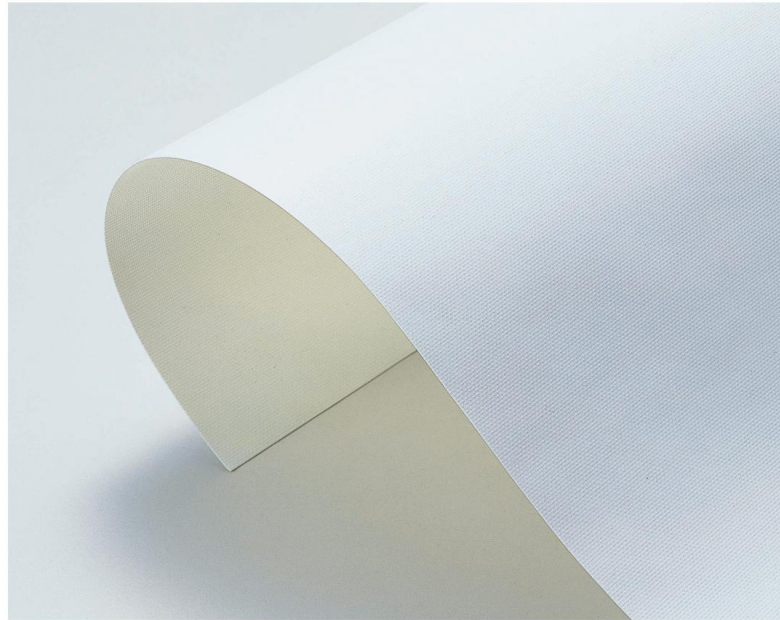




ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930


CHUKOH FLO™ SKYTOP™ FGT Series
Chukoh Chemical Industries, Ltd.



EPD HUB, HUB-3230

Published on 27.04.2025, last updated on 27.04.2025, valid until 26.04.2030

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

One Click  Created with One Click LCA



一般情報 - GENERAL INFORMATION

メーカー

MANUFACTURER

メーカー名 Manufacturer	Chukoh Chemical Industries,Ltd.
住所 Address	26F Akasaka Intercity AIR, 1-8-1 Akasaka, Minato-ku, Tokyo 107-0052, Japan
問い合わせ先 Contact details	kanazawa@chukoh.co.jp
ウェブサイト Website	https://www.chukoh.co.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+A2:2019 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
EPD のスコープ Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD 申請者 EPD author	Tomoyuki Kanazawa
EPD 検証 EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD 検証 EPD verifier	Sarah Curpen, as an authorized verifier acting for EPD Hub Limited.

製品 - PRODUCT

製品名 Product name	CHUKOH FLO™ SKYTOP™ FGT Series
追加ラベル Additional labels	-
参照製品 Product reference	FGT-600、FGT-800、FGT-1000
製造地 Place of production	1642-12 Kitamen, Imafuku-cho, Matsuura City, Nagasaki Prefecture 859-4521, Japan
データ取得年 Period for data	2023/10~2024/9
EPD 平均化 Averaging in EPD	Multiple products
A1-A3 の GWP-fossil 変動率 Variation in GWP-fossil for A1-A3 (%)	+9.42%/ -5.41%

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

宣言単位 Declared unit	1 m ²
宣言単位あたりの質量 Declared unit mass	1,43 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1,07E+01
GWP-fossil, A1-A3 (kgCO ₂ e)	1,02E+01
GWP-total, A1-A3 (kgCO ₂ e)	1,02E+01
GWP-total, A1-A3 (kgCO ₂ e)	0,37
副資材の投入(%) Secondary material, inputs (%)	18,4
副資材のアウトプット(%) Secondary material, outputs (%)	43,9
エネルギー使用量計, A1-A3 (kWh)	0,04
水使用量計, A1-A3 (m ³) Net fresh water use, A1-A3 (m ³)	

製品とメーカー - PRODUCT AND MANUFACTURER

メーカーの概要 - ABOUT THE MANUFACTURER

Chukoh Chemical Industries, Ltd. is a processing manufacturer of High-Performance Polymers, primarily fluoroplastic, supplying diverse products across many fields including food, semiconductors, automotive, electronic components, construction, and medical industries.

