

# ENVIRONMENTAL PRODUCT DECLARATION



In accordance with  
EN 15804+A2 & ISO 14025

## Double eccentric butterfly valves AVK International A/S

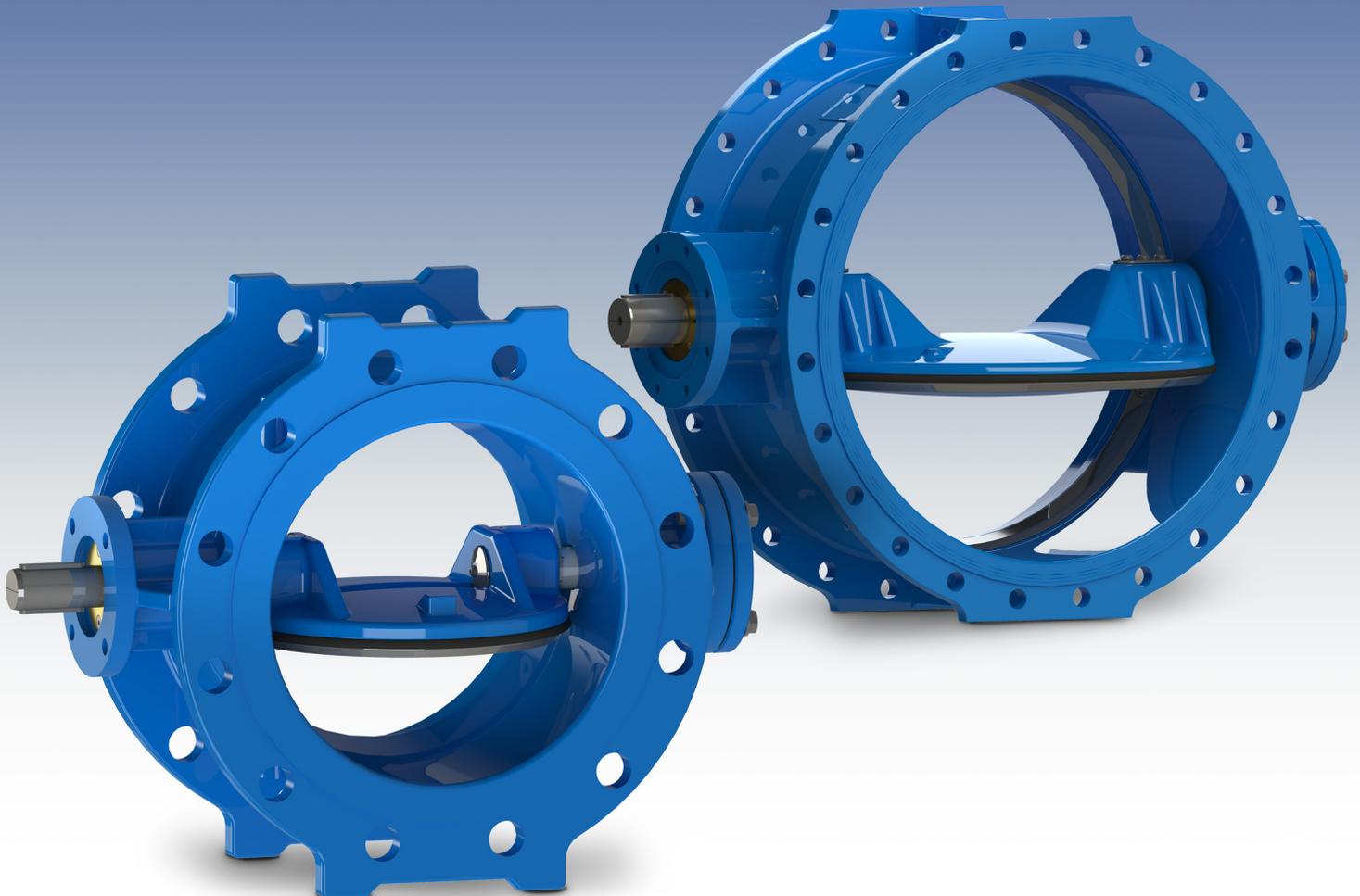
**EPD HUB, HUB-3563**

Published on 04.07.2025, Last updated on 04.07.2025, Valid until 03.07.2030.

