ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Domestic Structural Plywood
Seihoku Plywood Co., Ltd

EPD HUB, HUB-4932
Published on 22.01.2026, last updated on 22.01.2026, valid until 21.01.2031

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	Seihoku Plywood Co., Ltd
住所 Address	1-25-5 Hongo, Bunkyo-ku, Tokyo, Japan
問い合わせ先 Contact details	quality@seihoku-group.co.jp
ウェブサイト Website	https://www.seihoku.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 EN 16485 Product category rules for Round and sawn timber
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	Ryuuichi Okada
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	D.V , as authorized verifier acting for EPD HUB Limited

製品 - PRODUCT

製品名 Product name	Domestic Structural Plywood
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, Taiwan
製造地 Place of production	Plywood Factory, 1-16 Nishihama-cho Ishinomaki-city, Miyagi-Pref. 986-0844 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	2024/04-2025/03
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)	-
A1-A3 特定データ（%） A1-A3 Specific data (%)	43.8

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	430 kg
包装の質量 Mass of packaging	0.0196kg
GWP-fossil, A1-A3 (kgCO2e) GWP-fossil, A1-A3 (kgCO2e)	258
GWP-total, A1-A3 (kgCO2e) GWP-total, A1-A3 (kgCO2e)	-1050
副資材の投入(%) Secondary material, inputs (%)	0.14
副資材のアウトプット(%) Secondary material, outputs (%)	92.2
エネルギー使用量計, A1-A3 (kWh) Total energy use, A1-A3 (kWh)	3020
水使用量計、A1-A3 (m3) Net fresh water use, A1-A3 (m3)	2.73

製品とメーカー-PRODUCT AND MANUFACTURER

メーカーの概要 - ABOUT THE MANUFACTURER

Established in 1963 (Showa 38) as Seihoku Plywood Co., Ltd., the company began operations with a plywood factory in Koto Ward, Tokyo. Later, a specialized softwood plywood factory was built in Ishinomaki City, Miyagi Prefecture, which continues to operate to this day.

製品説明 - PRODUCT DESCRIPTION

We manufacture JAS-certified structural plywood with an F☆☆☆☆ low formaldehyde emission rating, primarily using domestic wood species such as Japanese cedar (Sugi), Japanese larch (Karamatsu), Sakhalin fir (Todomatsu), and Japanese cypress (Hinoki).

The panels are bonded with alkali phenol resin adhesive and available in thicknesses ranging from 9 mm to 50 mm. Our products are widely utilized in residential construction, including flooring, wall components, and roofing applications, and are supplied to building material manufacturers, house builders, and pre-cut factories.

Further information can be found at:
https://www.seihoku.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- %	原材料源 Material origin
金属 Metals	-	-
鉱物 Minerals	2	Japan
化石原料 Fossil materials	6	Japan, Taiwan
バイオマス原料 Bio-based materials	92	Japan

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	357.172
梱包の生物起源 CO2 含有量、kg C Biogenic carbon content in packaging, kg C	0

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	430 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	Deconstruction/demolition	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 plywood manufactured by rotary cutting logs into thin veneers, drying them, and then bonding them together with adhesive between layers arranged with alternating grain directions at right angles. Our manufacturing process consists of veneer cutting, drying, adhesive application, cold pressing, hot pressing, thickness calibration, trimming, inspection, marking, and packaging.

The production incorporates raw materials, ancillary materials, and packaging components. For hot pressing and drying operations, we utilize steam generated from biomass power, using bark and veneer edge trimmings produced within our facility as renewable fuel sources.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs), and its use is ensured throughout the validity period of this EPD.