Since its establishment in 1963, we have developed many products, mainly focusing on fluoroplastic molded products and composite products of glass fiber and fluoroplastic. These products are adopted not only in Japan but also worldwide, including neighboring countries such as China, South Korea, Taiwan, and Southeast Asian countries, as well as in Western and the Middle Eastern countries.

Among these products, the FGT series of architectural membrane materials, introduced in 1984, has been highly evaluated globally. Due to its lightweight properties and weatherability, its adoption have expanded to large-scale facilities such as stadiums and airports, as well as structures closely connected to daily life, like train stations.

We hold ISO certifications for environmental management (ISO 14001) as well as for quality (ISO 9001). By providing products that leverage our strengths, we aim to resolve customer issues while enhancing environmental sustainability.

製品説明 - PRODUCT DESCRIPTION

The FGT series of architectural membrane materials is used in membrane structure architecture.

This product is a material made by coating glass fiber with fluoroplastic,

leveraging the many excellent properties of fluoroplastic and the toughness of glass fiber.

Fluoroplastics remain unaffected by external factors due to their numerous properties such as UV, chemical and heat resistance.

Combined with the toughness of the glass cloth, it can withstand long-term outdoor use.

Moreover, due to its composition, it is much lighter than other building materials, contributing to structural lightness and improved safety during disasters.

The quality of the FGT series has received top-ranking evaluations worldwide and has been adopted globally. It is used as roofing in venues for major international sports events, transportation facilities such as airports that support the lives of many people, as well as educational and cultural facilities, and commercial establishments.

Further information can be found at <https://www.chukoh.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	-	-
鉱物 Minerals	100	Japan, China, India
化石原料 Fossil materials	-	-
バイオマス原料 Bio-based materials	-	-

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	-
梱包の生物起源 CO2 含有量、kg C Biogenic carbon content in packaging, kg C	0,156

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

宣言単位 Declared unit	1 m ²
宣言単位あたりの質量 Mass per declared unit VP	1,43 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	MN D	MN D	MN D	MN D	MN D	MN D	MN D	MN D	MN D	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.

The product is manufactured by impregnating glass fabric with fluororesin and baking it. Raw materials are sourced from China, India, and Japan, and transported to the Matsuura factory by ship and truck.

The primary manufacturing processes involve resin compounding and coating, followed by inspection, packaging, and shipping. The manufacturing process requires electricity, heat, and water to operate machinery and equipment.

The final product is packed and shipped using plastic sheets, Minafoam®,

and wooden crates. During production, leftover materials, trimmings, and defective items are generated and subsequently landfilled as industrial waste. The wooden crates are typically reused multiple times. When deemed unfit for further use, they are disposed of as combustible waste for incineration.

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

This EPD excludes the A4-A5 stage. It is not common in Japan to include A4-A5 in declaration as well as we do not have data for calculations. It is excluded because the impacts are assumed to be very little and it is not mandated by standards. As this EPD excludes module A5, all the packaging wastes are considered in the EOL 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)

It is assumed that 0.00156 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. In this EPD, end-of-life scenarios are developed for each material categories.

Membrane products:

As the product contains fluoroplastic, 100% are assumed to be landfilled as the conservative scenario instead of incineration.

