ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

FläktGroup Fire Damper ETPR, FläktGroup AB

EPD of a product with a scaling table for similar products and sizes.

Included products: Fire damper ETPR size Ø125-630 and fire damper ETCE size Ø125-630.

EPD HUB, HUB-5789

Published on 19.03.2026, last updated on 19.03.2026, valid until 18.03.2031

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	FläktGroup AB
Address	Slovanská 781, 463 12 Liberec – Vesec, Czech Republic
Contact details	info-cz@flaktgroup.com
Website	www.flaktgroup.com

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	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, B6 and modules C1-C4, D
EPD author	Doubravka Šimáňová, FläktGroup
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	FläktGroup Fire Damper ETPR
Product reference	ETPR-250-03-3
Place(s) of raw material origin	Europe, Asia
Place of production	Czech Republic
Place(s) of installation and use	Europe
Period for data	Calendar year 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	08595736302471
A1-A3 Specific data (%)	31,1

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of ETPR-250-03-3
Declared unit mass	5,8 kg
Mass of packaging	3,66 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	19,4
GWP-total, A1-A3 ($kgCO_2e$)	13,9
Secondary material, inputs (%)	20
Secondary material, outputs (%)	37,6
Total energy use, A1-A3 (kWh)	77,3
Net freshwater use, A1-A3 (m^3)	0,83

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

ABOUT FLÄKTGROUP

FläktGroup designs and manufactures ventilation and air treatment products for use in commercial and industrial buildings. The company is headquartered in Germany and operates production facilities in Europe, Asia and the United States.

FOR WELLBEING, SAFETY, AND ENVIRONMENT

Today, we spend more than 90% of our time indoors, and the air we breathe has a big impact on our performance, well-being, and comfort. Our buildings need mechanical ventilation and air treatment to deliver safe and comfortable building spaces. At the same time, buildings account for up to 40% the energy consumption, where ventilation systems play a big part. With this in mind, FläktGroup aims to approach ventilation and air treatment with consideration for indoor environments, energy use, and environmental aspects throughout the building lifecycle.

PRODUCT DESCRIPTION

Fire dampers are safety components installed in ventilation and air-conditioning duct systems at locations where ducts penetrate fire-resisting walls or intermediate floors. Their function is to prevent the spread of fire and smoke between fire compartments while allowing air distribution during regular operation. In the event of a fire, the damper blade closes automatically, either by means of a spring in the electrical actuator connected to a control system or via a mechanical thermal-fuse mechanism.

ETPR and ETCE are circular fire dampers intended for installation in fire-separating constructions in buildings. Both of the damper casings are manufactured from hot-dip galvanized steel sheet, and the blades are made of fire-resistant calcium silicate material. The maximum permitted pressure against a closed damper is 2500 Pa, corresponding to pressure class B.

The damper casings meet leakage class C according to EN 1751. Motorized versions are available with 24 V or 230 V actuators and have been tested for 10,000 open/close cycles, enabling their use for both fire protection and daily ventilation operation.
Versions with a mechanical thermal fuse (70 °C) are also available. All variants are equipped with two microswitches indicating open and closed blade positions, enabling position monitoring and integration into building management or fire safety control systems. The Ø100 mm version of both dampers is configured from a corresponding Ø125 damper fitted with 2 × reducer pieces BDED-1-012-010.

ETPR Fire Damper (Reference Product)
The ETPR fire damper is designed for installation on a wall or intermediate floor for circular duct connection. The factory-made calcium silicate flange construction supports consistent installation quality and facilitates on-site installation.
ETPR is available in sizes from Ø100 mm to Ø630 mm. The fire resistance class is EI 60 S, with selected variants achieving EI 90 S classification depending on installation conditions. The product is approved for installation in accordance with EN 15650. The closed damper fulfills leakage class 3 according to EN 1751.