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



Created with One Click LCA



# GENERAL INFORMATION

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.

## ABOUT THE MANUFACTURER

AVK International A/S is part of the AVK Group, a privately owned Danish company employing +5,300 people worldwide. At AVK International A/S, we manufacture valves and accessories, and thanks to additional product types from other AVK factories, we are able to offer a very wide selection of high-quality products.

MANUFACTURER	
Manufacturer	AVK International A/S
Address	Smedeskovej 40, 8464 Galten, Denmark
Contact details	julvib@avk.dk
Website	www.avkvalves.eu

EPD STANDARDS, SCOPE AND VERIFICATION	
Program operator	EPD Hub, hub@epdhub.com
Reference standard	EEN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
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	Julie Vibe, AVK International A/S
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 Gonzalez Vazquez, as an authorized verifier acting for EPD Hub Limited

PRODUCT	
Product name	Double eccentric butterfly valves
Additional labels	Bare shaft double eccentric butterfly valves
Product reference	-
Place(s) of raw material origin	Europe, Asia
Place of production	Galten, Denmark
Place(s) of installation and use	Europe, ROW
Period for data	01/10/2023-30/09/2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	+7.47%/-6.82%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	15.1

ENVIRONMENTAL DATA SUMMARY	
Declared unit	1 kg of bare shaft Butterfly Valve
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	3.08E+00
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	2.98E+00
Secondary material, inputs (%)	6.78
Secondary material, outputs (%)	96.9
Total energy use, A1-A3 (kWh)	10.4
Net freshwater use, A1-A3 (m <sup>3</sup> )	0.01

# PRODUCT AND MANUFACTURER

## PRODUCT DESCRIPTION

AVK double eccentric butterfly valves are designed with tilted disc for easy operation. The disc seal is made of AVK's drinking water approved EPDM rubber featuring an excellent compression set and thus ability to regain its original shape. The high quality GSK approved epoxy coating and the corrosion protected shaft end zones ensure high durability. The valves are suitable for bi-directional application. AVK International's valves require no maintenance or inspection once installed and are only assumed to need repair/replacement if exterior damage is inflicted upon them.

The EPD is an average EPD for valves in series 756. The valves are delivered as either a bare shaft valve or a valve assembled with a gearbox. The EPD only covers the bare shaft valve and not the gearbox. The EPD was generated using a representative product as the averaging method. The results of the EPD are calculated based on data for the variant 7560450114091190009, as this was determined to have the most average bill of materials.

Further information can be found at:  
[www.avkvalves.eu](http://www.avkvalves.eu)

PRODUCT RAW MATERIAL MAIN COMPOSITION		
Raw material category	Amount, mass %	Material origin
Metals	98	ROW
Minerals	-	-
Fossil materials	2	EU
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	0.0295

## FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of bare shaft Butterfly Valve
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

## SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Brass: lead (Pb)	231-100-4	7439-92-1



# 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	MND	MND	MND	MND	MND	MND	MND	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

### 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 finished valve is either delivered assembled with a gearbox or as a bare shaft valve. This EPD covers only the bare shaft valve.

The valve is made of mainly ductile iron along with components of steel, brass, rubber and plastic.

The assembled valve consists of the following components:

- Epoxy coated ductile iron body, disc and end plate
- Stainless steel shafts, rings, screws and bolts
- Brass bearings and spacer
- Rubber gasket, seals and rings
- Small plastic components

The ductile iron parts are casted and sourced from China and subsequently processed and coated at AVK International A/S. The stainless steel shafts are processed from steel bars sourced from Asia. The brass components are processed from brass bars sourced from Europe and Asia. Smaller components of stainless steel, rubber and plastic are sourced and received as finished components into the valve.

The A2 transport of the A1 materials is based on actual distances between the supplier and AVK International A/S. Following the assembly of the valve, the valve is pressure tested and packaged. The manufacturing process requires electricity and fuels for the different equipment as well as natural gas for heating. Ancillary materials used for manufacturing includes mineral oils, tap water and steel shot powder.