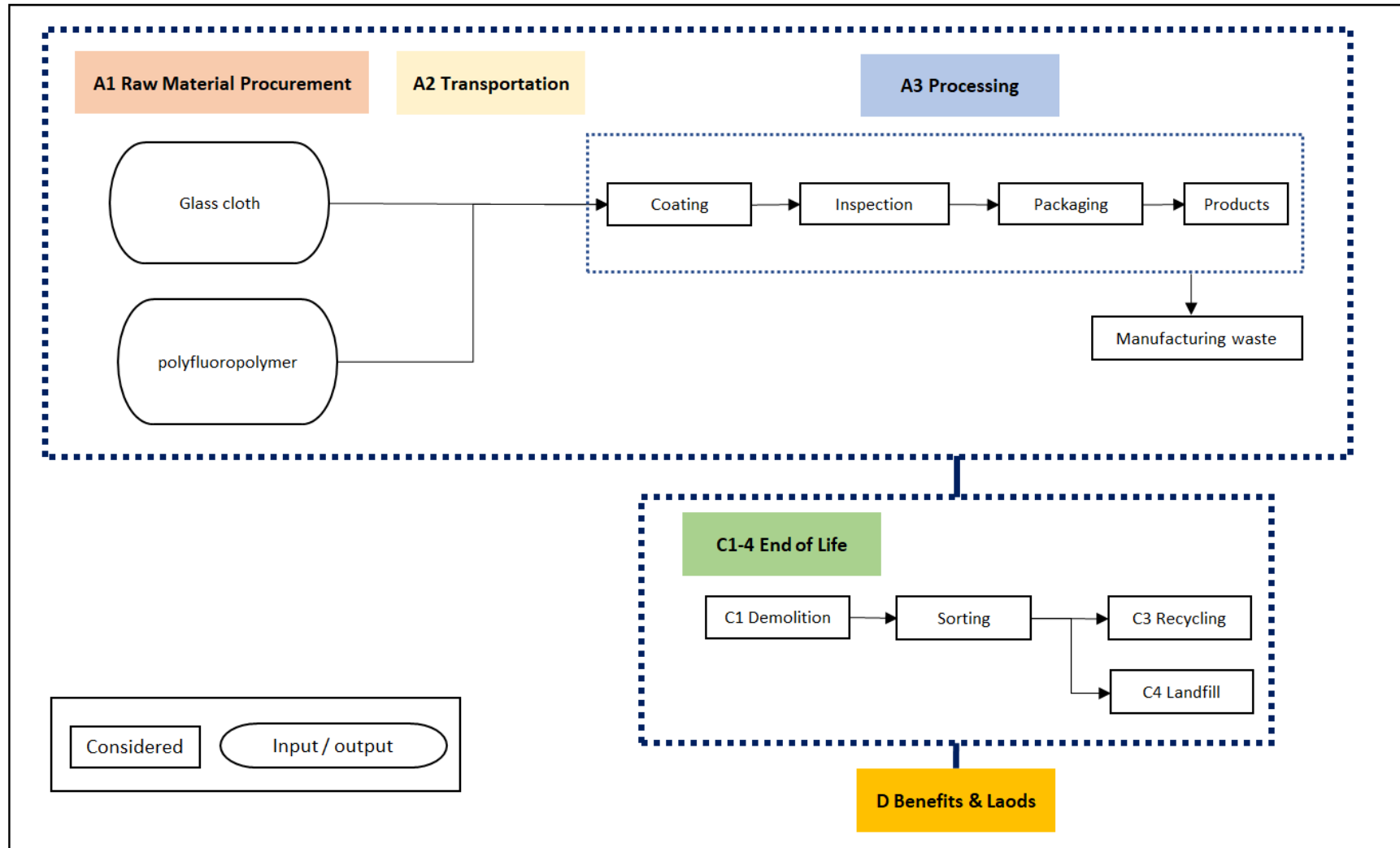
As this EPD does not include A5 stage, packaging wastes are considered in the end-of-life stage.

Plastic wastes: Plastic wastes are assumed to be 25% recycled, 63% incinerated with energy recovery, 7% incinerated without energy recovery,

and 6% landfilled. This scenario is based on the survey report published by Japan Plastic Recycling and Reuse Association in 2023.

Wooden box: 80% are collected by us and reused as is. The remaining 20% are assumed to be damaged and will be discarded and incinerated without energy recovery. The scenario is based on the internal data.

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.