ETCE Fire Damper (included in the scaling table)
The ETCE fire damper is designed for installation inside fire-separating walls or intermediate floors in circular duct systems. ETCE is available in sizes from Ø100 mm to Ø1000 mm. Depending on size and installation configuration, the product achieves fire resistance classes EI 60 S, EI 90 S or EI 120 S in accordance with EN 13501-3. The closed damper fulfills leakage class 2 or 3 according to EN 1751, depending on size and configuration. A motorized version with stainless steel casing (ETCS) is available for selected sizes (Ø100–630 mm).

Further information can be found at: *www.flaktgroup.com*

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	43,28	Europe, Asia
Minerals	47,39	Europe
Fossil materials	9,33	Europe
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	1,478

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of ETPR-250-03-3
Mass per declared unit	5,8 kg
Functional unit	Provision of fire protection from one motorized Fire Damper ETPR 250 during 25 years of use in standby mode.
Reference service life	25 years

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	X	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 location-based approach is used in modelling the electricity mix utilized in the factory.
The fire damper is made of galvanized steel sheets that are cut and formed to create the body. The body is then fitted with supplied components, including nylon bearings, a graphite-based intumescent fire protection seal to prevent the spread of smoke and fire, a maintenance-free shaft system, and an electric actuator with a thermal release mechanism.
The damper blade is made of a calcium silicate board and is equipped with EPDM rubber to ensure tight sealing.
Compared to the ETCE model, the ETPR damper also includes a calcium silicate flange, which provides an easy airtight duct installation.

Waste generated during the manufacturing process includes steel scrap (≈20%) and copper welding wire (≈10%), both of which are sent for material recycling. A standard transport distance of 50 km is applied in the model, reflecting that recycling takes place at several nearby locations within this distance.
After production, the damper is carefully packaged in a cardboard box, cushioned with reused cardboard pieces, and placed on a custom-made wooden pallet for shipping.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to the construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transport distance is calculated based on a weighted average of sales, ensuring a representative distribution of transportation impacts.
The product is supplied ready for installation (A5), with no raw material waste generated during the installation process. Installation can be performed without the need for additional energy consumption. Packaging materials used for transport, such as cardboard and wooden pallets, are sent to waste treatment and managed according to the average end-of-life scenario in the EU.
Based on EUROSTAT data from 2021, 32% of wooden pallets are recycled, 30% are incinerated with energy recovery, and the remaining 38% are landfilled. For cardboard waste, 83% is recycled, 8% is incinerated, and the remaining 9% is landfilled.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product should be cleaned only using a vacuum cleaner. Chemical cleaning agents must not be used.
Testing must be carried out at least twice a year in accordance with EN 15650 (120552). The energy used for cleaning and testing is considered negligible.

