



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Aludec - Laminated ducts

Dutch Environment Corporation BV



EPD HUB, HUB-5046

Published on 23.01.2026, last updated on 05.02.2026, valid until 23.01.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Dutch Environment Corporation BV
Address	Ir. Hanlostraat 18-22 , 7547 RD ENSCHEDE , Netherlands
Contact details	info@decinternational.com
Website	https://www.decinternational.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction 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	Miloš Dujić - DEC Group
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Yazan Badour as an authorized verifier for EPD Hub

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	Aludec - Laminated duct
Additional labels	-
Product reference	A23
Place(s) of raw material origin	Netherlands ,China and Turkey
Place of production	Ir. Hanlostraat 18-22 , 7547 RD ENSCHDEDE , Netherlands
Place(s) of installation and use	Europe
Period for data	01/2024 12/2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	26% / -9%
GTIN (Global Trade Item Number)	Not applicable
NOBB (Norwegian Building Product Database)	Not Applicable
A1-A3 Specific data (%)	3,79

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m of laminated duct
Declared unit mass	0,127 kg
Mass of packaging	0,0251 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	0,92
GWP-total, A1-A3 (kgCO ₂ e)	0,9
Secondary material, inputs (%)	17,3
Secondary material, outputs (%)	74,7
Total energy use, A1-A3 (kWh)	3,14
Net freshwater use, A1-A3 (m ³)	0,01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The abbreviation DEC stands for Dutch Environment Corporation, trading its products under the name DEC International, is established in Enschede (The Netherlands) with several “sister companies for the production and distribution of flexible ducting and it’s accessories. Over the years DEC has become one of the world's largest manufacturers of flexible ducting systems, its accessories and is recognized globally for its superior quality, its machine engineering and services. DEC offers an extensive range of flexible, semi flexible ducts, duct-work, silencers, tapes, sealants and air management systems. The production process is certified according to ISO9001:2015.

PRODUCT DESCRIPTION

Aludec® ducts are high-quality, flexible laminate ducts designed for use in a wide range of HVAC applications. They are constructed from multiple layers of aluminium and polyester, reinforced with a high-tensile carbon steel spiral helix embedded between the layers for added strength and flexibility. This unique multi-layer design ensures complete overlap of the aluminium and polyester films, providing excellent mechanical performance and durability. Aludec ducts are compatible with both round and oval connectors, allowing for easy and secure installation without the need for special tools or sealing components. The fire resistance of Aludec® ducts complies with all relevant international standards, ensuring safe operation in standard building ventilation systems. These ducts are primarily intended for use in general air supply and air conditioning systems where no special mechanical or thermal requirements are imposed. Aludec® products are fully compliant with the requirements outlined in EN 13180: Ventilation for Buildings – Ductwork – Dimensions and Mechanical Requirements for Flexible Ducts, and carry Eurovent certification, confirming their quality and performance. This Environmental Product Declaration (EPD) is based on the Aludec A23 model,

which represents the average product within the Aludec range. It covers the entire spectrum of products—from Aludec A11 (best-case scenario) to Aludec 112 (less-case scenario). For detailed technical data, certifications, and additional documentation, please visit:www.decinternational.com

Further information can be found at:
<https://www.decinternational.com/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	82	Europe-Asia
Minerals		
Fossil materials	18	Europe-Asia
Bio-based materials		

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,0089

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m of laminated duct
Mass per declared unit	0,127 kg
Functional unit	kg
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)

A market-based approach is used in modelling the electricity mix utilized in the factory.

The raw materials, aluminum, polyester, steel wire and adhesive are received in the Netherlands. Steel wire and adhesive materials are received from Netherlands with approximated distances over 100km. Aluminium material is received from Turkey with approximated distance over 2000km. Polyester material is received from China with approximated distance over 20.000 km. After quality control of incoming goods, the raw materials are supplied to the machines according the Bill of material. Then ducts are formed by a helix of the steel wire , simultaneously the steel wire helix is en-collapsed by a lamination process of preslitted coils of aluminum and polyester bounded together with an adhesive. Inside production steps quality control add on to minimize waste. 5% of production losses are assumed to be recycled with 30 km distance between production site and waste treatment facilities. The energy consumption includes natural gas and electricity grid production. The finished product is packed in a for the specific size cardboard box , and cardboard box is stacked and shrink wrapped on the appropriate wooden pallet . The power required to produce the flexible ducts is sourced from electricity grid in Netherlands . All production waste is sent to a recycling company.

