Environmental Product Declaration

In accordance with **ISO 14025:2006** and **EN 15804:2012+A2:2019/AC:2021** for:

Carfoam®/Zetatunel Waterproofing Membrane for tunnels and underground structures

from

Zfoam España S.L.

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



Programme information

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
PCR 2019:14 Construction products, Version 1.3.2 General Programme Instructions (GPI) Version: 4.0 (2021) and UN CPC code 363-semi-manufactures of plastics, subclass 36390: other plates, sheets, film, foil and strips of plastics
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members is available on www.environdec.com. The review panel may be contacted via info@environdec.com.
Life Cycle Assessment (LCA)
LCA accountability: FUNDACIÓN CIRCE (Centro de Investigación de Recursos y Consumos Energéticos) Parque Empresarial Dinamiza, Avda. Ranillas 3D, 1ª Planta 50018 Zaragoza (España) www.fcirce.es
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Lorena Pereda Pereda. CTME Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third-party verifier: ☐ Yes ☒ No [Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programs may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits20) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison.

Company information

Owner of the EPD: Zfoam S.L
Polígono Industrial Alfajarín. P10
50172 Alfajarín (Zaragoza) España
(+34) 976 790 640
E-mail: info@zfoam.com

Description of the organisation: Zfoam S.L has been present in the plastic foam market since 1992. It currently supplies final products in national and international markets.

All plastic foam transformation processes are available at the Alfajarín (Zaragoza) facilities: cutting systems, gluing, CNC, thermoforming, coatings... We have the latest transformation technologies available on the market, with a philosophy of continuous evolution and equipment updating.

The company divides its manufacturing into 5 sectors: ZFoam Industry, ZFoam Packaging, ZFoam Sport, ZFoam Construction and ZFoam Eco.

In our desire to develop as a company, nationally and internationally, but contributing value and growth in Aragon, we are part of the Chamber Club, the Zaragoza Chamber of Commerce and the Aragon Automotive Cluster.

Product-related or management system-related certifications: ISO 9001.

Name and location of production site: Carfoam®/Zetatunel is produced in ZFoam in Alfajarín (Zaragoza, Spain).

More information:
Name and contact information of LCA practitioner:

FUNDACION CIRCE-Circular economy Department
Avda. Ranillas 3D, 1ª Planta, 50018 Zaragoza (España)
(+34) 976 976 859
www.fcirce.es

Product information

Product name: Carfoam®/Zetatunel Waterproofing Membrane for tunnels and underground structures

Product identification: CARFOAM polymeric geosynthetic sheet.

Product description: The Carfoam®/Zetatunel sheet is comprised of multiple layers. The exposed outer layer provides mechanical resistance; the middle layer consists of closed-cell foam that provides the desired level of thermal insulation; and the inner layer provides mechanical resistance, drainage, and a weldable surface.

The Carfoam®/Zetatunel sheet provides waterproofing, drainage capacity, and thermal insulation with anti-icing properties (where necessary). Effective fireproofing is achieved through the use of special materials designed to limit the spread of flames. Depending on the design, the classification of its reaction to fire conforms to the European EN 13501 standard (Euroclass B s1d0).

Geographical scope: European Union

LCA information

Declared unit / declared unit:
1 square meter of finished product. The product has a surface weight of 454 g/m^2.

Reference service life:
50 years.

Time representativeness:
All specific data used for the study related to the production plant dates from 2022.

Database(s) and LCA software used:
The primary data inventory has been obtained from Zfoam España S.L which corresponds to the Carfoam Sheet produced in the facilities of the company during 2022, located in Alfajarín, Zaragoza (Spain).
The secondary data was extracted from Ecoinvent version 3.8 database, employed in the SimaPro v.9.3.0.3 software, internationally acknowledged. Whenever feasible, inventory data on the particular study countries, or if unavailable, to Europe as a whole, has been chosen. These data sets have been applied to assess the stages of raw material production and transportation, as well as electricity generation or waste management processes, which fall outside the direct control of the manufacturer.

Cut-off rules:

In compliance with PCR 2019:14 Construction Products and EPD International's guidelines, in this study, no specific cut-off rules have been applied. All the LCI data collected from the manufacturer have been considered for the inflows (mass and energy) per declared unit for all modules (A1-A3, C1-C4 and D).