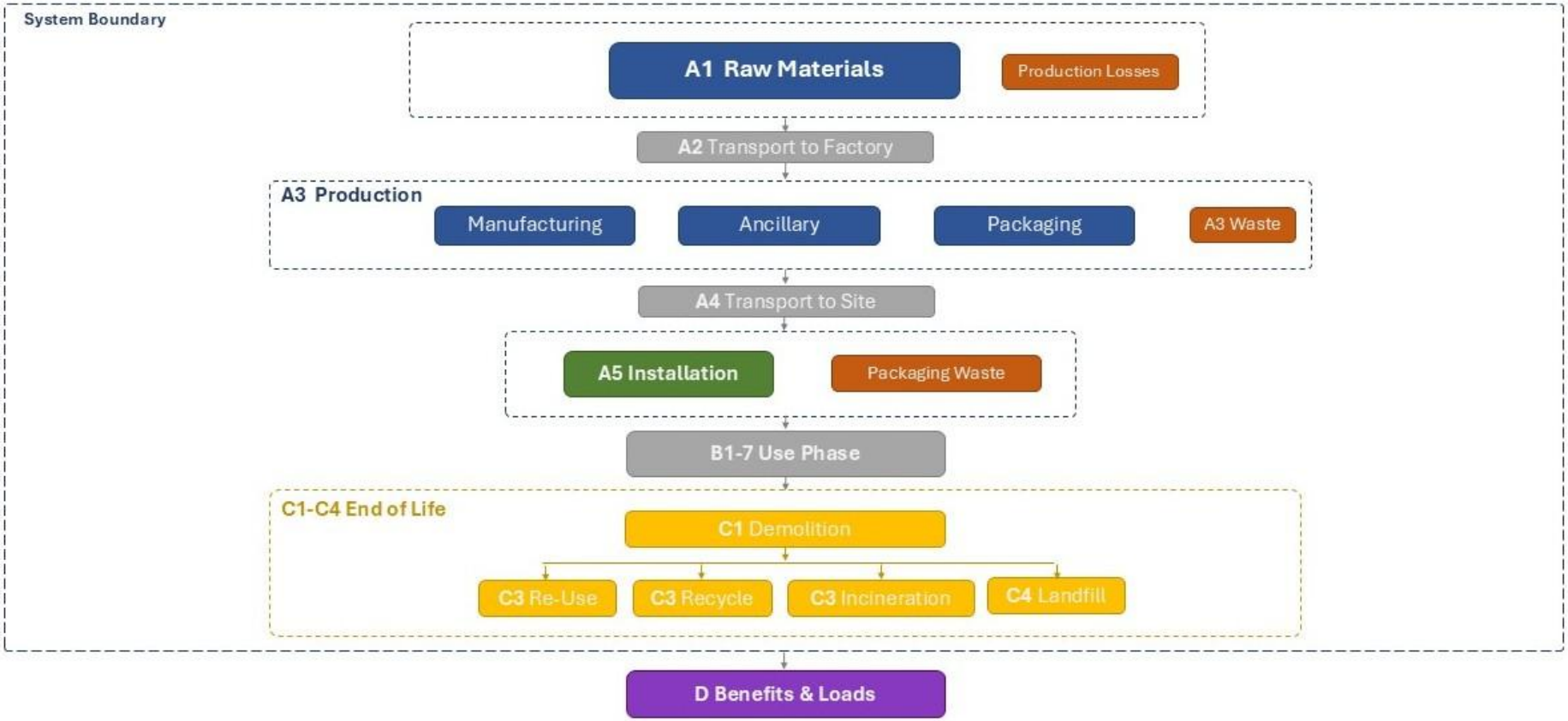
Electricity consumption during the use phase is calculated over a 25-year period based on the energy consumption of the actuator in standby mode. The electricity mix used in the scenario reflects a weighted average based on 2024 sales data.
The use phase may vary depending on individual usage patterns, for example, the frequency of function testing or the use of the damper for daily ventilation purposes. The Module B6 results presented in this EPD represent only a specific scenario. Therefore, it is recommended to assess the environmental impact of the use phase separately for each project.

The replacement of components or parts has not been included in this assessment.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end of its life, the fire damper is assumed to be dismantled with electrical tool (deconstruction energy is negligible) and then transported 50 km to a local recycling facility. 50km is used because the real-life scenario is unknown and highly dependent on the location in which the unit is placed (C2). Waste processing (C3) and disposal (C4) are modelled with consideration of the markets where the VaV Damper was mostly sold in 2024, and pre-made groups for EOL by OneClick were used. The recycling rates for each material are based on the following sources: data for steel is from the World Steel Association (85% recycling rate), copper (40%) from the International Copper Association and electronic parts (39%) from European Environment Agency. Recycled materials are then credited in module D. The calcium silicate boards are assumed to be used as inert construction waste at the end of their service life.

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	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

A4: Transport to construction is based on the 2024 statistics on the type of wehicle used by our carrier, and weighted averidge of the transportation distance of the included plenum boxes (all types and sizes) in 2024.

A5: Treatment of waste from packaging is based on:
For carboard 83% is recycled. (source: EUROSTAT) 8% is incinerated and 9% is landfilled.
For wooden pallet: 32% of the wooden packaging is recycled (source: EUROSTAT)

C1: A default value is derived from Table 4 of the Construction Products PCR 2019:14 (EN 15804+A2) for dismantling steel products: 1.1 kWh/t.
For a product mass of 1 kg, the dismantling energy is 0,0011 kWh and is therefore considered negligible.

C2: The separated materials are then assumed to be transported 50km to the local recycling site by truck. 50km is used because the real-life scenario is unknown and dependent on which city the unit is placed in.