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.

The transportation distance is defined according to the PCR. Average distance of transportation from production plant to building site is assumed as 1545 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be <1 which means less than 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. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilization factor is assumed to be <1 for the nested packaged products. Environmental impacts from waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets are considered. Material loss during installation is estimated to be zero. Usually, ducts should be taped, along with steel clamp as fixation. The distance for transportation of installation waste to waste management facility is assumed to be 50 km. The assumption for the treatment of the 3 packaging type: plastic film goes to recycling 40%, incineration with energy recovery 37% and the rest to landfilling. Corrugated board goes to 83% recycling, 8% incineration with energy recovery, the rest landfilled; Pallet goes to 32% recycling, incineration with energy recovery 30% and the rest landfilled (source: EUROSTAT).

demolition site while 24% of the hydrocarbon is sent to recycling and 49% hydrocarbon to incineration facilities (C3). 90% of Aluminium waste is sent to recycling. Due to the recycling and incineration potential of polyethylene and recycling potential of Aluminium, the end-of-life product is converted into the recycled hydrocarbon while energy and heat is produced from its incineration (D). 85% of the steel is going to recycling, the rest is assumed to be landfilled (World Steel Association). The benefits and loads of waste packaging materials in A5 are also considered in module D.

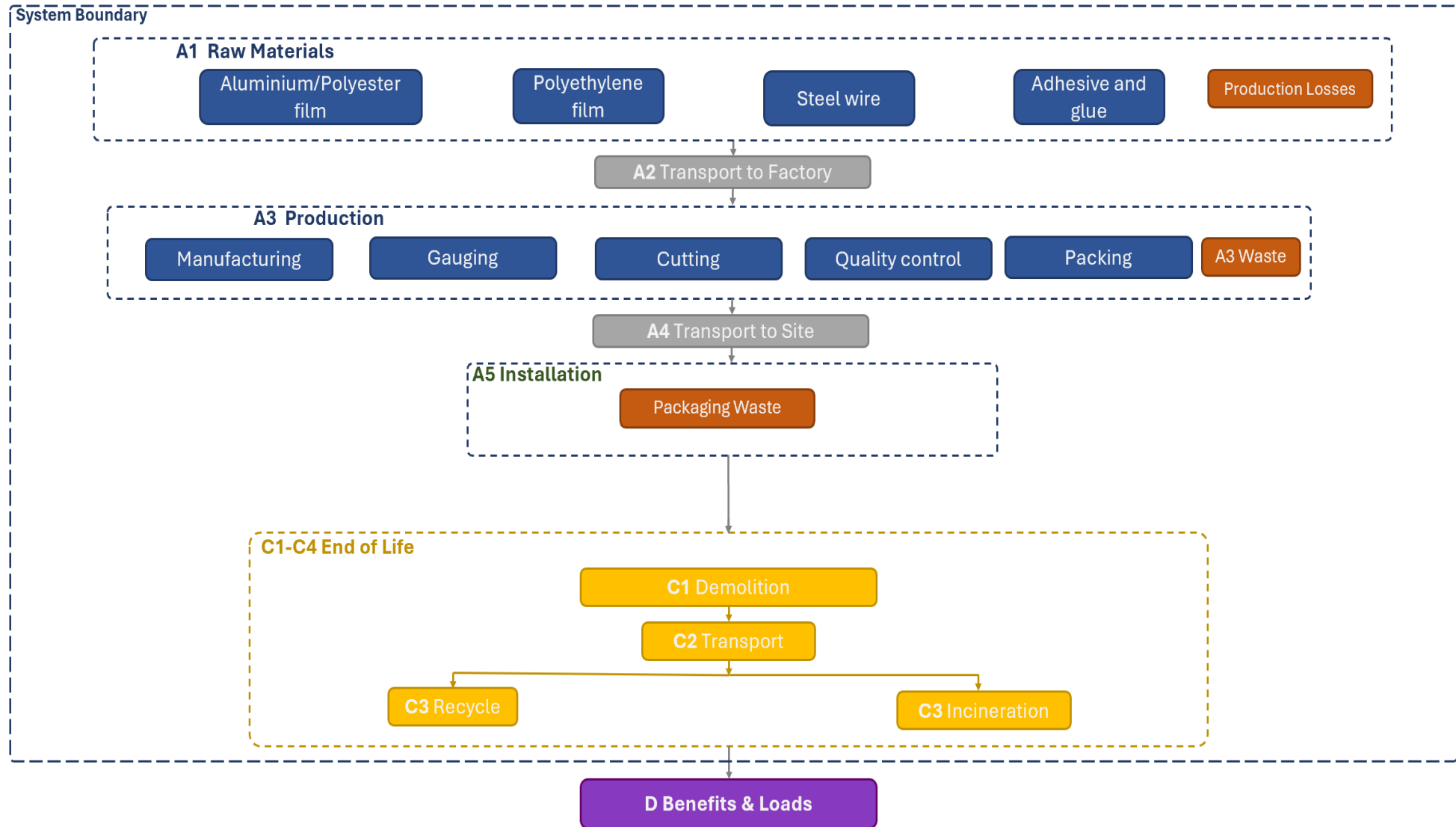
PRODUCT USE AND MAINTENANCE (B1-B7)