System diagram:

In the following system diagram, boundaries considered for the subject of this study with the modules included are presented in Figure 1.

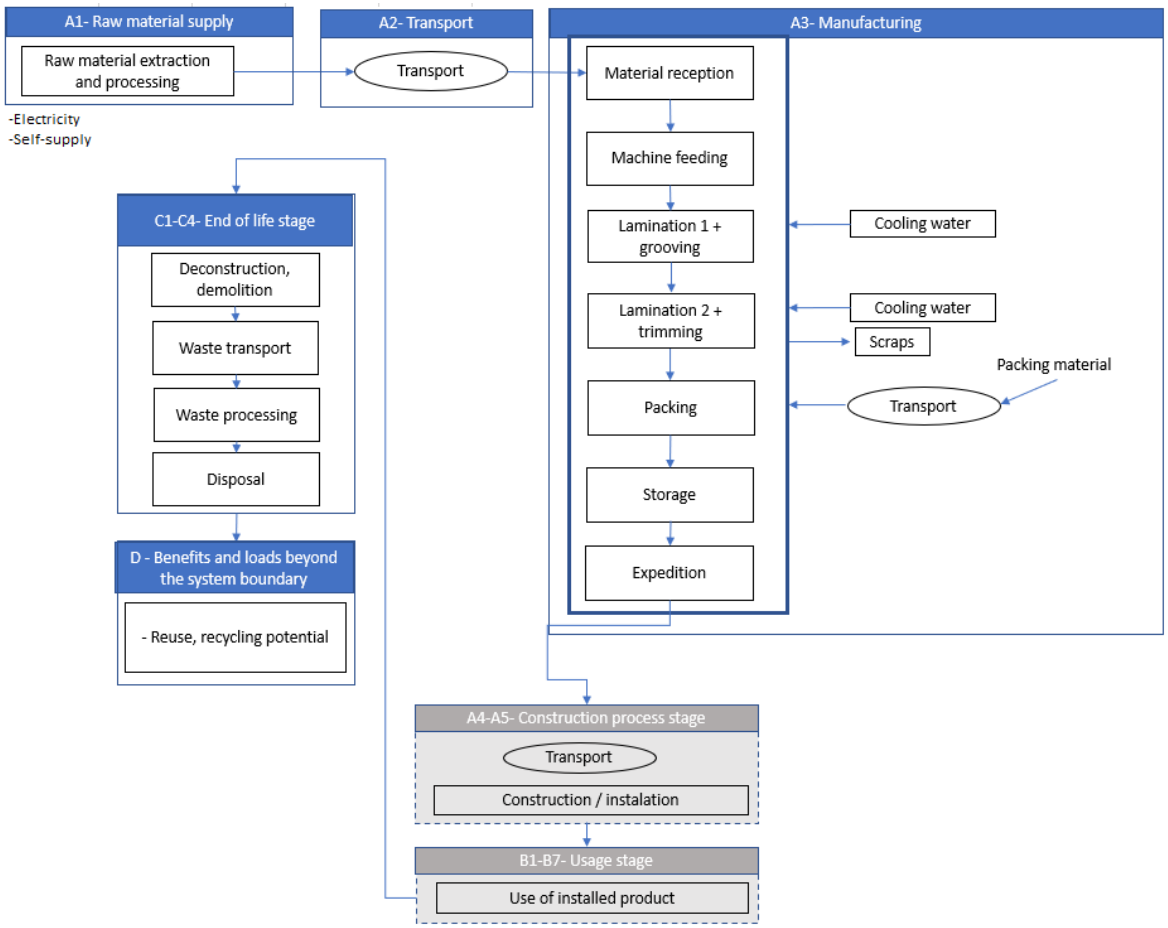


Figure 1. Flowchart of the product and boundary system used for the life cycle assessment.

Description of system boundaries:

This analysis is based on conducting a Life Cycle Assessment (LCA) following ISO 14040 and 14044 standards, with a 'cradle-to-gate (A1-A3) with modules C1-C4 and module D' approach that covers the sheet foam product's life cycle, according to EN 15804 Section 5.2.