C3-C4:
The recycling rates for each material are based on the following sources: data for steel is from the World Steel Association (85% recycling rate) Life cycle inventory (LCI) study, aluminium (90% for aluminium parts and 76% for aluminium in electronic parts) from the International Aluminium Institute (IAI) Data for PP from Plastics Europe (23% recycled; 50% incinirated).

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific and does not contain average callculations. The environmental impact data presented are specific for the product Fire damper ETPR size 250 with motorized actuator.
The calculated GWP-GHG for the other included Fire damper ETCE and all sizes for modules A1-A3 are shown in the scaling table in Annex I.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.4. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

EUROSTAT, 2024. env_waspac custom table 8519259. [online] Available at: https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519259/default/table?lang=en [Accessed 5 Mar. 2026].

EUROSTAT, 2024. env_waspac custom table 8519174. [online] Available at: https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519174/default/table?lang=en [Accessed 5 Mar. 2026].

World Steel Association, n.d. Life cycle inventory (LCI) study – steel recycling rates. [online] Available at: https://www.worldsteel.org [Accessed 5 Mar. 2026].

European Environment Agency, n.d. Electronic parts recycling data. [online] Available at: https://www.eea.europa.eu/ [Accessed 5 Mar. 2026].

Euric, n.d. Metal recycling factsheet – Copper. [online] Available at: https://www.euric-aisbl.eu[Accessed 5 Mar. 2026].

Ecoinvent, 2023. Ecoinvent database v3.10.1 / 3.11. [online] Available at: https://www.ecoinvent.org/[Accessed 5 Mar. 2026].

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. The results are based on the functional unit.

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_2e	1,35E+01	7,46E-01	-4,14E-01	1,39E+01	3,04E+00	5,55E+00	ND	ND	ND	ND	ND	6,23E+01	ND	3,28E-01	1,43E-01	4,92E-01	5,36E-01	-3,85E+00
GWP – fossil	kg CO_2e	1,38E+01	7,44E-01	4,89E+00	1,94E+01	3,04E+00	1,30E-01	ND	ND	ND	ND	ND	6,15E+01	ND	3,28E-01	1,43E-01	4,92E-01	5,36E-01	-3,67E+00
GWP – biogenic	kg CO_2e	-2,29E-01	1,51E-04	-5,42E+00	-5,65E+00	6,08E-04	5,42E+00	ND	ND	ND	ND	ND	1,47E-01	ND	-1,81E-05	3,08E-05	-1,43E-04	-2,54E-05	-1,77E-01
GWP – LULUC	kg CO_2e	1,11E-02	1,36E-03	1,15E-01	1,27E-01	1,10E-03	1,05E-04	ND	ND	ND	ND	ND	7,06E-01	ND	3,18E-05	6,11E-05	7,00E-05	1,61E-05	-2,12E-03
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	8,03E-05	1,53E-08	1,49E-07	8,05E-05	6,02E-08	1,53E-09	ND	ND	ND	ND	ND	1,93E-06	ND	3,48E-10	2,18E-09	7,46E-10	8,62E-10	-1,77E-08
Acidification potential	mol H^+e	2,53E-01	1,76E-03	2,03E-02	2,75E-01	8,14E-03	5,76E-04	ND	ND	ND	ND	ND	2,85E-01	ND	2,39E-04	4,42E-04	6,71E-04	2,52E-04	-2,69E-02
EP-freshwater[2)]	kg Pe	1,14E-02	5,01E-05	3,89E-03	1,53E-02	2,02E-04	3,05E-05	ND	ND	ND	ND	ND	2,05E-02	ND	7,95E-06	1,08E-05	3,28E-05	5,86E-06	-1,06E-02
EP-marine	kg Ne	2,04E-02	4,90E-04	8,35E-03	2,93E-02	1,98E-03	8,29E-04	ND	ND	ND	ND	ND	5,32E-02	ND	7,88E-05	1,38E-04	1,75E-04	1,86E-04	-6,82E-03
EP-terrestrial	mol Ne	7,19E-01	5,21E-03	5,83E-02	7,83E-01	2,15E-02	1,99E-03	ND	ND	ND	ND	ND	5,81E-01	ND	9,14E-04	1,50E-03	1,86E-03	1,04E-03	-8,79E-02
POCP ("smog")[3)]	kg NMVOCe	1,12E-01	2,86E-03	1,64E-02	1,31E-01	1,18E-02	7,21E-04	ND	ND	ND	ND	ND	1,70E-01	ND	2,03E-04	6,33E-04	5,34E-04	3,45E-04	-2,17E-02
ADP-minerals & metals[4)]	kg Sbe	1,90E-02	2,44E-06	1,28E-05	1,90E-02	9,97E-06	7,13E-07	ND	ND	ND	ND	ND	1,37E-03	ND	2,76E-07	4,70E-07	3,45E-06	8,07E-08	-3,32E-04
ADP-fossil resources	MJ	1,82E+02	1,05E+01	7,76E+01	2,70E+02	4,27E+01	1,36E+00	ND	ND	ND	ND	ND	2,24E+03	ND	3,34E-01	2,01E+00	7,42E-01	6,62E-01	-3,64E+01
Water use[5)]	m^3e depr.	6,23E+00	5,27E-02	2,28E+00	8,57E+00	2,10E-01	3,70E-02	ND	ND	ND	ND	ND	5,04E+01	ND	1,85E-02	9,49E-03	2,81E-02	2,86E-02	-1,00E+00

