



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Air Purifier Units With Chemical Filters
Climecon oy



EPD HUB, HUB-5266

Published on 06.02.2026, last updated on 06.02.2026, valid until 06.02.2031

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



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Climecon oy
Address	Lämmittäjänkatu 4A, 00880, Helsinki, FI
Contact details	info@climecon.fi
Website	https://climeconair.com/en-en/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Emma Amira Piha
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 verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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.

PRODUCT

Product name	Air Purifier Units With Chemical Filters
Additional labels	PSA, KPC, UltraCarbon
Product reference	-
Place(s) of raw material origin	Finland, Germany
Place of production	Pihtipudas, Finland & Kausala, Finland
Place(s) of installation and use	Finland
Period for data	Calendar year 2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	10,4
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	14,5

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of product
Declared unit mass	1 kg
Mass of packaging	0,2247 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	7,61
GWP-total, A1-A3 (kgCO ₂ e)	6,98
Secondary material, inputs (%)	41,1
Secondary material, outputs (%)	95,4
Total energy use, A1-A3 (kWh)	35,7
Net freshwater use, A1-A3 (m ³)	0,42

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

We are Climecon, a responsible forerunner in indoor air design. With our indoor air design, we take a holistic approach to the well-being of people, buildings, and the environment. We design our solutions and products in a human-centric way, taking into account the perspective and needs of different users.

PRODUCT DESCRIPTION

Clean air is important for the well-being of sensitive equipment in the premises, in addition to people's well-being. Air pollutants and the resulting corrosion cause malfunctions in equipment and systems. System failure can even lead to the shutdown of the entire production process, which can

result in significant financial losses. Our air purifiers are designed to remove dust, odours, gases and particles from the air in very demanding conditions to protect electronics and electrical equipment from malfunctions.

Climecon's broad selection of air filtration products helps in creating the best possible indoor air in various locations. The reliable technology we use has so far been used to implement several hundred air purification systems in data centres, server rooms and electrical rooms in the process industry, among other places. Climecon designs and manufacturers customized air purifiers that utilize so called dry scrubbing purifying technique. The materials of filtering components and the quality and quantity of filter media is chosen considering the composition and concentration of the impurities in the air.

This environmental product declaration covers the following products:

- UltraCarbon is a chemical air purifier for professional kitchens, restaurants and food industry. UltraCarbon air purifier is a compact solution for efficient purification of both gaseous contaminants and particles in the air.
- PSA air purifier unit is perfect for purifying supply air when background levels are high and excellent purity is required. PSA is typically used in industrial applications for protecting electronics and electrical devices from corrosion caused by the surrounding air. It is also perfect for purifying compressor intake air and eliminating odours in wastewater systems. PSA is modularly constructed and allows the building of one or more chemical filtering stages.
- KPC is a chemical air purifier that cleans particles, odours, exhaust fumes and urban air. It is a compact solution for the efficient purification of both gaseous contaminants and particles in the air.

All the air purifiers come in various sizes, and can be modified according to customer's needs. The type and strength of used chemicals is also adapted to the designed use. The devices use activated carbon and potassium

permanganate mix to remove particles. This EPD study was conducted by using an average weight of an air purifier as a reference product. The EPD includes only the air purifier unit without the chemicals.

Further information can be found at:
<https://climeconair.com/en-en/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	68.1%	Finland
Minerals	-	-
Fossil materials	31.9%	Finland, Germany
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	0,18

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of product
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).



PRODUCT LIFE-CYCLE

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	X	X	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.

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.

The stainless steel sheets are cut to specified shapes in Climecon's Kausala production site. Hydraulic oil is used during the process to reduce the wear of machines and to ensure stable cutting conditions. The parts are then transported to Climecon's Pihtipudas production site, where the air purifiers are bent mechanically and assembled. The manufacturing process requires electricity for the different equipment as well as district heating in both production sites. All electricity used is renewable, while district heating includes several sources according to the suppliers. The steel waste produced at the plant is directed to recycling. The loss of material and waste water treatment is considered according to data retrieved from Climecon's own machinery. The air purifier is then sent back to Kausala production site where the final product is assembled with pre- and post-filters and the chemical filters. The transport distances of both materials, components and product parts are calculated based on knowledge, while the transport equipment is based on assumptions according to distance. This EPD does not take into account the chemicals used, as they vary depending on the designated use. From there, the final product is sent to the customer. A timber packaging, steel screws and packaging plastics are used as a packaging material for transporting the product from the factory gate. The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