Table 1. System boundaries

System boundaries (X=included, MND=module not declared)																	
	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	EU	EU	EU	-	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Share of specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The following processes have not been included in the analysis according to the PCR selected:

- The flows related to infrastructure, construction of the production plant, production machines, and transport systems.
- The flows related to personnel-processes such as employee transportation.

Concerning waste, as established in EN 15804+A2 for stages A1-A3, the treatment of waste generated until it has reached the end of its waste status has been included.
Concerning Module C, the most conservative waste treatment has been considered for the End of life of the product.

Below, the processes evaluated in the LCA are described, and classified according to the modules specified in the PCR:

A1-A3 Product stage

The potential impacts of producing the raw materials needed for the final product are included in this module. The main raw materials used to manufacture the CARFOAM sheet are polyolefin foam, polyethylene fabric, and PE/Alu foil, which conform to every layer of the product. Table 2 collects the quantities of raw materials consumed for each of the products manufactured.

Table 2. Raw materials of CARFOAM Sheet tunnel waterproofing

ITEM	MATERIAL	Weight, % of the total product
1	Polyolefin FR foam	53%
2	PE FR fabric	37%
3	PE/Alu foil	10%

These materials are obtained from different providers from different zones of Europe and distributed via trucks to ZFoam S.L. facilities, as Table 3 and Figure shows.

Table 3. Information on the transportation of raw material

Material supplied	Transport distance (km)	Kind of transport
Polyolefin FR foam	1.530	Truck
PE FR fabric	1.820	Truck
PE/Alu foil	1.620	Truck

Moreover, the production process is included in module A3. This process starts with the raw material reception, followed by feeding the machine with the PE/Alu foil and the Polyolefin foam that will start the product manufacturing. The PE fabric is introduced in this stage in a first lamination step, in which grooving takes place to create the desired form for the sheet foam. A second lamination of the sheet is then performed. In this step, the produced sheet foam is trimmed to the specific measures that want to be reached. Finally, the finished product is packed using PE bags for its storage and its subsequent expedition to the client.

Table 4. Packaging material for the CARFOAM sheet

Material supplied	Transport distance (km)	Kind of transport
PE bag	21	Truck

This module also includes the potential environmental impacts associated with generating electrical energy used in CARFOAM's production process. It should be noted that 58,6% of the electricity used in the factory comes from the power grid and the other 41,4% comes from self-supply electricity provided by a rooftop photovoltaic installation. It should be noted that the photovoltaic installation is underway since 2023. Table 5 summarises this premise.

Table 5. Electricity consumption per m^2 of product

Input energy	Unit	Amount
Electricity from grid	kWh	0,087
Self-supply electricity	kWh	0,062

Finally, the treatment of waste resulting from the manufacturing activity is also evaluated. These scraps are generated after the Trimming process when the final product is cut from both ends. All the generated scraps are 100% landfilled.

Table 6. Manufacturing waste and considered distance for its treatment (per declared unit)

Waste treatment		
Waste material	**Amount (kg)**	**Distance (km)**
Scraps of the final product	3,405E-02	30

C1-C4 End of life stage

In case the tunnel needs to be demolished, the following consideration has been estimated: for replacing 1 m^2 of Carfoam sheet, the concrete at the front needs to be removed too. Therefore, the excavated volume of concrete and the Carfoam sheet is known.

Table 7. Excavation volume (per declared unit)

Process	Unit	Amount
Excavation	m^3	0,126

The recycling process includes a segregation and shredding process, obtaining Aluminium and Polyethylene. 95% of the Al is recycled, while the remaining 5% is sent to landfill. On the other hand, the energy recovery process concerns the PE of the product. Therefore, considering the previous premises, the actual end-of-life scenarios are as follows: recycling (7,2%), energy recovery (82,4%), and landfill (10,4%).

The established waste scenarios are summarised in the following Table.

Table 8. Waste treatments (per declared unit)

Waste treatment		
Scenario	**Amount (kg)**	**Distance (km)**
Carfoam sheet to recycling	0,0328	50
Carfoam sheet to energy recovery	0,374	50
Carfoam sheet to landfill	0,04713	50

D Potential environmental benefits and burdens beyond the system boundary

In this case, the benefits beyond the system come from the recycled Aluminium present in the product, and the energy recovered from the Polyethylene.

