

ENVIRONMENTAL PRODUCT DECLARATION

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

Mirafoam MKS

JSP Corporation



EPD HUB, HUB-1906

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一般情報 - GENERAL INFORMATION

メーカー - MANUFACTURER

メーカー名 Manufacturer	JSP Corporation
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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	ISO 21930:2017 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
EPD 申請者 EPD author	Tatsuyuki Ishikawa
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	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited
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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	Mirafoam MKS
追加ラベル Additional labels	-
参照製品 Product reference	-
製造地 Place of production	Kanuma Miraform Plant(Tochigi Prefecture Japan), Hokkaido Plant(Hokkaido Prefecture Japan), Kanasai Plant(Hyogo Prefecture Japan), and Kyushu Plant(Kumamoto Prefecture Japan)
データ取得年 Period for data	2022/04~2023/03
EPD 平均化 Averaging in EPD	Multiple factories
A1-A3 の GWP-fossil 変動率 Variation in GWP-fossil for A1-A3	10.6 %

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

宣言単位	1t
Declared unit	
宣言単位あたりの質量	1000 kg
Declared unit mass	
GWP-fossil, A1-A3 (kgCO ₂ e)	2,63E+03
GWP-fossil, A1-A3 (kgCO ₂ e)	
GWP-total, A1-A3 (kgCO ₂ e)	2,64E+03
GWP-total, A1-A3 (kgCO ₂ e)	
副資材の投入(%)	41.4
Secondary material, inputs (%)	
副資材のアウトプット(%)	0
Secondary material, outputs (%)	
エネルギー使用量計, A1-A3 (kWh)	8950
Total energy use, A1-A3 (kWh)	
水使用量計, A1-A3 (m ³)	31.6
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

As a foamed resin manufacturer, JSP provides products such as packaging materials, protective materials, building components, as well as various related services to a wide range of fields, including food packaging containers, IT and electronic equipment, automobile parts, and civil engineering and construction. Starting from polystyrene paper business in 1962, JSP was the first in the world to develop and commercialize its unique EPS products such as non-cross-linked foamed polyethylene sheets and expanded polypropylene beads, etc. With the strength of its technology and products, JSP is currently expanding its business globally to North America, South America, Europe, China, Korea and Southeast Asia. In addition, we are contributing to the reduction of environmental loads and CO₂ emissions through the lightweight, resource-saving, thermal insulation, shock-absorbing, and sound insulation/absorption of our foam resin products. We have acquired ISO 14001 certification as part of global environment conservation. We will be committed to achieving symbiosis between our business and the natural environment by implementing energy-saving measures, enhancing resource recovery, and developing and improving recycling technologies.

製品説明 - PRODUCT DESCRIPTION

Mirafoam MKS is an extruded polystyrene foam thermal insulation material widely used in residential buildings to improve energy consumption efficiency of indoor heating and cooling system. It has the highest standard of the thermal insulation performance (0.028W/mK) in the industry and excellent dew-proofing performance. The product weight is 35 kg/m³. Mirafoam MKS is available in thirteen thicknesses ranging from 20mm to 100mm.

Mirafoam MKS is a non-fluorocarbon product that does not use chlorofluorocarbons as foaming agents. It is also a F☆☆☆☆ labeled product that contains no formaldehyde and is certified as compliant with the 4VOC standard. It conforms to the “specified procurement items (thermal insulating materials) of the Green Purchasing Law and is a certified product of “Top Runner Program for the building materials where Ministry of Economy, Trading, and Industry of Japan defines standards on energy-saving performances.

Further information can be found at <https://www.co-jsp.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	3	Japan
化石原料 Fossil materials	97	Japan
バイオマス原料 Bio-based materials	0	-

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 CO ₂ 含有量、kg C Biogenic carbon content in product, kg C	-
梱包の生物起源 CO ₂ 含有量、kg C Biogenic carbon content in packaging, kg C	-

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

宣言単位 Declared unit	1t
宣言単位あたりの質量 Mass per declared unit VP	1000 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
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.

This product is made by melting and blending, foaming polystyrene with mineral additives (talc), flame retardants, and foaming agents (isobutane, DME, CO₂, ethanol water, methyl chloride). There is no surface material. All raw materials used for the product are procured domestically and transported to the manufacturing site mainly by truck.

The main manufacturing processes are foaming, molding, and trimming. Finished products are packed in polyethylene tape or cardboard box for shipping.

The manufacturing process consumes electricity to operate machinery and equipment. Most of the production losses generated during manufacturing are

recovered as raw material and returns to the manufacturing process. The portion that cannot be used as recycled raw material is incinerated.

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. 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.

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

This EPD excludes the use stage.