Production losses have been estimated from production waste accounts. All production waste is sent directly to recycling facilities. The wastewater treatment is also considered.

A wooden pallet, fiberboard and cardboard 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.

An average sales weighted distance for the transportation has been calculated based on sales data with location, transport mode and mass. Vehicle capacity utilization volume factor is assumed to be 1 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. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as product is packaged properly.

Environmental impacts from installation into the building include generation of waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets. The impacts of material production, its processing and disposal as installation waste are also included. Installation is carried out underground at an installation depth of 1.2 m and requires excavation. The excavation activity has been calculated based on estimated volume of the valve and the required installation depth. The installation waste is assumed to be sent to the closest waste handling site by lorry 50 km away and is assumed to follow a European waste scenario.

### PRODUCT USE AND MAINTENANCE (B1-B7)

The use phase is not relevant for the life cycle emissions of this product and is therefore not accounted into the assessment. Air, soil, and water impacts during the use phase have not been studied.

### PRODUCT END OF LIFE (C1-C4, D)

The deconstruction of the valve is expected to mirror the installation (A5). The deconstruction is assumed to be carried out by professionals and the valve is sent to a waste handling site intact, where the disassembly and sorting of materials is carried out. The end-of-life product is assumed to be sent to the closest facilities by lorry and is assumed to be 50 km away (C2). Of the end-of-life product, 96.88 %

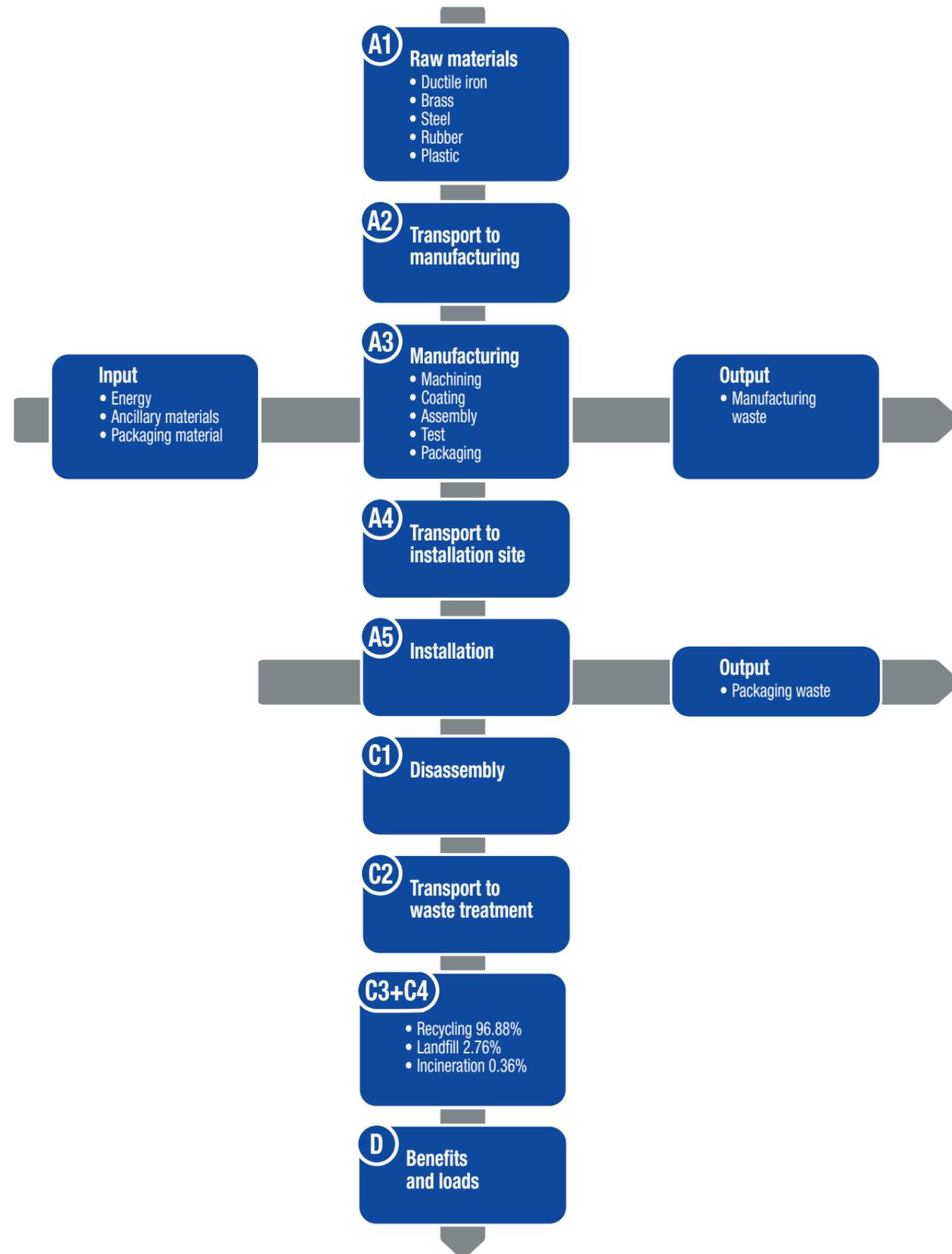
sent to recycling and 0.36 % to incineration facilities (C3). 2.76% of the end-of-life product goes to landfill (C4). Due to the recycling and incineration potential of metals and plastics, the end-of-life product is converted into recycled materials, while energy and heat is produced from material incineration (D). The benefits and loads of waste packaging materials in A5 are also considered in module D.