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. Average distance of transportation from production plant to building site is assumed as 105 km, which is the distance between the location of Kausala

ware house and Climecon's headquarters in Helsinki. The transportation method is assumed to be lorry. Vehicle capacity is assumed to be 100% which means full load. In reality, it may vary, but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Transportation does not cause losses as product are packaged properly. Installation consumes 0.01 kWh of energy for assembling 1 kg of product. Treatment of packaging material waste (wood, steel and plastic) is considered in this module. Moreover, direct emission to air of carbon dioxide are considered as well to balance emissions of the biogenic CO₂.

The assumptions on A5 installation waste is based on a national data base of waste treatment in Finland. 95% of steel is assumed to be recycled in Finland, while 5% is landfilled (co2data.fi, 2023). According to Statistics Finland (2025), the majority of the timber (97%), 12.45% of plastic is incinerated with energy recovery. The remaining 3% of wood and 73.45 % of plastics are recycled. The rest of the plastic packaging is assumed to be incinerated without energy recovery (13.7%) and landfilled (0.4 %).

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-C4, D)

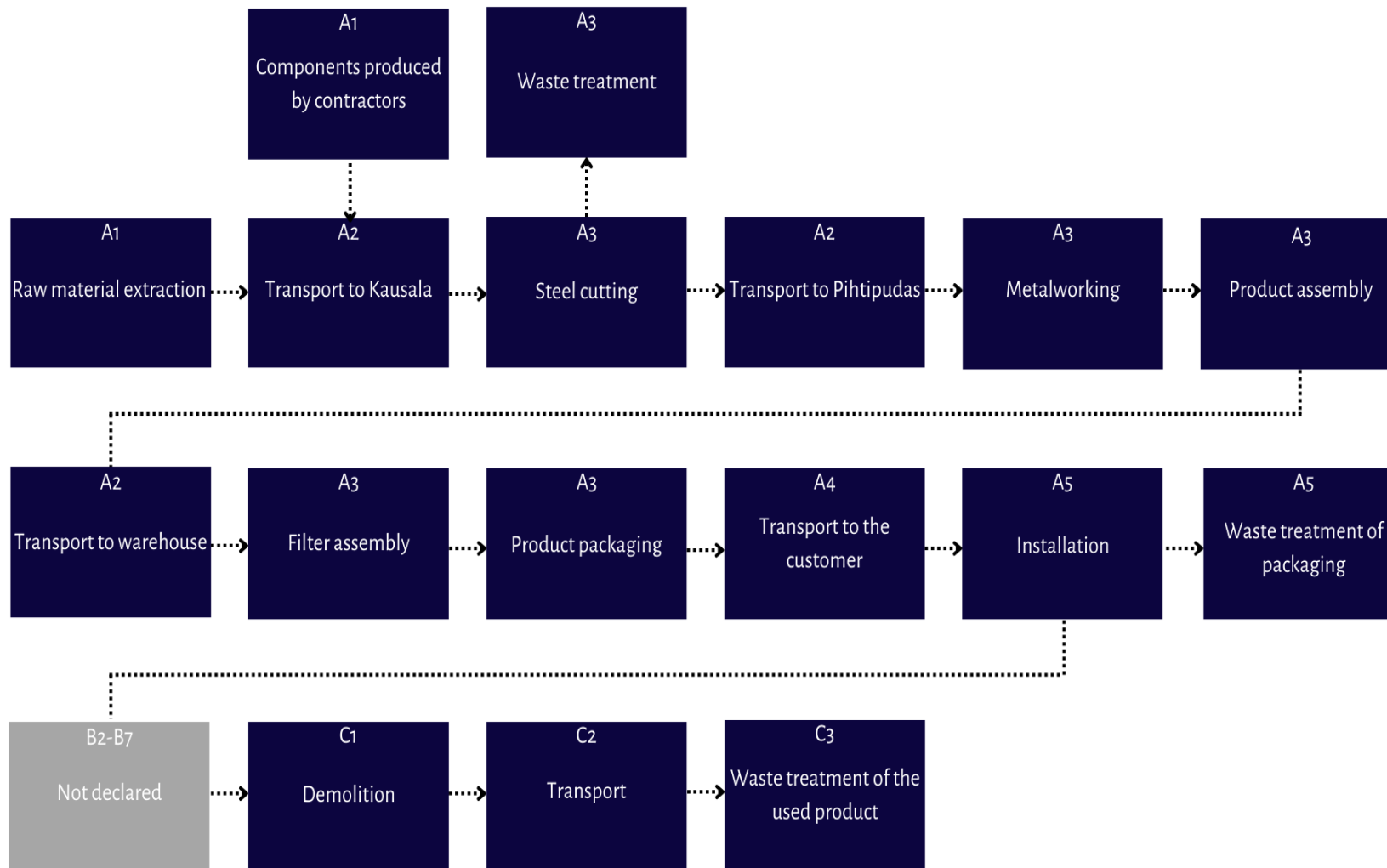
End of life scenario was assumed based on the common practices of construction products in Finland as the products market area is Finland. During the demolition phase C1, the entire final product is dismantled, using the mass of the final product as the input data. Demolition is assumed to consume 0,01 kWh/kg of product. The source of energy is diesel fuel used by construction machines (C1). It is assumed that 100% of the waste is collected and transported to the waste treatment centre. Transportation