Considerations:

The considerations that have been taken into account for the study in the different modules are described as follows:

Module A: All raw materials come from the Ecoinvent database, providing a comprehensive and standardized basis. It should be noted that these Simapro datasheets are adapted to include the specifications provided by ZFOAM S.L, therefore, they are not the original datasheets from Ecoinvent.

In addition, it has been considered that road transportation is carried out using trucks weighing 16 to 32 tons and complying with EURO6 emissions regulations (the most recent standard).

The generation of electrical energy used in the production process and the self-supply photovoltaic generation have been accounted for, as well as the treatment of manufacturing-derived waste in the plant.

Module C: For the excavation process, the volume of excavated material is needed. It has been considered a concrete thickness of 12 cm, while the Carfoam sheet's is 6 mm. Therefore, the excavated volume per declared unit is 0,126 m^3.

Allocations: There are no allocation criteria applicable for production at ZFOAM S.L. facilities, because the production line is exclusively used for manufacturing this product. So, the inventory data considered for this analysis have taken into account only the inflows for the specific CARFOAM sheet, reporting all data for declared unit of 1 m^2 of product.

Geographical scope: Spain, Europe, Global

Electricity consumption: There are two energy sources: (1) the generation of electricity consumed within ZFoam production was based on the trading company, and (2) self-supply energy from a photovoltaic installation at the Zfoam installation.

The climate impact of the energy mix used to manufacture the product, by means of kg CO_2eq/kWh, is 0,161 kg CO_2 eq/kWh.

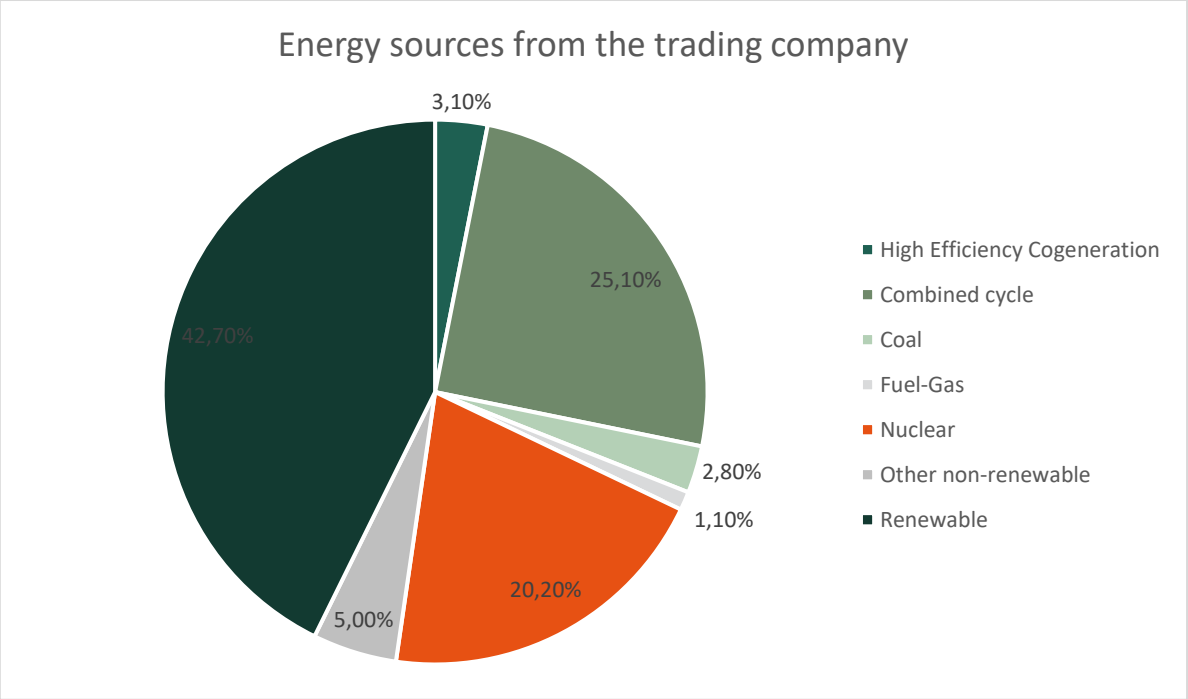


Figure 2. Electrical mix of trading company on year 2022.