# MANUFACTURING PROCESS

# LIFE-CYCLE ASSESSMENT

## Life cycle stages



### 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.

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of product. The use phase is not covered, assuming there are no use emissions or replacements. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation, and end-of-life management are included. For easier modelling and because of lack of accuracy in available modelling resources, some constituents under 1% of product mass are excluded. These include some ancillary materials which are used in the product manufacturing only in very small amounts and have a negligible impact on the emissions of the product.

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.

Apart from excavation, the installation is assumed to be handled manually or with handheld electric tools. It is assumed that the overall use of these electric tools will be very limited and is therefore excluded. This is also the case for any lubricant used in the installation. As we assume C1 to mirror A5, the use of tools is also excluded from the deconstruction stage.

Transport from production site to warehouse and logistics site is a one way trip of <3km. Due to lack of data and the 1% threshold, this process is 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	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

All estimations and assumptions regarding the cut off criteria and the allocation are declared in the part "Cut-off Criteria except the estimations/ assumptions below:

Proxy data is used for certain materials due to their unavailability in the database.

**Module A2, A4 & C2:** Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transport of ancillary and packaging materials is assumed to be 50 km by default.

**Module A4:** Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products. Additionally, transportation distances are assumed based on distance between AVK International A/S in Galten, Denmark and the capital of each country of the sales statistics.

**Module A5:** Packaging waste is declared as installation waste.

**Module C2:** Transportation distance to waste handling facility is estimated as 50 km and the transportation method is assumed as lorry.

**Module C3, C4, D:** The product undergoes separate collection and a certain percentage of each material is assumed to be recycled, incinerated and landfilled. Ash from incineration processes is assumed negligible. The recycled end-of-life materials are assumed to serve as secondary raw materials in manufacturing while the materials incinerated displace electricity and heat production.

PRODUCT & MANUFACTURING SITES GROUPING	
Type of grouping	Multiple products
Grouping method	-
Variation in GWP-fossil for A1-A3, %	+7.47%/-6.82%

Among the products declared in this EPD, the DN400 bare shaft resilient seated double eccentric butterfly valve has been used as the representative valve. From calculation it was concluded that this valve a close to average weighted distribution of materials while also being one of the most sold variants and was consequently chosen as the most representative valve. Primary data represents the manufacturing of this valve. The data was used to calculate representative impacts for the range of products declared. The included valves varies in type of valve seat, but the manufacturing process and the overall material distribution is similar for all included product variants. The variability of the primary data or the emissions between the products did not amount to more than +7.47%/-6.82% of the relevant data.

