ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Product name:

1. Ventilation noise silencers
2. Ventilation fittings
3. Ventilation dampers type POJCN
4. Ventilation dampers type POJCS




Producer:

Ciecholewski-Wentylacje Sp. z o.o.

Issued on 31 December 2025
Valid until 31 December 2030

GENERAL INFORMATION

EPD OWNER

Manufacturer / EPD Holder	Ciecholewski-Wentylacje Sp. z o.o.
Address	Koźmin 30,83-236 Pogódki, Poland
Contact details	sekretariat@wentylacje.pl
Website	https://www.ciecholewski.pl/

PRODUCT IDENTIFICATION

Product name	1. Ventilation noise silencers 2. Ventilation fittings 3. Ventilation dampers type POJCN 4. Ventilation dampers type POJCS
Place(s) of production	Poland

EPD INFORMATION

EPD Polska program operator	Multicert Sp. z o.o. Ul. Mydlarska 47, 04-690 Warszawa, Poland www.epd.org.pl, epd@epd.org.pl
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Daniel Wałach, PhD Eng.
EPD number	EPD-P 04.12.2025
Registration:	EPD Polska www.epd.org.pl
Publishing date	31 December 2025
EPD valid until	31 December 2030
Reasons for performing LCA	B2B
Accountability	The EPD Holder is responsible for the information provided and evidence. Multicert Sp. z o.o. does not hold responsibility for the manufacturer information, life cycle assessment data nor supporting evidence.

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.

COMPANY INFORMATION

HOLDER OF THE EPD

Ciecholewski-Wentylacje Sp. z o.o.
Koźmin 30
83-236 Pogódki, Poland

COMPANY PROFILE

Ciecholewski-Wentylacje Sp. z o.o. is a Polish manufacturer and installer of HVAC systems operating continuously since 1977. We design, produce, and install ventilation and air-conditioning solutions supported by a modern, flexible machine park. Our portfolio includes circular and rectangular ductwork and fittings, diffusers, ventilation grilles, hoods, and laminar flow units. We manufacture in black, galvanized, and stainless steel as well as aluminum, copper, and lead, enabling robust, custom solutions for demanding applications in pharmaceuticals, food processing, shipbuilding, hospitals, industrial halls, offices, shopping centers, and auditoriums.

Picture 1 –Manufacturer's plant in Koźmin

Drawing on decades of engineering experience, we continually invest in machinery, software, and process improvements to expand capacity, shorten lead times, and maintain consistent quality. We collaborate with reputable partners and develop advanced project capabilities to handle complex, large-scale installations.

Sustainability is integral to our operations: our products are primarily metal-based and recyclable, and our modernization efforts emphasize energy-efficient technologies and responsible resource use—both in manufacturing and in the systems we deliver—to help customers reduce environmental impact.

PRODUCT INFORMATION

PRODUCT DESCRIPTION

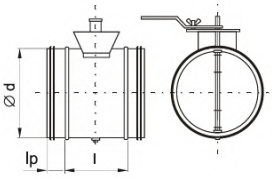
Ciecholewski-Wentylacje Sp. z o.o. offers modern and versatile solutions for ventilation and air-conditioning system components. Among the key products covered by this declaration are:

Ventilation Noise Silencers
Inline acoustic attenuators for circular and rectangular ducts. Typical construction: galvanized or stainless steel outer casing; mineral-wool acoustic core protected by perforated sheet; end caps and gaskets designed for stable insertion loss, low pressure drop, and airtight performance.

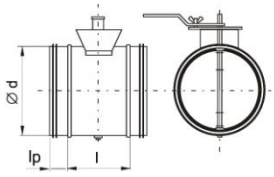

Ventilation fittings
Pressed and segmented fittings for circular and rectangular duct systems—e.g., bends, reducers, transitions, tees, and couplings. Manufactured in automated metal-forming/welding processes for dimensional accuracy and leak-tight connections; available with or without factory-mounted gaskets.




Ventilation dampers — type POJCN (circular shut-off damper)
Circular shut-off/balancing damper for supply or exhaust lines. Available in single- or multi-blade configurations, manual or actuator-ready. Materials, seals, and connection options tailored for industrial, hygienic, or medical installations.



Ventilation dampers — type POJCS (circular shut-off damper)
Circular regulation/isolating damper with alternative blade/shaft arrangements to suit operating conditions. Offered with sealing and actuation options to integrate with building control systems while preserving duct airtightness.



PRODUCT APPLICATION

Ciecholewski-Wentylacje Sp. z o.o. products serve a broad range of uses wherever reliable air distribution, control, and noise attenuation are required. They are routinely deployed in industrial, hygienic, commercial, and other specialized HVAC installations. In particular, the sheet-metal components enable precise airflow regulation, effective acoustic damping, and airtight duct connections. The typical applications for the four product groups are outlined below:

Ventilation noise silencers
Installed in-line to reduce fan and airflow-borne noise in commercial, industrial, hygienic, and clean-room HVAC systems while maintaining specified airtightness class and serviceability.