Data quality: In this study, data quality requirements established by the EN 15804 standard (Annex E) and the Commission Recommendation 2013/179/EU have been considered.

Data has been evaluated through a data quality matrix. As a result, Table 9 quantifies the gathered data achievements, known as Data Quality Rating (DQR), ranging from (1) poor quality, (2) fair quality, (3) good quality, (4) very good quality, and to (5) excellent quality.

Table 9: Assessment of the quality of the data for EPD

Data	Geographical representativeness	Technical representativeness	Temporal representativeness	DQR
Raw materials	Very good quality. Average data from the largest area in which the studied area is included.	Good quality. Data on the processes and products studied, but with different technology. This level also applies when the technology is not specified, e.g. wheat (without further specification).	Good quality. Less than 10 years difference between the reference year according to the documentation and the time period for which the data are representative.	Good quality
Manufacturing electricity	Excellent quality. Data from the studied area.	Excellent quality. Data on the processes and products studied. The same state of the applied technology as defined in the objective and scope (i.e. identical technology).	Excellent quality. Less than 3 years difference between the reference year according to the documentation and the time period for which the data are representative.	Excellent quality
Transport	Very good quality. Average data from the largest area in which the studied area is included.	Good quality. Data on the processes and products studied, but with different technology. This level also applies when the technology is not specified, e.g. wheat (without further specification).	Very good quality. Less than 6 years difference between the reference year according to the documentation and the time period for which the data are representative.	Very good quality
End-of-life scenario	Very good quality. Average data from the largest area in which the studied area is included.	Good quality. Data on the processes and products studied, but with different technology. This level also applies when the technology is not specified, e.g. wheat (without further specification).	Very good quality. Less than 6 years difference between the reference year according to the documentation and the time period for which the data are representative.	Good quality

Content declaration

Product

Table 10. Product composition per layer and proportion

Products declared	kg/DU	%	Environmental / hazardous properties
PE FR fabric (layer 1)	0,240	53%	Components not included in the Candidate list of substances of very high concern for authorization of the REACH regulation
Polyolefin FR foam (layer 2)	0,168	37%	
PE/Alu foil (layer 3)	0,046	10%	
Total	**0,454**	**100%**	

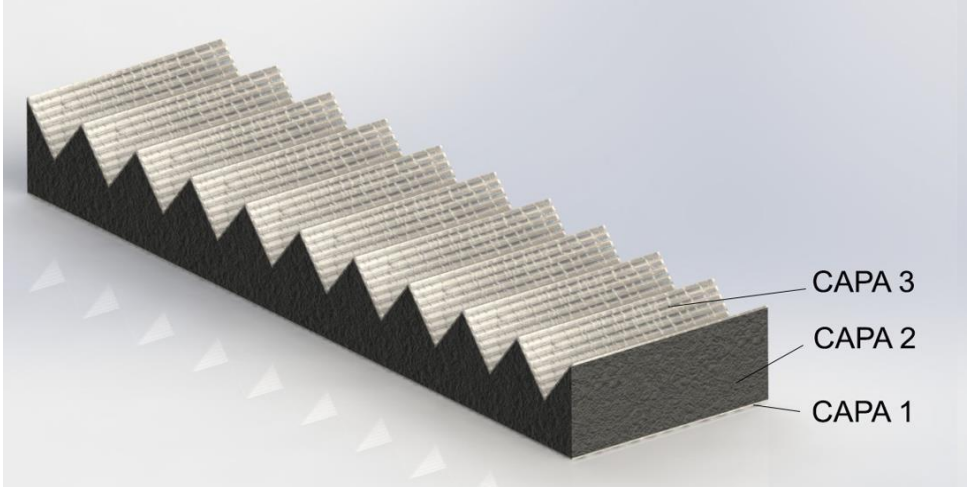


Figure 3. Final product declared by layers

Packaging

Distribution packaging: PE bags are used as packaging.