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	1,53E-06	5,58E-08	1,73E-07	1,75E-06	2,21E-07	8,56E-09	ND	ND	ND	ND	ND	1,79E-06	ND	2,68E-09	1,13E-08	8,70E-09	4,30E-09	-3,09E-07
Ionizing radiation[6)]	kBq U235e	5,23E+00	1,38E-02	1,04E+00	6,28E+00	5,43E-02	7,02E-03	ND	ND	ND	ND	ND	1,12E+02	ND	1,03E-03	1,83E-03	4,56E-03	7,08E-04	-3,77E-04
Ecotoxicity (freshwater)	CTUe	2,94E+04	2,50E+00	3,10E+01	2,94E+04	5,63E+00	3,29E+00	ND	ND	ND	ND	ND	2,47E+02	ND	3,71E+00	3,07E-01	6,92E-01	1,05E+00	-1,53E+02
Human toxicity, cancer	CTUh	1,94E-04	1,25E-10	3,01E-09	1,94E-04	5,13E-10	8,58E-11	ND	ND	ND	ND	ND	2,78E-08	ND	1,23E-10	2,43E-11	6,76E-11	1,57E-11	-1,67E-09
Human tox. non-cancer	CTUh	4,02E-05	6,68E-09	3,30E-08	4,03E-05	2,67E-08	4,60E-09	ND	ND	ND	ND	ND	1,39E-06	ND	8,21E-09	1,26E-09	3,79E-09	6,37E-10	-6,62E-08
SQP[7)]	-	6,96E+01	6,59E+00	2,90E+02	3,66E+02	2,54E+01	1,10E+00	ND	ND	ND	ND	ND	9,16E+02	ND	4,93E-01	1,23E+00	1,34E+00	1,15E+00	-2,07E+01