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 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.
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)

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

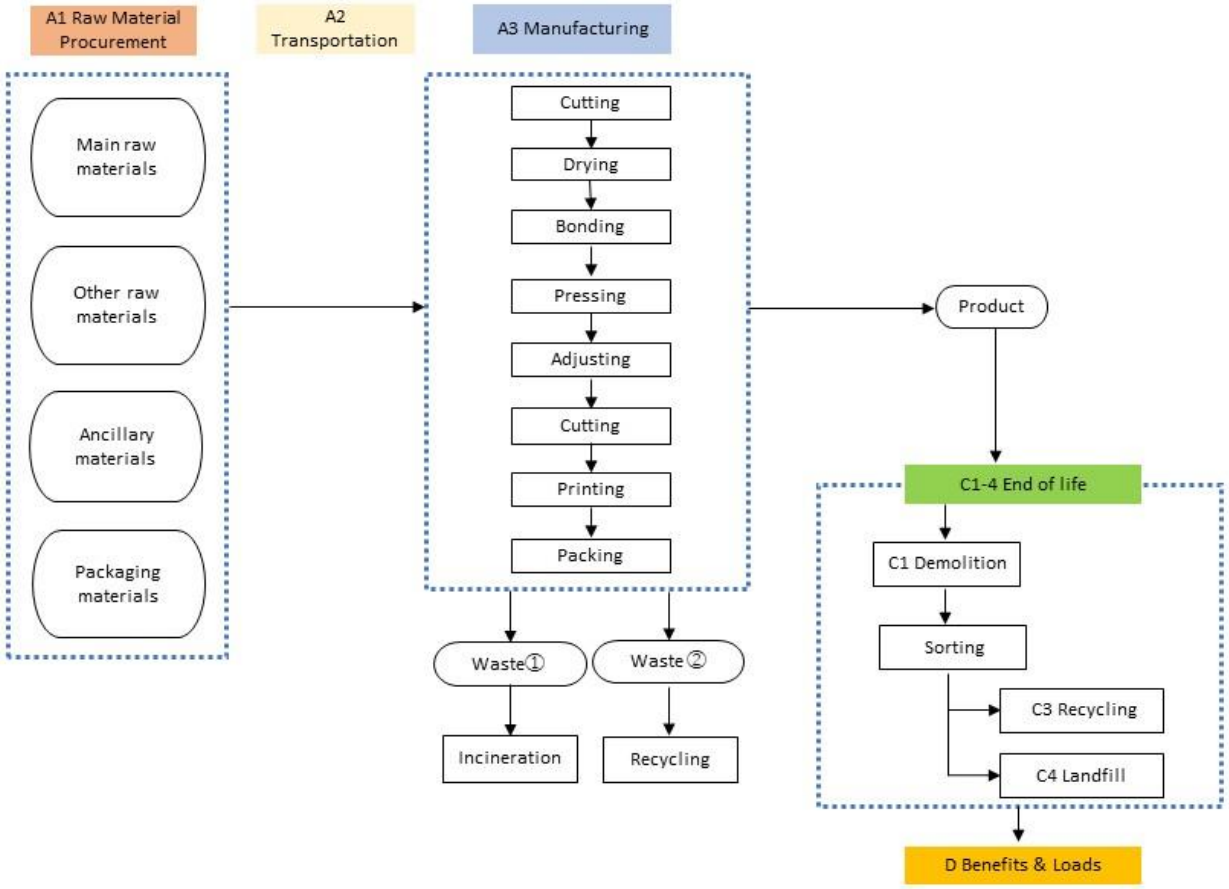
As this EPD does not include A5 stage, packaging wastes are considered in the end-of-life stage.

PP strapping band (packaging):

The EOL scenario is assumed to be 25% recycled, 57% energy recovery, 10% incinerated and 8% landfilled based on the report published by Ministry of Environment.

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 – 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	Allocated by mass
梱包材 - Packaging materials	Allocated by mass
補助材料 - Ancillary materials	Allocated by mass
製造エネルギーと廃棄物 - Manufacturing energy and waste	Allocated by mass

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 (%)	-

This EPD is product and factory specific and does not contain average calculations.