The use stage is not assessed as it has no impacts are expected to occur during the use of the product.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed zero (C1). The end-of-life product is assumed to be sent to the closest facilities by lorry and is assumed to be from 50km to 250km away (C2). 100% of the end-of-life product is collected separately from the

SYSTEM DIAGRAM



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	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	26% / -9%

Main variation between best case and representative products are next :

-Aludec 112 as less case scenario product. This product has most usage of material in our Aludec program. Aludec 112 has 87 microns thickness of duct material.

-Aludec A23 as representative product. Aludec A23 duct has 45 microns thickness of duct material.

-Aludec A11 as best case scenario product. This product has minimum usage of material. Aludec A11 duct has 19 microns thickness of duct material.

GWP Fossil of these products are:

Aludec 112 = +26% than representative product

Aludec A11 = -9% than representative product

Products that are included from best to less case scenario :

Aludec A11, (Econoflex A1) Aludec A12, Aludec A21 (Aludec classic), Aludec A22, Aludec A23, Aludec AA3, Aludec 245, CE Flex, Aludec 270, Aludec 80, Aludec 100, Aludec 112.

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'.

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	8,33E-01	2,16E-02	4,22E-02	8,96E-01	1,43E-01	4,95E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,29E-03	2,90E-02	1,17E-03	-4,66E-01
GWP – fossil	kg CO ₂ e	8,28E-01	2,16E-02	7,45E-02	9,24E-01	1,43E-01	1,67E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,29E-03	2,90E-02	1,17E-03	-4,59E-01
GWP – biogenic	kg CO ₂ e	2,24E-03	4,70E-06	-3,28E-02	-3,05E-02	3,20E-05	3,28E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,45E-07	-5,68E-06	-8,44E-07	-4,93E-03
GWP – LULUC	kg CO ₂ e	1,97E-03	1,00E-05	5,58E-04	2,54E-03	5,76E-05	1,34E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,90E-06	3,09E-06	2,16E-07	-1,47E-03
Ozone depletion pot.	kg CFC ₁₁ e	8,44E-09	3,52E-10	1,93E-09	1,07E-08	2,82E-09	1,77E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,07E-11	3,27E-11	6,20E-12	-2,01E-09
Acidification potential	mol H ⁺ e	5,14E-03	1,34E-04	2,69E-04	5,55E-03	2,88E-04	7,50E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E-05	2,94E-05	1,72E-06	-2,44E-03
EP-freshwater ²⁾	kg Pe	4,41E-04	1,57E-06	2,33E-05	4,66E-04	1,13E-05	3,08E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,34E-07	1,43E-06	2,91E-08	-8,38E-05
EP-marine	kg Ne	9,23E-04	3,45E-05	7,61E-05	1,03E-03	6,33E-05	7,62E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,67E-06	7,84E-06	1,21E-05	-4,27E-04
EP-terrestrial	mol Ne	9,93E-03	3,80E-04	6,83E-04	1,10E-02	6,83E-04	2,96E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,08E-05	8,30E-05	6,91E-06	-4,68E-03
POCP (“smog”) ³⁾	kg NMVOCe	3,18E-03	1,38E-04	3,29E-04	3,65E-03	4,57E-04	9,37E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,03E-05	2,37E-05	2,59E-06	-4,70E-03
ADP-minerals & metals ⁴⁾	kg Sbe	8,26E-05	6,68E-08	3,84E-07	8,31E-05	6,35E-07	7,63E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,36E-08	1,49E-07	5,55E-10	-1,44E-06
ADP-fossil resources	MJ	9,90E+00	3,02E-01	1,55E+00	1,18E+01	1,99E+00	1,54E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,06E-02	3,26E-02	5,40E-03	-2,24E+00
Water use ⁵⁾	m ³ e depr.	2,89E-01	1,50E-03	3,49E-02	3,26E-01	1,14E-02	7,10E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,86E-04	1,18E-03	4,73E-05	-3,07E-01