distance to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2).

Based on experience on the reuse programme of chemical filters, it is known that 95% of the filters are refilled and used again. 95% of steel is assumed to be recycled in Finland, according to co2data.fi (2023) (C3). It is assumed that the remaining 5% of steel is taken to landfill for final disposal (C4). Module D covers the net benefits and loads arising from the reuse of product and packaging or the recycling or recovery of energy from end-of-waste state materials. Due to the recycling process, the end-of-life product is converted into recycled steel, while majority of the timber (97%), 12.45% of plastic is incinerated with energy recovery (D). The remaining 3% of wood and 73.45 % of plastics are recycled (D). The rest of the plastic is assumed to be incinerated without energy recovery (13.7%) and landfilled (0.4 %) (C4), according to Statistic Finland (2025).



MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

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.

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.

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:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by revenue
Manufacturing energy and waste	Allocated by revenue

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	10,4

This environmental product declaration covers Climecon Oys chemical air purifier units designed and manufactured by Climecon in Kausala and Pihtipudas, Finland. The EPD contains three products in various sizes:

- PSA
- KPC
- UltraCarbon

All of the air purifier units have the same manufacturing materials, process and locations. The products are used in the same way regardless of the product size and type. As such, an average weight was used as a reference product. The differences occur in the composition of the product, as the amount of filters vary depending on the size of product. As such, the results of averaging results are representative. The emission density is the lowest in Ultracarbon 2.4-E (7,13E+00/kg of product) and the highest in KPC 1.4, with GWP-fossil A1-A3 of 8,05E+00/kg of product. The variation in different products is 10.4%. An average weight extracted from the most sold air purifier modules was used as the reference product. EPD data can be scaled for different product sizes by multiplying EPD result table by the mass of product.

This EPD study was conducted using European average data points and statistics on Finland. The EPD results (A1-A3) can therefore be applied in European countries. There are no restrictions in use of this EPD due to averaging.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

- ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.
- ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
- ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

- Ecoinvent database v3.10.1, System model: Allocation, cut-off, EN15804 (2024)
- Municipal waste by treatment method in Finland, 2018-2023, Statistics Finland, 2025. Available at: https://pxdata.stat.fi/PxWeb/pxweb/en/StatFin/StatFin__jate/statfin_jate_pxt_12qy.px/
- la Eriksson and Göran Finnveden. Energy Recovery from Waste Incineration—The Importance of Technology Data and System Boundaries on CO2 Emissions. 2017. Available at: https://www.researchgate.net/publication/316088617_Energy_Recovery_from_Waste_Incineration-The_Importance_of_Technology_Data_and_System_Boundaries_on_CO2_Emissions
- Institute, 2023. Available at: <https://co2data.fi/>