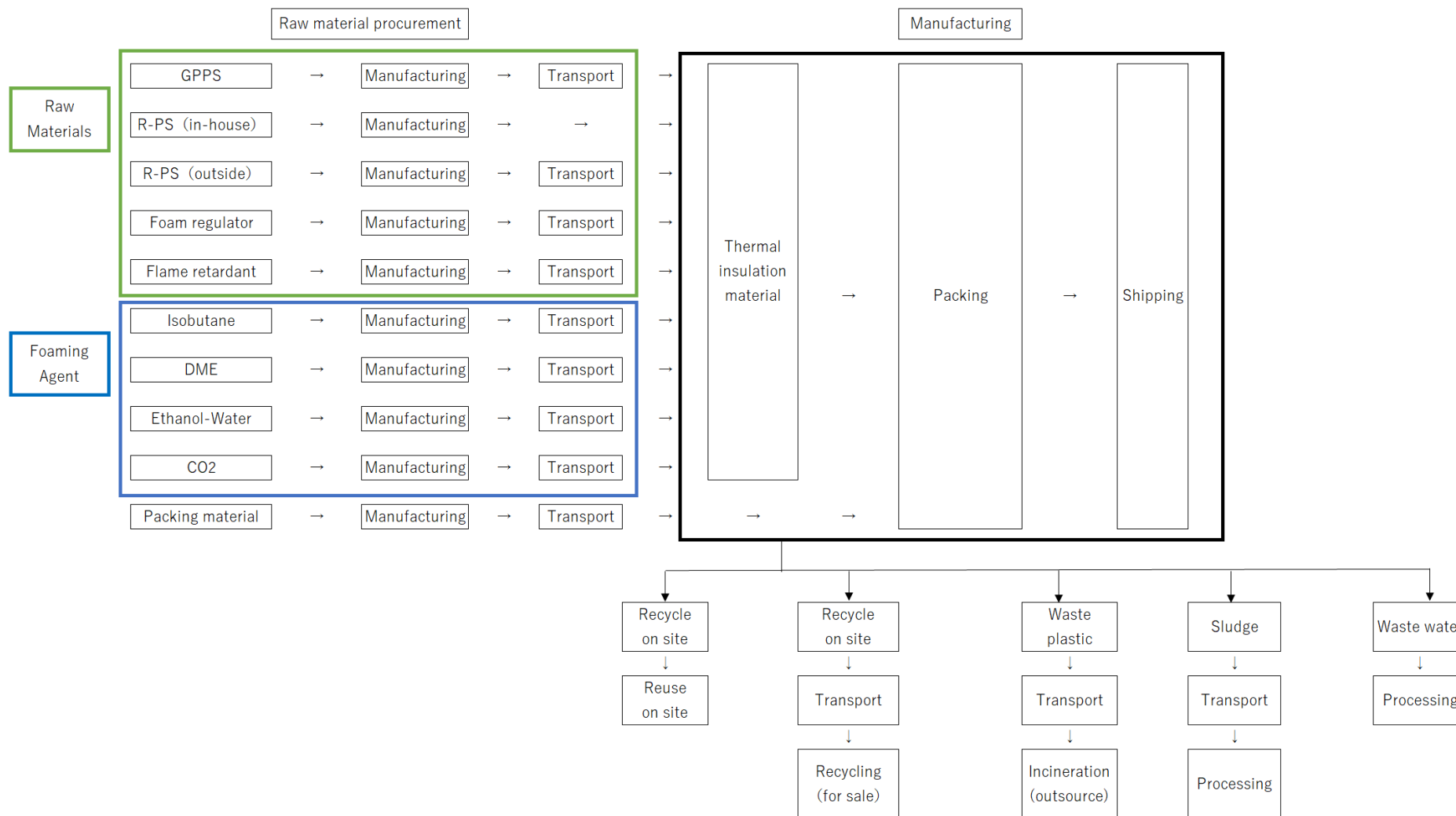
Air, soil, and water impacts during the use phase have not been studied.

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

This EPD excludes the end of life stage.

This is the cradle to gate EPD in accordance with requirements defined in ISO 21930:2017.

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	No allocation
補助材料 - Ancillary materials	No allocation
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 factories
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	10.6 %

This product is manufactured at four plants, the Kanuma Plant, the Hokkaido Plant, the Kansai Plant, and the Kyushu Plant. Since the raw materials and production processes are the same at all plants, the Kanuma plant, which has the largest share by production volume, is used as the representative case in this EPD. The difference in environmental impact between the four plants is that the GWP-fossil A1-A3 per ton is less than 10.6%.

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 v3.8 and One Click LCA databases were used as sources of environmental data.