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	No allocation
梱包材 - Packaging materials	Not applicable
補助材料 - Ancillary materials	Allocated by mass or volume
製造エネルギーと廃棄物 - Manufacturing energy and waste	Allocated by mass or volume

平均値と変動率 - AVERAGES AND VARIABILITY

平均化の種類 - Type of average	Multiple products
平均化の方法 - Averaging method	Representative product
A1-A3 における GWP-fossil の変動率 - Variation in GWP-fossil for A1-A3 (%)	+9.42% / -5.41%

This EPD covers three types of products made by impregnating glass cloth with fluoroplastic and baking it. As FGT-800, which is used as an architectural membrane material, has the largest production volume, it is used as the representative case in this EPD. These three types of products are manufactured at the same production site using nearly identical processes, despite variations in fluoroplastic content. The variation in A1-A3 GWP-fossil among all products is less than 10%.

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

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

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	7,68E+00	2,50E-01	2,23E+00	1,02E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,54E-03	1,37E-02	4,55E-01	2,49E-01	-1,03E-01
GWP – fossil	kg CO ₂ e	7,68E+00	2,50E-01	2,80E+00	1,07E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,54E-03	1,37E-02	6,25E-04	1,34E-01	-1,03E-01
GWP – biogenic	kg CO ₂ e	-1,12E-03	0,00E+00	-5,71E-01	-5,72E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,55E-01	1,15E-01	0,00E+00
GWP – LULUC	kg CO ₂ e	3,32E-03	1,16E-04	9,01E-04	4,34E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,75E-07	6,26E-06	1,14E-08	1,13E-05	-2,99E-04
Ozone depletion pot.	kg CFC ₁₁ e	2,38E-08	3,60E-09	8,62E-08	1,14E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,31E-10	2,00E-10	1,14E-13	4,28E-10	-1,22E-09
Acidification potential	mol H ⁺ e	1,63E-02	1,00E-03	1,37E-02	3,10E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,71E-05	6,23E-05	1,02E-07	1,32E-04	-6,64E-04
EP-freshwater ²⁾	kg Pe	7,89E-01	1,94E-05	7,20E-04	7,90E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,47E-07	1,09E-06	2,24E-09	2,23E-06	-2,72E-05
EP-marine	kg Ne	3,74E-03	2,35E-04	3,11E-03	7,09E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,58E-05	2,34E-05	5,75E-08	3,01E-03	-1,80E-04
EP-terrestrial	mol Ne	4,02E-02	2,57E-03	2,50E-02	6,78E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,92E-04	2,55E-04	4,77E-07	5,39E-04	-1,98E-03
POCP (“smog”) ³⁾	kg NMVOCe	1,20E-02	1,06E-03	1,19E-02	2,50E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,17E-04	8,80E-05	1,23E-07	2,07E-04	-7,02E-04
ADP-minerals & metals ⁴⁾	kg Sbe	1,23E-04	8,45E-07	4,53E-06	1,28E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,06E-09	4,40E-08	6,23E-11	3,87E-08	-4,57E-07
ADP-fossil resources	MJ	1,19E+02	3,42E+00	6,43E+01	1,86E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,12E-01	1,95E-01	9,92E-05	3,68E-01	-1,42E+00
Water use ⁵⁾	m ³ e depr.	4,01E-01	1,55E-02	9,84E-01	1,40E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,79E-04	9,39E-04	1,54E-05	3,99E-03	-5,19E-02

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, PEF

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	1,33E-07	1,50E-08	8,70E-08	2,35E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,19E-09	1,32E-09	1,22E-12	2,73E-09	-1,54E-08
Ionizing radiation ⁶⁾	kBq U235e	8,63E-02	2,85E-03	1,55E-01	2,44E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,95E-05	1,66E-04	1,89E-07	3,95E-04	-4,10E-03
Ecotoxicity (freshwater)	CTUe	5,91E+00	5,99E-01	1,01E+01	1,66E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	6,15E-03	3,07E-02	1,66E-04	4,97E+00	-6,61E-01
Human toxicity, cancer	CTUh	2,43E-09	4,11E-11	1,38E-09	3,85E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,78E-13	3,36E-12	3,03E-14	1,78E-11	-6,14E-10
Human tox. non-cancer	CTUh	5,89E-08	1,95E-09	1,99E-08	8,08E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,39E-11	1,35E-10	9,96E-13	3,34E-09	-1,00E-09
SQP ⁷⁾	-	4,13E+00	1,61E+00	8,18E+01	8,76E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,83E-03	1,46E-01	9,33E-05	8,32E-01	-5,82E+01

