-9.45E-08
Acidification	kg SO ₂ e	3.08E-01	3.85E-01	1.51E+00	2.21E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.20E-02	1.37E-02	6.29E-02	4.00E-03	-6.30E-02
Eutrophication	kg PO ₄ ³ e	5.12E+00	4.94E-02	3.51E-01	5.52E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.54E-03	3.44E-03	1.04E-02	1.70E-03	-1.04E-02
POCP (“smog”)	kg C ₂ H ₄ e	3.47E-02	2.21E-02	1.25E-01	1.81E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.40E-03	1.12E-03	5.23E-03	4.17E-04	-5.23E-03
ADP-elements	kg Sbe	5.64E-04	1.44E-04	1.94E-04	9.02E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.78E-06	1.29E-05	2.05E-05	9.95E-07	-2.05E-05
ADP-fossil	MJ	1.63E+03	6.91E+02	1.86E+03	4.17E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.59E+01	5.58E+01	1.71E+02	6.17E+00	-1.71E+02

環境影響 - ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	8.70E+01	5.24E+01	1.70E+02	3.10E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.09E+00	4.02E+00	1.50E+01	5.79E-01	-1.49E+01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated in line with the guidance. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero.

シナリオドキュメント

- SCENARIO DOCUMENTATION

データソース - DATA SOURCES

製造エネルギーのシナリオドキュメント - Manufacturing energy scenario documentation

1. Heat production, untreated waste wood, at furnace 1000-5000 kW, World, Ecoinvent, 2.07 kgCO₂e/kg
2. Diesel, burned in building machine, World, Ecoinvent, 0.10 kgCO₂e/MJ
3. Electricity production, hard coal, Japan, Ecoinvent, 0.97 kgCO₂e/kWh
4. Electricity production, natural gas, conventional power plant, Japan, Ecoinvent, 0.75 kgCO₂e/kWh
5. Electricity production, oil, Japan, Ecoinvent, 0.88 kgCO₂e/kWh
6. Heat production, propane, at industrial furnace >100kW, World, Ecoinvent, 0.0919 kgCO₂e/MJ

廃棄・リサイクル段階のシナリオドキュメント - End of life (C1-C4) -

Scenario documentation

シナリオパラメータ - Scenario parameter	値 - Value
回収プロセス：分別回収 (kg) Collection process: collected separately (kg)	500.0339
回収プロセス：混合廃棄物 (kg) Collection process: Mixed waste (kg)	-
再生：再使用 (kg) Recovery: re-use (kg)	-
再生：リサイクル (kg) Recovery: recycling (kg)	460.0085
再生：エネルギー回収 (kg) Recovery: energy recovery (kg)	0.0193
廃棄 (kg) Disposal (kg)	40.0061
シナリオの前提条件 (例：輸送 [手段、km] およびその他) Scenario assumptions e.g. transportation (mode, km) & other	Transported 50 km by lorry

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 15804+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

Afzal khan Peerukhan as an authorized verifier for EPD Hub Limited
21.08.2026