Ventilation fittings
Used wherever precise routing and connection of ductwork are required—direction changes, cross-section transitions, and branch take-offs—supporting airtight installation and reliable airflow distribution.

Ventilation dampers — type POJCN
Applied for on/off isolation or balancing of airflow in ducts, branches, and air-handling unit connections, enabling maintenance isolation and set-point control with compact geometry and dependable tightness.

Ventilation dampers — type POJCS
Used to regulate and stabilize airflow in supply/exhaust runs across industrial, hygienic, and commercial facilities; supports integration with control/monitoring systems and maintenance isolation.

PRODUCT STANDARDS

The product complies with:

EN 1506 – Ventilation for buildings – Sheet metal air ducts and fittings with circular cross-section – Dimensions

EN 1505 – Ventilation for buildings – Sheet metal air ducts and fittings with rectangular cross-section – Dimensions

EN 1507 – Ventilation for buildings – Sheet metal air ducts with rectangular cross-section – Requirements

EN 12237 – Ventilation for buildings – Strength and leakage of circular sheet metal ducts,

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at https://www.ciecholewski.pl

PRODUCT RAW MATERIAL COMPOSITION

Product Raw Material Composition for Ventilation Silencers

Material	Amount (by weight)	Weighted average (by weight)
Galvanized steel	82.5 – 95%	94.6%
Mineral-wool	4.2 – 15.9%	0.3%
EPDM gasket	0.3 – 0.8%	0.5%
Sealant	0.14 – 0.8%	4.6%

Product Raw Material Composition for Ventilation Fittings

Material	Amount (by weight)	Weighted average (by weight)
Galvanized steel	98.0 – 100.0%	98.0%
EPDM gasket	0.0– 1.0%	1.0%
Sealant	0.0 – 1.0%	1.0%

Product Raw Material Composition for Ventilation dampers type POJCN

Material	Amount (by weight)	Weighted average (by weight)
Galvanized steel	96.48– 99.21%	97.85%
EPDM gasket	0.0 – 2.75%	1.38%
HDPE plastic	0.18 – 0.19%	0.19%
Micro rubber	0.03%	0.03%

Product Raw Material Composition for Ventilation dampers type POJCS

Material	Amount (by weight)	Weighted average (by weight)
Galvanized steel	94.46– 97.37%	95.91%
EPDM gasket	1.92 – 4.85%	3.38%
Sealant	0.60 –0.62%	0.61%
HDPE plastic	0.17 – 0.18%	0.18%
Micro rubber	0.03%	0.03%

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

RAW MATERIALS ACQUISITION TRANSPORT (A1, A2)

Modules A1 and A2—Raw Material Supply and Transport—cover the sourcing, upstream processing, and delivery of all inputs used to produce Ciecholewski-Wentylacje Sp. z o.o. silencers, fittings, and dampers. Module A1 includes the extraction and processing of materials and intermediates (e.g., rolling of sheet-metal coils, compounding of EPDM gasket profiles, production of mineral-wool acoustic inserts, and fabrication of fastening hardware) supplied by domestic and EU partners, as well as any necessary packaging. Module A2 encompasses inbound logistics from suppliers to the manufacturing site by road, using standard truck transport. Transportation modeling is based on Polish and European average fuel-consumption data and representative load factors and distances.

MANUFACTURING (A3)

Silencers - production begins with automated spiral or longitudinal duct forming to create the outer shell, followed by end-cap fabrication using punching, rolling, and seam welding or mechanical folding. Perforated liners and mineral-wool inserts are prepared in parallel. EPDM gaskets are mounted at the connections, and the assembly is consolidated with folding or spot welding. Final steps include installing reducers (where specified), securing insulation, and performing visual and dimensional checks.

Ventilation fittings - bends, reducers, transitions, tees, and couplings are produced by cold-forming and segmenting sheet metal, then joining by seam/spot welding or mechanical locking. Where applicable, factory-mounted EPDM gaskets are fitted to ensure tight, repeatable joints. Each piece is verified for dimensional accuracy and surface finish.

Dampers (types POJCN and POJCS) - damper bodies are formed from rolled or pressed sections and joined by welding or folding. Blades and shafts are machined and balanced; bearings/bushings and seals are installed to achieve the specified tightness class. Units are prepared for manual operation or actuator mounting, including brackets and position indicators. Functional checks cover blade travel, closing torque, and leakage at defined set-points.

Quality control and packing - all finished components undergo documented quality procedures (visual inspection, key dimensional checks, and—where relevant—leakage or functional testing). Products are then boxed or palletized, wrapped, labeled with dimensions and batch data, and secured for transport so they arrive ready for immediate installation.