Table 11. Packaging material

Packaging materials	kg/m^2 of product	Weight-% (vs the product)	Environmental / hazardous properties
PE bag	0,0036	0,79%	Component not included in the Candidate list of substances of very high concern for authorization of the REACH regulation

Environmental performance

Limitation of liability for the declaration of basic and additional environmental impact parameters

Information on the disclaimers relating to the statement of relevant basic and additional environmental impact parameters is included below.

Table 12. Classification of disclaimers on the declaration of basic and additional environmental impact parameters

ILCD Classification	Parameter	Legal notice
ILCD Type 1	Global warming potential (GWP)	None
	Ozone layer depletion (ODP)	None
	Particulate matter	None
ILCD Type 2	Acidification potential (AP)	None

	Eutrophication potential (EP) - Aquatic freshwater	None
	Eutrophication potential (EP) - Aquatic marine	None
	Eutrophication potential (EP) - Aquatic terrestrial	None
	Photochemical oxidant creation potential (POCP)	None
	Ionising radiation	1
ILCD Type 3	Abiotic depletion potential (ADP) - Metals and minerals	2
	Abiotic depletion potential (ADP) - Fossil resources	2
	Water deprivation potential (WDP)	2
	Ecotoxicity, freshwater	2
	Human toxicity, cancer	2
	Human toxicity, non-cancer	2

1. This impact category deals mainly with the potential impacts of low doses of ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The ionising radiation potential of soil, due to radon or some building materials is also not measured with this parameter.

2. The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.

Disclaimer: from the PCR recommendations, since module C is included in the EPD, it is discouraged the use of the results of modules A1-A3 without considering the results of module C.

Disclaimer: the estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Disclaimer: Following the EC-JRC characterization factors, the Environmental Footprint (EF) reference package 3.0 has been considered.

Results of the environmental performance indicators

Considering a declared unit of 1 m^2 of Carfoam sheet manufactured.

Potential environmental indicators

PARAMETER		UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global warming potential (GWP)	Fossil	kg CO_2 eq.	2,07E+00	1,04E-01	1,53E-02	2,19E+00	6,03E-02	3,06E-03	1,13E+00	6,46E-03	-1,14E+00
	Biogenic	kg CO_2 eq.	1,31E-02	6,57E-06	2,49E-05	1,32E-02	4,49E-06	1,94E-07	5,78E-05	4,16E-07	-7,24E-03
	Land use and land transformation	kg CO_2 eq.	6,82E-03	8,39E-07	9,00E-06	6,83E-03	7,26E-07	2,48E-08	2,10E-05	1,45E-08	-7,36E-03
	TOTAL	kg CO_2 eq.	2,09E+00	1,04E-01	1,54E-02	2,21E+00	6,03E-02	3,06E-03	1,13E+00	6,46E-03	-1,15E+00
Ozone layer depletion (ODP)		kg CFC 11 eq.	1,36E-07	2,46E-08	3,12E-10	1,61E-07	1,39E-08	7,28E-10	1,34E-09	4,42E-11	-6,72E-08
Acidification potential (AP)		mol H^+ eq.	9,36E-03	2,06E-04	4,37E-05	9,61E-03	6,53E-04	6,09E-06	1,71E-04	2,16E-06	-6,28E-03
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	1,22E-04	5,31E-08	3,18E-07	1,22E-04	4,26E-08	1,57E-09	4,70E-07	4,20E-10	-1,13E-04
	Aquatic marine	kg N eq.	1,63E-03	3,42E-05	9,39E-06	1,67E-03	2,93E-04	1,01E-06	6,54E-05	2,09E-06	-7,78E-04
	Aquatic terrestrial	mol N eq.	1,58E-02	3,81E-04	9,27E-05	1,63E-02	3,21E-03	1,12E-05	7,43E-04	1,04E-05	-8,84E-03
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	7,02E-03	1,34E-04	4,39E-05	7,20E-03	8,76E-04	3,97E-06	1,97E-04	4,30E-06	-2,58E-03
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	2,45E-07	4,51E-09	1,57E-09	2,51E-07	2,97E-09	1,33E-10	2,02E-07	1,10E-11	1,23E-07
	Fossil resources	MJ, net calorific value	4,64E+01	1,47E+00	3,04E-01	4,82E+01	8,35E-01	4,35E-02	1,59E-01	3,06E-03	-2,35E+01
Water deprivation potential (WDP)		m^3 world eq. deprived	1,39E+00	-1,40E-04	1,40E-02	1,41E+00	-1,74E-05	-4,15E-06	2,58E-03	3,23E-06	-2,30E-01
Global warming potential – Greenhouse gases		kg CO_2 eq.	2,02E+00	1,04E-01	1,49E-02	2,14E+00	6,03E-02	3,06E-03	1,13E+00	6,45E-03	-1,07E+00