**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. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.



# ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2																			
Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total <sup>1)</sup>	kg CO <sub>2</sub> e	2.57E+00	2.23E-01	1.90E-01	2.98E+00	2.47E-01	1.81E-01	MND	2.88E-03	5.39E-03	3.67E-02	2.31E-04	-6.62E-01						
GWP – fossil	kg CO <sub>2</sub> e	2.56E+00	2.23E-01	2.97E-01	3.08E+00	2.46E-01	3.97E-03	MND	2.88E-03	5.38E-03	3.68E-02	2.31E-04	-7.04E-01						
GWP – biogenic	kg CO <sub>2</sub> e	8.40E-03	3.58E-05	-1.08E-01	-9.95E-02	5.72E-05	1.77E-01	MND	3.65E-07	1.22E-06	-1.28E-04	-9.54E-08	4.23E-02						
GWP – LULUC	kg CO <sub>2</sub> e	1.28E-03	1.20E-04	4.33E-04	1.84E-03	1.16E-04	1.12E-06	MND	3.81E-07	2.41E-06	3.11E-05	1.02E-07	-2.97E-04						
Ozone depletion pot.	kg CFC <sub>-11</sub> e	1.34E-08	3.24E-09	7.53E-09	2.42E-08	3.94E-09	6.20E-11	MND	4.12E-11	7.95E-11	2.86E-10	5.13E-12	-2.72E-09						
Acidification potential	mol H <sup>+</sup> e	1.40E-02	6.18E-03	9.32E-04	2.11E-02	9.91E-04	3.25E-05	MND	2.55E-05	1.84E-05	2.84E-04	1.26E-06	-3.46E-03						
EP-freshwater <sup>2)</sup>	kg Pe	1.31E-03	7.68E-06	1.20E-04	1.44E-03	1.91E-05	5.98E-07	MND	1.21E-07	4.19E-07	1.43E-05	1.48E-08	-1.37E-04						
EP-marine	kg Ne	2.21E-03	1.54E-03	1.97E-04	3.95E-03	2.50E-04	2.37E-05	MND	1.17E-05	6.03E-06	6.36E-05	1.83E-06	-4.10E-04						
EP-terrestrial	mol Ne	2.42E-02	1.71E-02	1.87E-03	4.32E-02	2.73E-03	1.59E-04	MND	1.28E-04	6.57E-05	7.14E-04	5.25E-06	-7.61E-03						
POCP ("smog") <sup>3)</sup>	kg NMVOCe	8.10E-03	4.66E-03	7.90E-04	1.35E-02	1.20E-03	4.82E-05	MND	3.81E-05	2.71E-05	2.10E-04	1.89E-06	-2.21E-03						
ADP-minerals & metals <sup>4)</sup>	kg Sbe	6.81E-05	2.44E-07	1.77E-06	7.01E-05	6.87E-07	3.97E-09	MND	1.32E-09	1.50E-08	1.55E-06	2.88E-10	-1.92E-05						
ADP-fossil resources	MJ	2.67E+01	2.77E+00	5.01E+00	3.45E+01	3.67E+00	5.50E-02	MND	3.75E-02	7.81E-02	3.13E-01	4.35E-03	-7.57E+00						
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	4.26E-01	8.19E-03	9.45E-02	5.29E-01	1.77E-02	9.75E-04	MND	1.31E-04	3.86E-04	5.51E-03	1.29E-05	3.20E-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