END OF LIFE (C1 – C4)

Deconstruction /Demolition (C1)

The deconstruction of the product does not require the use of energy. Therefore, energy consumption and emissions associated with this module are considered negligible.

Transport (C2)

In the assumed end-of-life scenario, deconstructed products are transported 100 km to a waste processing using a lorry (>32 t, EURO mix standard).

Waste processing (C3) and Disposal (C4)

After deconstruction, the components are processed as follows:

- Steel: 95% of the steel is assumed to be sent for material recycling, while 5% is sent to landfill.
- Mineral wool: 100% of the mineral wool is disposed of via landfilling, as recycling is not applied.
- EPDM gasket: 100% of the EPDM gasket is subject to thermal waste treatment.
- HDPE profile: 100% of the HDPE profile is subject to thermal waste treatment.

Reuse/recovery/recycling potential (D)

Module D presents the environmental benefits associated with the recycling of steel scrap. The recycled steel is credited with avoiding the production impacts of primary steel. Additionally, the energy recovered from thermal waste disposal is accounted for as a benefit by substituting the production of energy from conventional sources.

In order to avoid double counting, the share of recycled steel content already present in the product was deducted when calculating the recycling benefits in Module D.

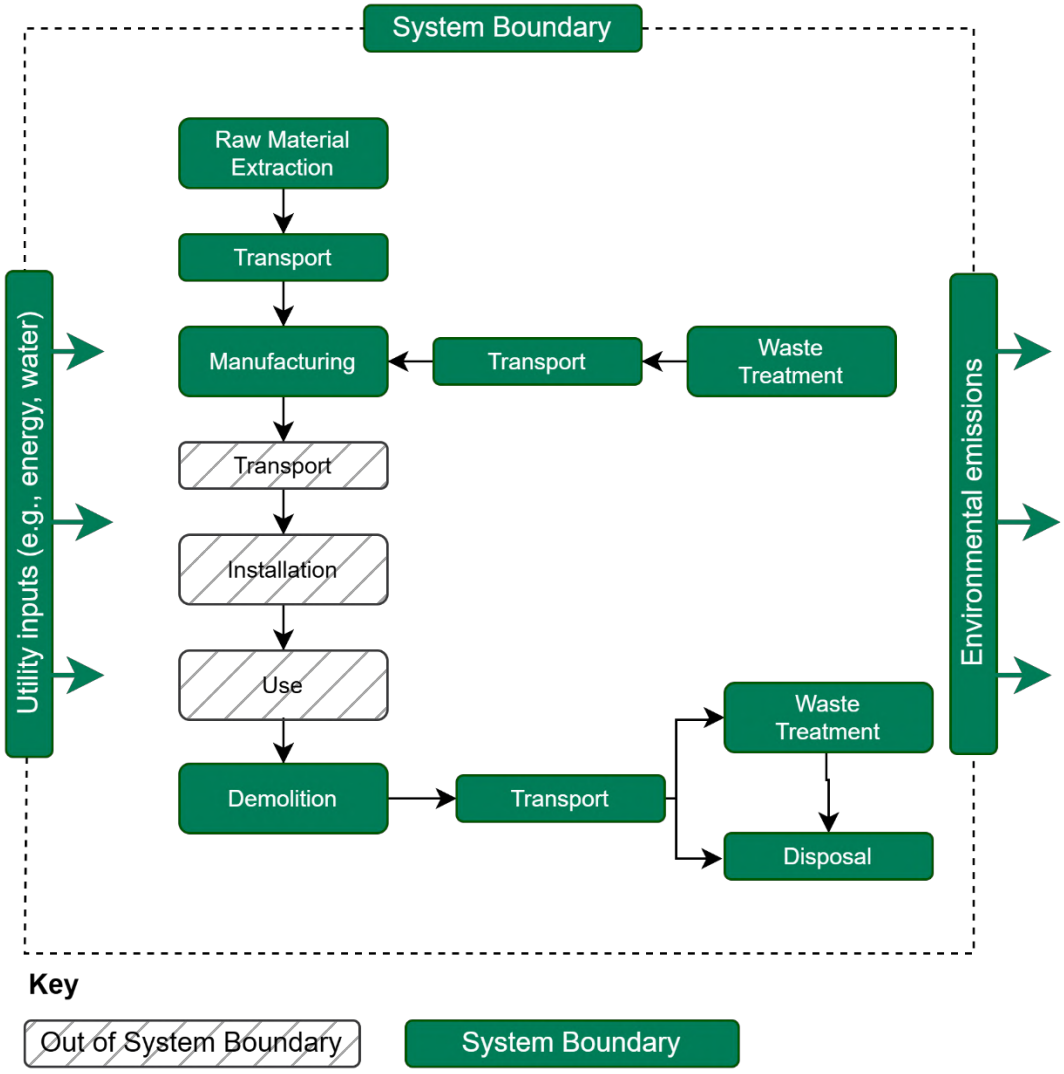


Diagram 1 - Life cycle stages

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2024 year

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 kg
Mass per declared unit	1 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.00
Biogenic carbon content in packaging, kg C	0.02

SYSTEM BOUNDARY

The scope of the EPD is "cradle to gate with modules C1-C4 and module D". The modules A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), C1 Deconstruction /Demolition C2 (Waste Transport), C3 (Waste Processing), C4 (Waste Disposal) and D are included in the study.