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	1,40E+01	1,88E-01	5,94E-01	1,48E+01	7,39E-01	-5,70E+01	ND	ND	ND	ND	ND	7,80E+02	ND	4,50E-02	2,91E-02	1,20E-01	1,08E-02	-4,24E+00
Renew. PER as material	MJ	1,35E-02	0,00E+00	4,67E+01	4,67E+01	0,00E+00	-4,67E+01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-2,70E-03	-1,08E-02	1,53E+00
Total use of renew. PER	MJ	1,40E+01	1,88E-01	4,73E+01	6,15E+01	7,39E-01	-1,04E+02	ND	ND	ND	ND	ND	7,80E+02	ND	4,50E-02	2,91E-02	1,17E-01	-5,88E-07	-2,71E+00
Non-re. PER as energy	MJ	1,75E+02	1,05E+01	7,70E+01	2,63E+02	4,27E+01	1,36E+00	ND	ND	ND	ND	ND	2,24E+03	ND	3,34E-01	2,01E+00	-8,19E+00	-9,82E+00	-3,64E+01
Non-re. PER as material	MJ	1,31E+01	0,00E+00	9,41E-01	1,41E+01	0,00E+00	-9,41E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,83E+00	-1,13E+01	8,68E-02
Total use of non-re. PER	MJ	1,89E+02	1,05E+01	7,79E+01	2,77E+02	4,27E+01	4,21E-01	ND	ND	ND	ND	ND	2,24E+03	ND	3,34E-01	2,01E+00	-1,00E+01	-2,11E+01	-3,63E+01
Secondary materials	kg	1,16E+00	4,78E-03	2,66E+00	3,83E+00	1,98E-02	1,77E-03	ND	ND	ND	ND	ND	3,60E-01	ND	3,97E-04	9,09E-04	1,06E-03	2,43E-04	1,78E+00
Renew. secondary fuels	MJ	5,11E-03	5,80E-05	5,79E-01	5,84E-01	2,47E-04	1,14E-05	ND	ND	ND	ND	ND	1,82E-03	ND	1,97E-04	1,16E-05	3,87E-05	5,68E-06	-2,59E-04
Non-ren. secondary fuels	MJ	8,89E-03	0,00E+00	0,00E+00	8,89E-03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	7,67E-01	1,49E-03	5,94E-02	8,28E-01	5,76E-03	-1,76E-03	ND	ND	ND	ND	ND	1,55E+00	ND	4,04E-04	2,69E-04	5,27E-04	-1,48E-05	-2,20E-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	3,23E+00	1,52E-02	2,23E-01	3,47E+00	6,19E-02	1,78E-02	ND	ND	ND	ND	ND	3,52E+00	ND	3,08E-02	3,39E-03	9,80E-03	1,54E-02	-1,07E+00
Non-hazardous waste	kg	3,10E+01	3,21E-01	1,65E+01	4,79E+01	1,30E+00	3,90E+00	ND	ND	ND	ND	ND	1,04E+02	ND	1,39E-01	6,49E-02	3,50E-01	1,50E+00	-8,57E+00
Radioactive waste	kg	1,61E-03	3,43E-06	2,55E-04	1,87E-03	1,35E-05	1,78E-06	ND	ND	ND	ND	ND	2,41E-02	ND	2,53E-07	4,49E-07	1,16E-06	1,78E-07	5,77E-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	6,09E-04	0,00E+00	0,00E+00	6,09E-04	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,26E-02	0,00E+00	0,00E+00	1,26E-02	0,00E+00	2,53E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,18E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	1,15E-02	0,00E+00	0,00E+00	1,15E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	2,49E-02	0,00E+00	0,00E+00	2,49E-02	0,00E+00	2,63E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,02E+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	1,10E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	8,53E-01	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	1,53E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,17E+00	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_2e	1,38E+01	7,46E-01	5,00E+00	1,95E+01	3,04E+00	1,30E-01	ND	ND	ND	ND	ND	6,22E+01	ND	3,28E-01	1,43E-01	4,92E-01	5,36E-01	-3,67E+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. Market for electricity, high voltage, Czech Republic, Ecoinvent, 0.62 kgCO2e/kWh
2. Heat production, natural gas, at industrial furnace >100kW, Albania, Ecoinvent, 0.0773 kgCO2e/MJ
3. Heat, from municipal waste incineration to generic market for heat district or industrial, other than natural gas, Hungary, Ecoinvent
4. Market for diesel, World, Ecoinvent, 0.84 kgCO2e/kg

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry 16-32 metric ton, EURO6, 1658.0 km
2. Market for transport, freight, sea, ferry, 58.0 km