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	2.20E-07	7.57E-09	8.74E-09	2.36E-07	2.33E-08	8.38E-10	MND	7.18E-10	5.39E-10	3.96E-09	2.87E-11	-6.93E-08						
Ionizing radiation <sup>6)</sup>	kBq U235e	8.17E-02	1.35E-03	6.72E-02	1.50E-01	3.12E-03	1.36E-04	MND	2.12E-05	6.81E-05	1.12E-03	2.81E-06	-9.47E-03						
Ecotoxicity (freshwater)	CTUe	1.41E+01	2.18E-01	7.01E-01	1.51E+01	5.05E-01	6.73E-03	MND	2.43E-03	1.11E-02	2.00E-01	2.61E-03	5.25E+00						
Human toxicity, cancer	CTUh	3.34E-09	4.67E-11	1.87E-10	3.57E-09	4.17E-11	1.04E-12	MND	3.91E-13	8.89E-13	2.17E-11	3.87E-14	-2.70E-09						
Human tox. non-cancer	CTUh	5.79E-08	7.60E-10	2.64E-09	6.13E-08	2.30E-09	4.91E-11	MND	5.62E-12	5.06E-11	1.36E-09	2.18E-12	-1.96E-07						
SQP <sup>7)</sup>	-	8.83E+00	4.12E-01	9.78E+00	1.90E+01	3.54E+00	2.47E-02	MND	2.85E-03	7.87E-02	5.90E-01	8.62E-03	-4.74E+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 <sup>8)</sup>	MJ	2.38E+00	2.25E-02	1.25E+00	3.65E+00	4.93E-02	-8.07E-01	MND	3.24E-04	1.07E-03	4.84E-02	4.31E-05	-9.24E-01						
Renew. PER as material	MJ	0.00E+00	0.00E+00	7.19E-01	7.19E-01	0.00E+00	-7.19E-01	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Total use of renew. PER	MJ	2.38E+00	2.25E-02	1.97E+00	4.37E+00	4.93E-02	-1.53E+00	MND	3.24E-04	1.07E-03	4.84E-02	4.31E-05	-9.24E-01						
Non-re. PER as energy	MJ	2.64E+01	2.77E+00	4.66E+00	3.38E+01	3.67E+00	5.50E-02	MND	3.75E-02	7.82E-02	1.51E-01	-1.93E-02	-7.58E+00						
Non-re. PER as material	MJ	3.45E-01	0.00E+00	-6.96E-03	3.38E-01	0.00E+00	-4.05E-02	MND	0.00E+00	0.00E+00	-1.50E-01	-1.48E-01	0.00E+00						
Total use of non-re. PER	MJ	2.67E+01	2.77E+00	4.65E+00	3.42E+01	3.67E+00	1.45E-02	MND	3.75E-02	7.82E-02	1.03E-03	-1.67E-01	-7.58E+00						
Secondary materials	kg	6.78E-02	1.31E-03	7.54E-03	7.67E-02	1.57E-03	4.01E-05	MND	2.69E-05	3.33E-05	3.65E-04	1.11E-06	4.12E-01						
Renew. secondary fuels	MJ	6.39E-04	3.80E-06	1.63E-02	1.69E-02	1.91E-05	1.32E-07	MND	4.46E-08	4.23E-07	1.64E-05	2.29E-08	-1.27E-04						
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Use of net fresh water	m <sup>3</sup>	1.20E-02	2.06E-04	2.71E-03	1.49E-02	5.38E-04	-1.08E-04	MND	3.22E-06	1.16E-05	1.46E-04	1.95E-06	-2.71E-02						

8) PER = Primary energy resources.

# ENVIRONMENTAL IMPACT DATA

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	7.20E-01	3.74E-03	1.68E-02	7.41E-01	6.13E-03	1.96E-04	MND	6.69E-05	1.32E-04	2.65E-03	4.92E-06	-2.58E-01						
Non-hazardous waste	kg	6.32E+00	5.23E-02	1.00E+00	7.38E+00	1.12E-01	1.76E-01	MND	8.63E-04	2.45E-03	7.24E-02	3.34E-03	1.41E+01						
Radioactive waste	kg	2.05E-05	3.28E-07	1.74E-05	3.82E-05	7.63E-07	3.43E-08	MND	5.21E-09	1.67E-08	2.76E-07	6.84E-10	-2.39E-06						

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	MND	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	4.20E-01	4.20E-01	0.00E+00	2.26E-02	MND	0.00E+00	0.00E+00	9.69E-01	0.00E+00	0.00E+00						
Materials for energy rec	kg	0.00E+00	0.00E+00	4.58E-03	4.58E-03	0.00E+00	2.09E-02	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.14E-02	MND	0.00E+00	0.00E+00	0.00E+00	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	3.43E-02	MND	0.00E+00	0.00E+00	1.82E-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	4.71E-02	MND	0.00E+00	0.00E+00	2.50E-02	0.00E+00	0.00E+00						