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	5,91E-08	1,62E-09	2,63E-09	6,33E-08	7,53E-09	1,03E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,61E-10	3,74E-10	3,68E-11	-1,82E-08
Ionizing radiation ⁶⁾	kBq 11235e	4,61E-02	3,48E-04	5,66E-03	5,21E-02	3,72E-03	6,55E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,00E-05	2,17E-04	6,29E-06	-3,97E-03
Ecotoxicity (freshwater)	CTUe	7,57E+00	4,40E-02	4,12E-01	8,03E+00	3,53E-01	2,28E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,34E-03	2,35E-02	5,30E-01	-9,69E-01
Human toxicity, cancer	CTUh	6,76E-10	3,85E-12	3,09E-11	7,11E-10	2,56E-11	1,34E-12	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,24E-13	2,96E-12	1,51E-13	-2,91E-09
Human tox. non-cancer	CTUh	1,39E-08	1,77E-10	5,59E-10	1,47E-08	1,19E-09	5,81E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,83E-11	1,68E-10	2,86E-11	-5,29E-09
SQP ⁷⁾	-	2,80E+00	2,12E-01	1,91E+00	4,93E+00	8,32E-01	1,56E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,23E-02	5,86E-02	1,09E-02	-4,18E+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	9,55E-01	4,99E-03	9,95E-02	1,06E+00	4,81E-02	-3,42E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,31E-04	5,30E-03	9,47E-05	-1,37E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,84E-01	2,84E-01	0,00E+00	-2,84E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,13E-02
Total use of renew. PER	MJ	9,55E-01	4,99E-03	3,83E-01	1,34E+00	4,81E-02	-6,26E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,31E-04	5,30E-03	9,47E-05	-9,53E-02
Non-re. PER as energy	MJ	8,98E+00	3,02E-01	9,62E-01	1,02E+01	1,99E+00	-4,99E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,06E-02	-4,73E-01	-3,58E-01	-2,26E+00
Non-re. PER as material	MJ	9,21E-01	0,00E+00	5,09E-01	1,43E+00	0,00E+00	-5,53E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-5,33E-01	-3,44E-01	3,96E-01
Total use of non-re. PER	MJ	9,90E+00	3,02E-01	1,47E+00	1,17E+01	1,99E+00	-1,05E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,06E-02	-1,01E+00	-7,02E-01	-1,86E+00
Secondary materials	kg	2,19E-02	1,46E-04	1,26E-02	3,47E-02	1,09E-03	3,00E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-05	5,13E-05	1,80E-06	8,48E-02
Renew. secondary fuels	MJ	6,97E-04	1,52E-06	5,98E-03	6,68E-03	1,17E-05	2,33E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,42E-07	1,68E-06	3,22E-08	-9,79E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	6,84E-03	4,30E-05	1,09E-03	7,97E-03	3,14E-04	-2,17E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,26E-06	2,03E-05	-4,49E-05	-9,44E-04

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	1,86E-01	4,94E-04	4,63E-03	1,91E-01	3,09E-03	2,75E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,05E-04	4,51E-04	1,56E-05	-4,32E-02
Non-hazardous waste	kg	3,24E+00	9,72E-03	3,29E-01	3,58E+00	7,51E-02	5,21E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,96E-03	1,67E-02	6,38E-02	-5,29E-01
Radioactive waste	kg	1,16E-05	8,62E-08	1,43E-06	1,31E-05	9,32E-07	1,66E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,22E-08	5,53E-08	1,54E-09	-5,72E-07