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.32 kg
2. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.3 kg
3. Exported Energy: Electricity, Ecoinvent, 0.67 MJ
4. Exported Energy: Electricity, Ecoinvent, 0.43 MJ
5. Exported Energy: Thermal, Ecoinvent, 0.92 MJ
6. Exported Energy: Thermal, Ecoinvent, 0.61 MJ
7. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.38 kg
8. Treatment of waste paperboard, unsorted, sorting, Ecoinvent, Materials for recycling, 2.21 kg
9. Treatment of waste packaging paper, municipal incineration, Ecoinvent, 0.21 kg
10. Treatment of waste packaging paper, sanitary landfill, Ecoinvent, 0.24 kg

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

1. Treatment of used industrial electronic device, manual dismantling, Ecoinvent, 15839 kg
2.-4. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.0076+2.2E-4+1.25 kg
5. Treatment of scrap steel, municipal incineration, Ecoinvent, 0.0025 kg
6. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.0025 kg
7.-10. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.48+0.052+0.024 +0.31 kg
11.-16. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.12+0.035+0.016+2.2E-4 + 0.22+0.078kg
17.-18. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.058+0.0012 kg
19.-20. Treatment of waste polypropylene, municipal incineration, Ecoinvent, 0.12+0.0025 kg
21.-23. Exported Energy: Electricity, Ecoinvent, 0.61+0,23+0,013 MJ
24.-26. Exported Energy: Thermal, Ecoinvent, 0.84+0,31+0,018 MJ
27. Treatment of waste polypropylene, sanitary landfill, Ecoinvent, 0.12 kg
28.-29. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, 0.046+0.023 kg
30.-31. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.023+0.0082 kg
32. Treatment of inert waste, sanitary landfill, Ecoinvent, 0.0234 kg
33. Treatment of waste concrete, inert material landfill, Ecoinvent, 2.553 kg
34. Treatment of waste rubber, unspecified, municipal incineration, Ecoinvent, 0.14 kg
35. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 0.0014 kg
36. Market for inert waste, Ecoinvent, 0.2944 kg

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 Limited 19.03.2026

ANNEX I:

This is a scaling table of multiple Fire Dampers, based on the results of a product ETPR-250-03-3. The following table shows the calculated GWP-GHG results for the climate impact in modules A1-A3 (Cradle-to-gate) for all included products and sizes. It was modelled in OneClick LCA software for each product and size.

Product Name	Size	Code	Mass (kg)	A1-A3, EN 15804+A2			Scaling coefficient A1-A3 GWP-total (kg CO2e)
				GWP-total (kg CO2e)	GWP-fossil (kg CO2e)	GWP-biogenic (kg CO2e)	
ETPR 	125	ETPR-125-03-3	3,4	8,9	13,06	-4,27	0,64
	150	ETPR-150-03-3	3,8	9,87	14,05	-4,29	0,71
	160	ETPR-160-03-3	3,9	9,82	14,4	-4,7	0,71
	200	ETPR-200-03-3	4,5	10,93	15,56	-4,75	0,79
	250	**ETPR-250-03-3**	**5,8**	**13,87**	**19,39**	**-5,65**	**1,00**
	315	ETPR-315-03-3	7,3	15,44	22,67	-7,36	1,11
	400	ETPR-400-03-3	10,6	17,95	31,82	-14,04	1,29
	500	ETPR-500-03-3	15,1	28,14	42,27	-14,3	2,03
	630	ETPR-630-03-3	21,3	40,93	55,47	-14,73	2,95
ETCE 	125	ETCE-0125-03-3	2,8	7,83	11,93	-4,21	0,56
	150	ETCE-0150-03-3	3,1	8,6	12,71	-4,23	0,62
	160	ETCE-0160-03-3	3,3	9,15	13,31	-4,28	0,66
	200	ETCE-0200-03-3	4,1	11,05	15,59	-4,66	0,80
	250	ETCE-0250-03-3	4,9	12,22	17,63	-5,54	0,88
	300	ETCE-0300-03-3	6,1	14,19	21,25	-7,2	1,02
	315	ETCE-0315-03-3	6,3	14,7	21,78	-7,22	1,06
	400	ETCE-0400-03-3	9,3	17,2	30,87	-13,84	1,24
	500	ETCE-0500-03-3	15,3	34,33	48,13	-13,99	2,48
	630	ETCE-0630-03-3	21,3	48,11	62,95	-15,07	3,47