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	1,89E+03	3,64E+01	7,18E+02	2,64E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
GWP – fossil	kg CO ₂ e	1,87E+03	3,64E+01	7,18E+02	2,63E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
GWP – biogenic	kg CO ₂ e	1,37E+01	1,75E-02	1,81E-01	1,39E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
GWP – LULUC	kg CO ₂ e	2,89E-01	2,22E-02	1,00E-01	4,11E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ozone depletion pot.	kg CFC ₁₁ e	1,44E-05	6,38E-06	1,47E-05	3,54E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Acidification potential	mol H ⁺ e	7,59E+00	1,82E-01	3,49E+00	1,13E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP-freshwater ²⁾	kg Pe	1,06E-02	3,71E-04	1,76E-02	2,86E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP-marine	kg Ne	1,07E+00	6,02E-02	5,05E-01	1,63E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP-terrestrial	mol Ne	1,18E+01	6,63E-01	5,63E+00	1,80E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP (“smog”) ³⁾	kg NMVOCe	4,87E+00	1,97E-01	1,67E+00	6,74E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-minerals & metals ⁴⁾	kg Sbe	6,63E-03	1,44E-04	9,96E-04	7,77E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-fossil resources	MJ	4,15E+04	5,06E+02	8,95E+03	5,10E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Water use ⁵⁾	m ³ e depr.	1,22E+03	2,82E+00	8,47E+01	1,31E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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	7,65E-05	3,16E-06	9,27E-06	8,89E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ionizing radiation ⁶⁾	kBq U235e	7,74E+00	2,50E+00	8,03E+01	9,06E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ecotoxicity (freshwater)	CTUe	1,62E+04	4,69E+02	7,76E+03	2,44E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Human toxicity, cancer	CTUh	5,21E-07	1,97E-08	2,10E-07	7,51E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Human tox. non-cancer	CTUh	1,05E-05	4,34E-07	4,35E-06	1,53E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SQP ⁷⁾	-	4,15E+03	3,30E+02	1,98E+03	6,46E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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	2,52E+02	8,50E+00	6,82E+02	9,42E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of renew. PER	MJ	2,52E+02	8,50E+00	6,82E+02	9,42E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-re. PER as energy	MJ	2,18E+04	5,06E+02	8,94E+03	3,13E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-re. PER as material	MJ	3,43E+04	0,00E+00	1,88E+01	3,43E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of non-re. PER	MJ	5,61E+04	5,06E+02	8,95E+03	6,56E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Secondary materials	kg	4,14E+02	3,08E-01	1,17E+00	4,15E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Renew. secondary fuels	MJ	2,70E-02	2,44E-03	1,72E-02	4,66E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
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	MND	MND	MND	MND	MND
Use of net fresh water	m ³	2,92E+01	7,15E-02	2,36E+00	3,16E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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	4,83E+01	1,10E+00	3,90E+01	8,84E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-hazardous waste	kg	2,37E+03	1,50E+01	7,07E+02	3,09E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Radioactive waste	kg	3,82E-03	3,40E-03	2,17E-02	2,89E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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	MND	MND	MND	MND	MND
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
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	MND	MND	MND	MND	MND
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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	1,75E+03	3,59E+01	7,00E+02	2,49E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ozone depletion Pot.	kg CFC ₁₁ e	1,23E-05	5,07E-06	1,21E-05	2,94E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Acidification	kg SO ₂ e	6,44E+00	1,39E-01	2,95E+00	9,53E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Eutrophication	kg PO ₄ ³ e	1,14E+00	3,40E-02	6,43E-01	1,82E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP (“smog”)	kg C ₂ H ₄ e	4,19E-01	5,49E-03	1,25E-01	5,50E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-elements	kg Sbe	6,37E-03	1,41E-04	9,92E-04	7,50E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-fossil	MJ	4,15E+04	5,06E+02	8,95E+03	5,10E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
23.08.2024



付属文書 – ANNEX

Below is a list of Mirafoam MKS extruded polystyrene foam insulation by product thickness and their corresponding mass.

Using the “A1-A3 GWP CML/ISO21930” value the carbon emissions attributed to each product has been determined below.

	Product Thickness mm	Product Weight kg/m ²	A1-A3 GWP CML/ISO21930 kgCO ₂ e/m ²
1	20	0.70	1.74
2	25	0.88	2.18
3	30	1.05	2.61
4	35	1.23	3.05
5	40	1.40	3.48
6	45	1.58	3.92
7	50	1.75	4.35
8	55	1.93	4.79
9	60	2.10	5.22
10	65	2.28	5.66
11	75	2.63	6.53
12	90	3.15	7.84
13	100	3.50	8.71