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	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
Materials for recycling	kg	0,00E+00	0,00E+00	6,12E-03	6,12E-03	0,00E+00	1,83E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,49E-02	0,00E+00	-6,99E-12
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	-3,65E-20
Exported energy	MJ	0,00E+00	0,00E+00	1,62E-03	1,62E-03	0,00E+00	9,72E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,36E-01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	6,80E-04	6,80E-04	0,00E+00	4,09E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,73E-02	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	9,35E-04	9,35E-04	0,00E+00	5,63E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	7,88E-02	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	8,26E-01	2,15E-02	7,47E-02	9,22E-01	1,42E-01	1,81E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,26E-03	2,90E-02	1,12E-03	-4,58E-01
Ozone depletion Pot.	kg CFC ₁₁ e	7,41E-09	2,81E-10	1,57E-09	9,26E-09	2,25E-09	1,45E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,85E-11	2,70E-11	4,95E-12	-1,89E-09
Acidification	kg SO ₂ e	4,26E-03	1,07E-04	2,13E-04	4,58E-03	2,34E-04	5,58E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,10E-05	2,32E-05	1,28E-06	-2,04E-03
Eutrophication	kg PO ₄ ³ e	1,18E-03	1,69E-05	6,77E-04	1,88E-03	6,10E-05	3,43E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,68E-06	3,88E-06	1,04E-06	-4,65E-04
POCP (“smog”)	kg C ₂ H ₄ e	3,40E-04	7,09E-06	3,16E-05	3,78E-04	2,42E-05	8,45E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,84E-07	1,42E-06	2,52E-07	-2,22E-04
ADP-elements	kg Sbe	8,26E-05	6,52E-08	3,80E-07	8,30E-05	6,17E-07	7,41E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,33E-08	1,48E-07	5,40E-10	-1,43E-06
ADP-fossil	MJ	9,13E+00	2,97E-01	1,45E+00	1,09E+01	1,92E+00	1,43E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,99E-02	2,89E-02	5,30E-03	-2,22E+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	8,30E-01	2,16E-02	7,50E-02	9,27E-01	1,43E-01	1,67E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,29E-03	2,90E-02	1,17E-03	-4,61E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. 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. Market for heat, district or industrial, natural gas, World, Ecoinvent, 0.0389 kgCO₂e/MJ
2. Electricity, medium voltage, residual mix, Netherlands, Ecoinvent, 0.71 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry 3.5-7.5 metric ton, EURO6, 1545 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50
Bulk density of transported products	0,00E+00
Volume capacity utilization factor	<1

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.0051 kg
2. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 0.0047 kg
3. Exported Energy: Electricity, Ecoinvent, 0.032 MJ
4. Exported Energy: Electricity, Ecoinvent, 0.0019 MJ
5. Exported Energy: Electricity, Ecoinvent, 0.007 MJ
6. Exported Energy: Thermal, Ecoinvent, 0.044 MJ
7. Exported Energy: Thermal, Ecoinvent, 0.0027 MJ
8. Exported Energy: Thermal, Ecoinvent, 0.0096 MJ
9. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 0.0029 kg
10. Treatment of waste paperboard, unsorted, sorting, Ecoinvent, Materials for recycling, 0.0099 kg
11. Treatment of waste packaging paper, municipal incineration, Ecoinvent, 9.5E-4 kg

12. Treatment of waste packaging paper, sanitary landfill, Ecoinvent, 0.0011 kg
13. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.0033 kg
14. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.0031 kg
15. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.004 kg

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

1. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.005 kg
2. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.0647 kg
3. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.0114 kg
4. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.0261 kg
5. Treatment of waste aluminium, sanitary landfill, Ecoinvent, 0.0029 kg
6. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.00413 kg
7. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 0.00843 kg
8. Exported Energy: Electricity, Ecoinvent, 0.0573 MJ
9. Exported Energy: Thermal, Ecoinvent, 0.0788 MJ
10. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 0.00464 kg

Scenario information	Value
Scenario assumptions e.g. transportation	The end-of-life product is assumed to be sent to the closest facilities by lorry and is assumed to be from 50km to 250km away

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

Yazan Badour as an authorized verifier for EPD Hub
23.01.2026