ENVIRONMENTAL IMPACTS – EN 15804+A1																			
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 <sub>2</sub> e	2.55E+00	2.22E-01	2.97E-01	3.07E+00	2.45E-01	5.51E-03	MND	2.86E-03	5.36E-03	3.68E-02	2.27E-04	-6.96E-01						
Ozone depletion Pot.	kg CFC <sub>-11</sub> e	1.19E-08	2.57E-09	6.16E-09	2.06E-08	3.14E-09	4.95E-11	MND	3.27E-11	6.34E-11	2.37E-10	4.07E-12	-2.60E-09						
Acidification	kg SO <sub>2</sub> e	1.17E-02	4.94E-03	7.71E-04	1.74E-02	7.90E-04	2.31E-05	MND	1.80E-05	1.40E-05	2.28E-04	9.36E-07	-2.83E-03						
Eutrophication	kg PO <sub>4</sub> <sup>3-</sup> e	2.05E-03	5.46E-04	5.59E-04	3.15E-03	1.48E-04	6.19E-06	MND	4.17E-06	3.42E-06	3.27E-05	3.53E-07	5.80E-04						
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	1.19E-03	2.46E-04	6.77E-05	1.50E-03	6.07E-05	2.13E-06	MND	1.36E-06	1.25E-06	1.35E-05	9.63E-08	-4.82E-04						
ADP-elements	kg Sbe	6.78E-05	2.41E-07	1.76E-06	6.98E-05	6.70E-07	3.78E-09	MND	1.29E-09	1.47E-08	1.55E-06	2.82E-10	-1.92E-05						
ADP-fossil	MJ	2.54E+01	2.75E+00	3.83E+00	3.20E+01	3.62E+00	5.26E-02	MND	3.72E-02	7.71E-02	2.95E-01	4.30E-03	-7.42E+00						

ENVIRONMENTAL IMPACTS – 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 <sup>9)</sup>	kg CO <sub>2</sub> e	2.56E+00	2.23E-01	2.98E-01	3.08E+00	2.46E-01	3.97E-03	MND	2.88E-03	5.39E-03	3.68E-02	2.31E-04	-7.04E-01						

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH<sub>4</sub> fossil, CH<sub>4</sub> biogenic and Dinitrogen monoxide - were updated in line with

the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO<sub>2</sub> is set to zero.

# SCENARIO DOCUMENTATION

MANUFACTURING ENERGY SCENARIO DOCUMENTATION	
Scenario parameter	Value
Electricity data source and quality	Market group for electricity, low voltage (Reference product: electricity, low voltage)
Electricity CO <sub>2</sub> e / kWh	0.31
District heating data source and quality	-
District heating CO <sub>2</sub> e / kWh	-

TRANSPORT SCENARIO DOCUMENTATION A4	
Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	Market for transport, freight, lorry >32 metric ton, EURO6. Market for transport, freight, sea, container ship.
Average transport distance, km	2099.22 (truck) + 1237.76 (sea)
Capacity utilization (including empty return) %	50
Bulk density of transported products	-
Volume capacity utilization factor	1

INSTALLATION SCENARIO DOCUMENTATION A5	
Scenario parameter	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	-
Water use / m <sup>3</sup>	-
Other resource use / kg	Hydraulic digger for excavation activity. Total excavation activity(digging + filling) is 0.0049 m <sup>3</sup> .
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	-
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Wood pallet: 0.0325 kg Wood pallet frame: 0.01625 kg Cardboard: 0.00043 kg Fibreboard: 0.0208 kg
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	(recycling %, incineration %, landfill % respectively) Wood pallet: 32%, 30%, 38% Wood pallet frame: 32%, 30%, 38% Cardboard: 83%, 8%, 9% Fibreboard: 32%, 30%, 38%

END OF LIFE SCENARIO DOCUMENTATION	
Scenario parameter	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed waste	1
Recovery process – kg for re-use	-
Recovery process – kg for recycling	0.9688
Recovery process – kg for energy recovery	0.003589
Disposal (total) – kg for final deposition	0.02759
Scenario assumptions e.g. transportation	Transported 50 km by lorry



# VERIFICATION STATEMENT

## 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 15802+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.

Magaly Gonzalez Vazquez, as an authorized verifier acting for EPD Hub Limited  
04.07.2025

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