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	5,55E+00	5,07E-02	2,28E+00	7,89E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,08E-04	2,77E-03	5,67E-06	-1,11E+00	-3,98E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	4,98E+00	4,98E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-3,99E+00	-9,97E-01	0,00E+00
Total use of renew. PER	MJ	5,55E+00	5,07E-02	7,26E+00	1,29E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,08E-04	2,77E-03	-3,99E+00	-2,11E+00	-3,98E+00
Non-re. PER as energy	MJ	1,13E+02	3,42E+00	3,36E+01	1,50E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,12E-01	1,95E-01	-1,11E-02	-5,16E+01	-1,16E+00
Non-re. PER as material	MJ	5,51E+00	0,00E+00	3,43E-01	5,86E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,75E-01	-5,58E+00	0,00E+00
Total use of non-re. PER	MJ	1,19E+02	3,42E+00	3,39E+01	1,56E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,12E-01	1,95E-01	-2,86E-01	-5,72E+01	-1,16E+00
Secondary materials	kg	5,34E-03	1,56E-03	2,38E-02	3,07E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,64E-05	8,71E-05	3,42E-07	1,50E-04	-1,22E-02
Renew. secondary fuels	MJ	1,40E-04	1,82E-05	1,32E-01	1,32E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,21E-07	1,11E-06	2,51E-09	2,47E-06	-1,05E-01
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	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	1,64E-02	4,44E-04	2,23E-02	3,92E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,39E-06	2,74E-05	1,34E-07	-5,28E-03	-1,12E-03

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	1,08E-01	6,05E-03	1,77E-01	2,91E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,24E-04	3,42E-04	5,79E-06	1,07E-03	-9,06E-03
Non-hazardous waste	kg	3,18E+00	1,15E-01	4,41E+01	4,74E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,70E-03	6,42E-03	2,28E-04	7,18E+00	-1,53E-01
Radioactive waste	kg	2,99E-05	6,98E-07	3,43E-05	6,49E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,21E-08	4,08E-08	4,76E-11	9,68E-08	-1,00E-06

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,63E-01	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,20E-02	1,20E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,00E-05	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,00E-04	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,70E-03	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,60E-04	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,84E-03	0,00E+00	0,00E+00

環境影響 - ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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	7,65E+00	2,49E-01	2,97E+00	1,09E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,50E-03	1,36E-02	6,26E-04	1,29E-01	-1,03E-01
Ozone depletion Pot.	kg CFC ₁₁ e	2,86E-08	2,87E-09	7,43E-08	1,06E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,04E-10	1,59E-10	9,54E-14	3,42E-10	-1,01E-09
Acidification	kg SO ₂ e	1,32E-02	8,07E-04	1,15E-02	2,55E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,42E-05	4,63E-05	7,34E-08	9,72E-05	-5,19E-04
Eutrophication	kg PO ₄ ³ e	2,86E-03	1,39E-04	5,23E-03	8,23E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,27E-05	1,13E-05	2,40E-08	1,54E-04	-2,83E-03
POCP (“smog”)	kg C ₂ H ₄ e	1,06E-03	5,91E-05	8,45E-04	1,96E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,06E-06	3,84E-06	6,33E-09	2,63E-05	-5,98E-05
ADP-elements	kg Sbe	1,23E-04	8,21E-07	4,01E-06	1,28E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,98E-09	4,29E-08	5,85E-11	3,73E-08	-4,49E-07
ADP-fossil	MJ	1,08E+02	3,38E+00	6,21E+01	1,73E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,11E-01	1,93E-01	9,62E-05	3,62E-01	-1,36E+00

検証報告 - VERIFICATION STATEMENT

本 EPD の検証プロセス - VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? [Read more online](#)

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

第三者検証報告 - THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Sarah Curpen, as an authorized verifier acting for EPD Hub Limited.
27.04.2025