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.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	6,46E+00	7,98E-02	4,45E-01	6,98E+00	1,38E-02	9,69E-01	ND	ND	ND	ND	ND	ND	ND	3,61E-03	4,14E-03	1,87E-01	2,88E-02	-1,36E+00
GWP – fossil	kg CO ₂ e	6,43E+00	7,97E-02	1,10E+00	7,61E+00	1,38E-02	8,43E-03	ND	ND	ND	ND	ND	ND	ND	3,60E-03	4,14E-03	1,87E-01	2,88E-02	-1,35E+00
GWP – biogenic	kg CO ₂ e	1,72E-02	1,81E-05	-6,56E-01	-6,38E-01	3,14E-06	9,61E-01	ND	ND	ND	ND	ND	ND	ND	3,68E-07	9,38E-07	-4,16E-05	-1,76E-06	-1,59E-02
GWP – LULUC	kg CO ₂ e	8,27E-03	3,57E-05	5,50E-03	1,38E-02	6,19E-06	3,12E-05	ND	ND	ND	ND	ND	ND	ND	3,69E-07	1,85E-06	1,98E-05	3,44E-07	3,35E-05
Ozone depletion pot.	kg CFC ₁₁ e	3,20E-07	1,18E-09	1,37E-08	3,34E-07	2,04E-10	8,80E-11	ND	ND	ND	ND	ND	ND	ND	5,52E-11	6,11E-11	2,81E-10	1,68E-11	-8,56E-09
Acidification potential	mol H ⁺ e	3,76E-02	2,72E-04	6,67E-03	4,45E-02	4,72E-05	4,66E-05	ND	ND	ND	ND	ND	ND	ND	3,25E-05	1,41E-05	2,18E-04	8,06E-06	-5,40E-03
EP-freshwater ²⁾	kg Pe	1,41E-03	6,21E-06	2,44E-04	1,66E-03	1,08E-06	2,03E-06	ND	ND	ND	ND	ND	ND	ND	1,04E-07	3,22E-07	1,00E-05	1,13E-07	-4,08E-04
EP-marine	kg Ne	5,89E-03	8,93E-05	1,24E-03	7,22E-03	1,55E-05	2,19E-05	ND	ND	ND	ND	ND	ND	ND	1,51E-05	4,64E-06	7,01E-05	4,29E-06	-8,33E-04
EP-terrestrial	mol Ne	6,17E-02	9,72E-04	1,17E-02	7,43E-02	1,69E-04	2,13E-04	ND	ND	ND	ND	ND	ND	ND	1,65E-04	5,05E-05	6,46E-04	3,80E-05	-1,12E-02
POCP (“smog”) ³⁾	kg NMVOCe	2,07E-02	4,01E-04	3,63E-03	2,48E-02	6,96E-05	5,70E-05	ND	ND	ND	ND	ND	ND	ND	4,93E-05	2,08E-05	1,84E-04	1,02E-05	-3,69E-03
ADP-minerals & metals ⁴⁾	kg Sbe	2,83E-04	2,22E-07	3,97E-06	2,87E-04	3,86E-08	2,18E-08	ND	ND	ND	ND	ND	ND	ND	1,29E-09	1,15E-08	1,05E-06	2,40E-09	-9,17E-06
ADP-fossil resources	MJ	9,37E+01	1,16E+00	1,91E+01	1,14E+02	2,01E-01	1,18E-01	ND	ND	ND	ND	ND	ND	ND	4,72E-02	6,01E-02	2,45E-01	1,09E-02	-2,64E+01
Water use ⁵⁾	m ³ e depr.	3,09E+00	5,71E-03	3,82E-01	3,48E+00	9,92E-04	8,99E-03	ND	ND	ND	ND	ND	ND	ND	1,18E-04	2,97E-04	1,48E-02	1,90E-03	-3,70E-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.