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 System Verification v3.2.3. 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 Ecoinvent 3.11 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_2e	-1.17E+03	1.90E+01	1.02E+02	-1.05E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.38E+00	3.46E+00	1.22E+03	1.04E+02	-1.28E+01
GWP – fossil	kg CO_2e	1.37E+02	1.90E+01	1.02E+02	2.58E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.38E+00	3.46E+00	1.28E+01	4.95E-01	-1.28E+01
GWP – biogenic	kg CO_2e	-1.31E+03	0.00E+00	1.37E-03	-1.31E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	1.21E+03	1.03E+02	0.00E+00
GWP – LULUC	kg CO_2e	1.10E+00	8.53E-03	4.35E-02	1.16E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.49E-04	1.60E-03	5.78E-02	1.60E-04	-5.78E-02
Ozone depletion pot.	kg CFC_{-11}e	1.32E-05	2.51E-07	1.58E-06	1.50E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.50E-08	4.59E-08	9.70E-08	6.56E-09	-9.70E-08
Acidification potential	mol H^+e	7.72E-01	5.99E-02	8.13E-01	1.64E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.92E-02	1.59E-02	6.79E-02	4.89E-03	-6.79E-02
EP-freshwater[2)]	kg Pe	1.18E-02	2.02E-03	4.80E-02	6.18E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.41E-04	3.84E-04	4.72E-03	2.47E-04	-4.72E-03
EP-marine	kg Ne	1.93E-01	1.34E-02	2.74E-01	4.80E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.82E-02	5.85E-03	1.80E-02	4.76E-03	-1.80E-02
EP-terrestrial	mol Ne	2.01E+00	1.46E-01	2.96E+00	5.12E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.00E-01	6.37E-02	1.87E-01	2.45E-02	-1.87E-01
POCP (“smog”)[3)]	kg NMVOCe	7.46E-01	6.87E-02	7.93E-01	1.61E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.97E-02	2.20E-02	6.25E-02	6.50E-03	-6.25E-02
ADP-minerals & metals[4)]	kg Sbe	1.72E-03	6.31E-05	1.88E-04	1.97E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.58E-06	1.14E-05	1.81E-05	1.01E-06	-1.81E-05
ADP-fossil resources	MJ	3.19E+03	2.59E+02	1.39E+03	4.84E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.71E+01	4.87E+01	1.62E+02	5.40E+00	-1.62E+02
Water use[5)]	m^3e depr.	1.44E+02	1.30E+00	1.97E+01	1.65E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.47E-01	2.73E-01	2.49E+00	9.79E-01	-2.49E+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	7.43E-06	1.17E-06	7.16E-06	1.58E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.12E-06	3.24E-07	7.82E-07	6.13E-08	-7.82E-07
Ionizing radiation[6)]	kBq U235e	3.03E+00	2.09E-01	1.20E+01	1.53E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.43E-02	4.12E-02	9.77E-01	5.61E-03	-9.77E-01
Ecotoxicity (freshwater)	CTUe	3.52E+03	2.95E+02	4.06E+03	7.87E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.26E+01	5.63E+01	3.30E+02	1.25E+01	-3.29E+02
Human toxicity, cancer	CTUh	3.54E-07	2.98E-09	3.52E-08	3.92E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.46E-10	8.34E-10	2.65E-09	8.04E-10	-2.65E-09
Human tox. non-cancer	CTUh	1.63E-06	1.48E-07	1.21E-06	2.99E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.02E-09	3.33E-08	7.91E-08	5.41E-08	-7.91E-08
SQP[7)]	-	8.58E+04	1.28E+02	3.15E+02	8.62E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.77E+00	3.58E+01	1.07E+04	5.01E+00	-1.07E+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	7.97E+03	3.75E+00	-2.81E+03	5.17E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.58E-01	6.98E-01	-2.49E+03	-5.75E+02	2.49E+03
Renew. PER as material	MJ	6.85E+03	0.00E+00	0.00E+00	6.85E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-6.31E+03	-5.41E+02	0.00E+00
Total use of renew. PER	MJ	1.48E+04	3.75E+00	-2.81E+03	1.20E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.58E-01	6.98E-01	-8.80E+03	-1.12E+03	2.49E+03
Non-re. PER as energy	MJ	2.32E+03	2.59E+02	1.38E+03	3.95E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.71E+01	4.87E+01	1.62E+02	5.26E+00	-1.62E+02
Non-re. PER as material	MJ	8.77E+02	0.00E+00	6.42E-01	8.78E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-8.09E+02	-6.94E+01	0.00E+00
Total use of non-re. PER	MJ	3.19E+03	2.59E+02	1.38E+03	4.83E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.71E+01	4.87E+01	-6.47E+02	-6.42E+01	-1.62E+02
Secondary materials	kg	5.97E-01	1.10E-01	2.94E-01	1.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.36E-02	2.13E-02	8.92E-02	9.30E-03	-8.92E-02
Renew. secondary fuels	MJ	3.17E-03	1.29E-03	1.76E+03	1.76E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.19E-05	2.75E-04	1.72E-03	4.00E-05	-1.72E-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	2.35E+00	3.36E-02	3.41E-01	2.73E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.65E-03	6.88E-03	5.73E-02	-2.01E-02	-5.73E-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	9.94E+00	5.77E-01	6.76E+00	1.73E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.40E-02	1.11E-01	1.16E+00	1.78E-01	-1.16E+00
Non-hazardous waste	kg	1.94E+02	1.12E+01	2.41E+02	4.46E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.32E-01	2.13E+00	2.39E+01	4.61E+01	-2.38E+01
Radioactive waste	kg	2.20E-03	5.12E-05	2.65E-03	4.90E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.96E-06	1.01E-05	2.36E-04	1.39E-06	-2.36E-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	1.43E+02	1.43E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	3.96E+02	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	1.10E+02	1.10E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	1.10E-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	2.70E-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	4.00E-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	2.30E-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_2e	1.38E+02	1.89E+01	1.01E+02	2.59E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.36E+00	3.45E+00	1.28E+01	8.86E-01	-1.28E+01
Ozone depletion Pot.	kg CFC_{-11}e	1.37E-05	2.02E-07	1.27E-06	1.52E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.18E-08	3.70E-08	8.13E-08	5.39E-09	-8.13E-08
Acidification	kg SO_2e	6.00E-01	4.85E-02	6.17E-01	1.27E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.75E-02	1.18E-02	5.42E-02	3.44E-03	-5.41E-02
Eutrophication	kg PO_4^3e	2.54E-01	9.54E-03	1.33E-01	3.97E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.48E-03	2.97E-03	8.93E-03	1.46E-03	-8.92E-03
POCP (“smog”)	kg C_2H_4e	8.76E-02	3.85E-03	4.74E-02	1.39E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.07E-03	9.64E-04	4.50E-03	3.58E-04	-4.50E-03
ADP-elements	kg Sbe	1.69E-03	6.12E-05	1.77E-04	1.93E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.53E-06	1.11E-05	1.76E-05	8.55E-07	-1.76E-05
ADP-fossil	MJ	3.18E+03	2.55E+02	1.22E+03	4.66E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.67E+01	4.80E+01	1.47E+02	5.31E+00	-1.47E+02