Resource use indicators

PARAMETER		UNIT	A1	A2	A3	A1-A3	A4-A5	C1	C2	C3	C4	D
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	8,16E+00	2,26E-03	1,19E-02	8,17E+00	0,00E+00	1,55E-03	6,66E-05	1,44E-02	3,74E-04	-4,95E+00
	Used as raw materials	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	TOTAL	MJ, net calorific value	8,16E+00	2,26E-03	1,19E-02	8,17E+00	0,00E+00	1,55E-03	6,66E-05	1,44E-02	3,74E-04	-4,95E+00
Primary energy resources – Non-renewable *	Use as energy carrier	MJ, net calorific value	4,64E+01	1,47E+00	3,04E-01	4,82E+01	8,79E-01	8,35E-01	4,35E-02	1,59E-01	3,06E-03	-2,35E+01
	Used as raw materials	MJ, net calorific value	1,84E+01	0,00E+00	1,68E-01	1,86E+01	0,00E+00	0,00E+00	0,00E+00	-1,04E+01	0,00E+00	0,00E+00
	TOTAL	MJ, net calorific value	6,48E+01	1,47E+00	4,71E-01	6,68E+01	8,79E-01	8,35E-01	4,35E-02	-1,03E+01	3,06E-03	-2,35E+01
Secondary material (optional)		kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	N/A**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels (optional)		MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	N/A**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	N/A**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water (optional)		m^3	3,95E-02	4,04E-06	2,71E-04	3,98E-02	N/A**	2,71E-06	1,19E-07	2,52E-04	1,16E-06	-2,66E-02

NOTES:

***Option B has been selected for modelling the primary energy use indicators

****N/A: A4-A5 are modules not declared (according to the system boundaries defined)

Waste indicators (optional)

PARAMETER	UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,34E-05	3,87E-06	4,49E-08	1,74E-05	2,15E-06	1,14E-07	2,17E-04	7,13E-09	2,09E-04
Non-hazardous waste disposed	kg	8,96E-02	7,72E-05	3,44E-02	1,24E-01	5,12E-05	2,28E-06	1,63E-02	4,72E-02	-8,30E-02
Radioactive waste disposed	kg	8,39E-05	1,05E-05	3,21E-07	9,47E-05	5,95E-06	3,11E-07	5,61E-07	2,38E-08	-1,71E-04

Output flow indicators (optional)

PARAMETER	UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.28E-02	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-01	0.00E+00	0.00E+00
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.98E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional potential environmental indicators (optional)

PARAMETER	UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	Disease inc.	7,83E-08	6,99E-09	4,13E-10	8,57E-08	1,78E-08	2,07E-10	1,56E-09	5,76E-11	-2,56E-08
Ionising radiation	kBq U235 eq	9,57E-02	6,39E-03	3,75E-04	1,03E-01	3,62E-03	1,89E-04	6,42E-04	2,04E-05	-2,07E-01
Ecotoxicity, freshwater	CTUe	1,84E+01	5,99E-01	8,53E-02	1,91E+01	2,82E-01	1,77E-02	4,45E-01	1,07E+00	-1,03E+01
Human toxicity, cancer	CTUh	1,08E-09	7,74E-12	1,84E-12	1,09E-09	3,67E-12	2,29E-13	1,34E-10	6,15E-14	-8,19E-10
Human toxicity, non-cancer	CTUh	1,95E-08	9,22E-10	5,65E-11	2,05E-08	2,92E-10	2,72E-11	1,29E-09	3,32E-12	-1,63E-08

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