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	1,04E-07	7,98E-09	1,42E-07	2,54E-07	1,39E-09	5,93E-10	ND	ND	ND	ND	ND	ND	ND	9,25E-10	4,14E-10	2,67E-09	6,86E-11	-4,68E-08
Ionizing radiation ⁶⁾	kBq 11235e	1,99E-01	1,01E-03	6,62E-01	8,62E-01	1,75E-04	3,81E-03	ND	ND	ND	ND	ND	ND	ND	2,09E-05	5,23E-05	1,74E-03	1,34E-05	-1,33E-01
Ecotoxicity (freshwater)	CTUe	7,30E+00	1,64E-01	3,81E+00	1,13E+01	2,84E-02	3,22E-02	ND	ND	ND	ND	ND	ND	ND	2,60E-03	8,50E-03	4,65E-01	5,66E-02	2,26E+00
Human toxicity, cancer	CTUh	8,74E-10	1,32E-11	1,09E-09	1,98E-09	2,28E-12	7,11E-12	ND	ND	ND	ND	ND	ND	ND	3,71E-13	6,83E-13	2,88E-11	2,48E-12	2,05E-11
Human tox. non-cancer	CTUh	1,51E-08	7,49E-10	9,85E-09	2,57E-08	1,30E-10	4,54E-10	ND	ND	ND	ND	ND	ND	ND	5,87E-12	3,89E-11	1,42E-09	8,64E-11	3,87E-08
SQP ⁷⁾	-	7,00E+00	1,17E+00	1,86E+01	2,67E+01	2,02E-01	5,20E-02	ND	ND	ND	ND	ND	ND	ND	3,30E-03	6,05E-02	4,04E-01	1,21E-02	-3,97E+00

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.

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	1,43E+01	1,59E-02	1,58E+01	3,01E+01	2,75E-03	-3,68E+00	ND	ND	ND	ND	ND	ND	ND	2,99E-04	8,23E-04	3,82E-02	2,81E-04	-1,44E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	5,87E+00	5,87E+00	0,00E+00	-5,87E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,75E+00
Total use of renew. PER	MJ	1,43E+01	1,59E-02	2,17E+01	3,60E+01	2,75E-03	-9,54E+00	ND	ND	ND	ND	ND	ND	ND	2,99E-04	8,23E-04	3,82E-02	2,81E-04	-7,19E+00
Non-re. PER as energy	MJ	7,82E+01	1,16E+00	1,89E+01	9,83E+01	2,01E-01	3,04E-02	ND	ND	ND	ND	ND	ND	ND	4,72E-02	6,01E-02	-2,49E+00	-4,25E-01	-2,54E+01
Non-re. PER as material	MJ	1,22E+01	0,00E+00	8,92E-02	1,23E+01	0,00E+00	-8,92E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,05E+01	-1,72E+00	-1,45E+00
Total use of non-re. PER	MJ	9,04E+01	1,16E+00	1,90E+01	1,11E+02	2,01E-01	-5,87E-02	ND	ND	ND	ND	ND	ND	ND	4,72E-02	6,01E-02	-1,30E+01	-2,15E+00	-2,68E+01
Secondary materials	kg	4,11E-01	4,92E-04	5,51E-03	4,17E-01	8,55E-05	9,19E-05	ND	ND	ND	ND	ND	ND	ND	1,96E-05	2,56E-05	2,77E-04	6,41E-06	6,28E-01
Renew. secondary fuels	MJ	3,96E-02	6,26E-06	9,70E-05	3,97E-02	1,09E-06	3,79E-07	ND	ND	ND	ND	ND	ND	ND	5,12E-08	3,25E-07	1,22E-05	1,94E-07	-6,83E-05
Non-ren. secondary fuels	MJ	1,82E-01	0,00E+00	0,00E+00	1,82E-01	0,00E+00	0,00E+00	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	4,06E-01	1,71E-04	1,13E-02	4,18E-01	2,97E-05	1,04E-04	ND	ND	ND	ND	ND	ND	ND	3,12E-06	8,88E-06	2,86E-04	3,65E-05	-2,47E-02

8) PER = Primary energy resources.

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	1,92E+00	1,96E-03	8,32E-02	2,01E+00	3,40E-04	1,56E-03	ND	ND	ND	ND	ND	ND	ND	5,25E-05	1,02E-04	4,24E-03	4,98E-04	-3,84E-01
Non-hazardous waste	kg	1,43E+01	3,63E-02	9,99E+00	2,44E+01	6,30E-03	2,25E-01	ND	ND	ND	ND	ND	ND	ND	7,15E-04	1,88E-03	1,44E-01	1,48E-02	7,85E+00
Radioactive waste	kg	2,19E-02	2,47E-07	1,44E-04	2,20E-02	4,28E-08	8,21E-07	ND	ND	ND	ND	ND	ND	ND	5,12E-09	1,28E-08	4,47E-07	3,38E-09	-1,13E-05