環境影響 - ENVIRONMENTAL IMPACTS

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	1.07E-04	1.53E-05	5.17E-04	6.39E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.73E-06	2.95E-06	7.38E-05	4.01E-07	-7.38E-05
Radioactive waste, int/low	kg	2.09E-03	3.59E-05	2.13E-03	4.26E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.23E-06	7.13E-06	1.62E-04	9.90E-07	-1.62E-04

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_2e	1.39E+02	1.90E+01	1.02E+02	2.59E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.38E+00	3.46E+00	1.29E+01	4.95E-01	-1.28E+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

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

Scenario parameter	Value
Electricity data source and quality	①Market for electricity, medium voltage, Japan, Ecoinvent ②Electricity production, photovoltaic, 3kWp flat-roof installation, single-Si
Electricity CO2e / kWh	①0.63 kg CO_2e / kWh ②0.0839 kg CO2e / kWh
District heating data source and quality	-
District heating CO2e / kWh	-

廃棄・リサイクル段階のシナリオドキュメント-End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	430.02
Collection process – kg collected with mixed waste	-
Recovery process – kg for re-use	-
Recovery process – kg for recycling	396.035
Recovery process – kg for energy recovery	0.011
Disposal (total) – kg for final deposition	33.974
Scenario assumptions e.g. transportation	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

D.V, as authorized verifier acting for EPD HUB Limited

22.01.2026