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	8,04E-03	0,00E+00	0,00E+00	8,04E-03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00
Materials for recycling	kg	1,34E-01	0,00E+00	8,55E+00	8,68E+00	0,00E+00	9,40E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	7,12E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	3,62E-03	0,00E+00	0,00E+00	3,62E-03	0,00E+00	2,15E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,09E-02	0,00E+00	0,00E+00
Exported energy	MJ	4,07E-03	0,00E+00	0,00E+00	4,07E-03	0,00E+00	4,19E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,10E-01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,31E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	4,67E-02	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,55E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,63E-01	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	6,44E+00	7,98E-02	1,10E+00	7,62E+00	1,38E-02	8,46E-03	ND	ND	ND	ND	ND	ND	ND	3,61E-03	4,14E-03	1,87E-01	2,88E-02	-1,35E+00

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. 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.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Heat production, at coal coke industrial furnace 1-10MW, World, Ecoinvent, 0.17 kgCO₂e/MJ
2. Heat production, at coal coke industrial furnace 1-10MW, World, Ecoinvent, 0.17 kgCO₂e/MJ
3. Heat production, softwood chips from forest, at furnace 1000kW, World, Ecoinvent, 0.0096 kgCO₂e/MJ
4. Heat production, softwood chips from forest, at furnace 1000kW, World, Ecoinvent, 0.0096 kgCO₂e/MJ
5. Heat production, light fuel oil, at industrial furnace 1MW, Albania, Ecoinvent, 0.10 kgCO₂e/MJ
6. Electricity production, wind, 1-3MW turbine, onshore, Finland, Ecoinvent, 0.0195 kgCO₂e/kWh
7. Electricity voltage transformation from high to medium voltage, Finland, Ecoinvent, 0.14 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry >32 metric ton, EURO5, 105 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	100
Bulk density of transported products	0,00E+00
Volume capacity utilization factor	1

Installation scenario documentation - A5 (Installation resources)

1. Market for electricity, medium voltage, Ecoinvent, 0.01 kWh

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.0066 kg
2. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, Materials for energy recovery, 0.2146 kg
3. Exported Energy: Thermal, Ecoinvent, 3.5465 MJ
4. Exported Energy: Thermal, Ecoinvent, 0.0079 MJ
5. Exported Energy: Electricity, Ecoinvent, 0.6293 MJ
6. Exported Energy: Electricity, Ecoinvent, 0.0014 MJ
7. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.0015 kg
8. Treatment of waste polyethylene, municipal incineration, Ecoinvent, Materials for energy recovery, 3.0E-4 kg
9. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 3.0E-4 kg
10. Treatment of inert waste, sanitary landfill, Ecoinvent, 1.0E-5 kg
11. Treatment of inert waste, sanitary landfill, Ecoinvent, 1.0E-4 kg
12. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.0013 kg

End-of-life scenario documentation - C1-C4 (Data source)

1. Diesel, burned in building machine, Ecoinvent, 0.01 kWh
2. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.6473 kg
3. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.0341 kg
4. Materials for re-use, Ecoinvent, Components for re-use, 0.2312 kg
5. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, Materials for energy recovery, 0.0109 kg
6. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, 0.012 kg
7. Exported Energy: Electricity, Ecoinvent, 0.0081 MJ
8. Exported Energy: Electricity, Ecoinvent, 0.0173 MJ

9. Exported Energy: Electricity, Ecoinvent, 0.0025 MJ
10. Exported Energy: Electricity, Ecoinvent, 0.0188 MJ
11. Exported Energy: Thermal, Ecoinvent, 0.0455 MJ
12. Exported Energy: Thermal, Ecoinvent, 0.0975 MJ
13. Exported Energy: Thermal, Ecoinvent, 0.0141 MJ
14. Exported Energy: Thermal, Ecoinvent, 0.106 MJ
15. Market for waste plastic, mixture, Ecoinvent, Materials for recycling, 0.0644 kg
16. Treatment of inert waste, sanitary landfill, Ecoinvent, 4.0E-4 kg

Scenario information	Value
Scenario assumptions e.g. transportation	The transportation distance is assumed to be 50 km for steel recycling and landfilling, plastic recycling, incineration and landfilling, and packaging materials.

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

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
06.02.2026