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	MND	MND	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	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse / Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the *EN 15804:2012+A2:2019*. 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 which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, and distribution.

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.

ESTIMATES AND ASSUMPTIONS

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- **Module (A1-A3):** All relevant data declared have been included. The average transport distances of each materials were calculated based on locations of all suppliers and allocated as per the declared unit. Energy resources were considered and taken into account as disclosed. Furthermore, the management of on-site waste was handled.
- **Module (C1):** Products at the end of their service life are dismantled without requiring additional equipment or energy.
- **Module (C2):** 100 kms of distance is taken as an average for the transportation of waste to the recycling facility.
- **Module (C3,C4):** After deconstruction, steel is prepared for material recycling (95%) or landfilling (5%), mineral wool is prepared for landfilling (100%), and the EPDM gasket and HDPE plastic undergoes thermal waste treatment which, due to an efficiency below 60%, is included in module C4.
- **Module (D):** The recycled steel is credited with avoiding the impacts of primary steel production. Additionally, the energy recovered from incineration is credited by substituting energy produced from conventional sources. In order to avoid double counting, the recycled content of steel already present in the product was deducted when calculating the recycling benefits in Module D.

ALLOCATION

The allocation is carried out in accordance with the provisions of EN 15804. The information provided for the year 2024 includes all products produced at both manufacturing facilities during that year. Due to the similarity in production resources and processing stages, a weighted average based on product weight for both facilities was applied. Input and output data from production are inventoried and allocated on a mass basis to the declared unit of 1 kilogram.

Data Quality

For foreground data, the LCA study relies on primary data gathered by Ciecholewski-Wentylacje Sp. z o.o. All relevant background data sets have been sourced from the LCA for Experts, version 10.9.1.19. – software's database Sphera Managed LCA Content Databases v2025 and from available EPD.

Geographic Representativeness

The specified land or region where the product system is manufactured and managed is Poland, Europe.

1. ENVIRONMENTAL IMPACT DATA – Ventilation noise silencers

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	1.19E-02	MND	MND	MND	0.00E+00	1.67E-05	7.04E-06	1.35E-05	-3.15E-03
Climate change – total	kg CO2e	2.94E+00	MND	MND	MND	0.00E+00	9.60E-03	4.26E-03	2.20E-02	-1.37E+00
Climate change – fossil	kg CO2e	3.03E+00	MND	MND	MND	0.00E+00	9.72E-03	4.26E-03	2.20E-02	-1.37E+00
Climate change – biogenic	kg CO2e	-9.13E-02	MND	MND	MND	0.00E+00	-2.13E-04	-4.12E-07	-3.07E-06	3.05E-04
Climate change – LULUC	kg CO2e	2.04E-03	MND	MND	MND	0.00E+00	9.96E-05	9.01E-07	6.71E-06	-6.67E-04
Abiotic depletion of fossil resources	MJ	3.56E+01	MND	MND	MND	0.00E+00	1.24E-01	4.31E-02	2.93E-02	-1.05E+01
Eutrophication, aquatic freshwater	kg PO4e	9.24E-04	MND	MND	MND	0.00E+00	2.61E-08	1.47E-09	2.95E-09	-4.84E-07
Eutrophication, aquatic marine	kg Ne	2.69E-03	MND	MND	MND	0.00E+00	7.05E-06	1.55E-06	3.43E-06	-7.59E-04
Eutrophication, terrestrial	mol Ne	2.81E-02	MND	MND	MND	0.00E+00	7.50E-05	1.71E-05	4.11E-05	-8.17E-03
Abiotic depletion. minerals & metals	kg Sbe	2.71E-05	MND	MND	MND	0.00E+00	6.44E-10	5.82E-10	1.32E-10	-1.45E-08
Ozone depletion	kg CFC11e	8.88E-08	MND	MND	MND	0.00E+00	1.61E-15	8.74E-14	6.85E-15	-8.22E-13
Photochemical ozone formation	kg NMVOCe	1.08E-02	MND	MND	MND	0.00E+00	1.50E-05	4.28E-06	1.04E-05	-2.54E-03
Water use	m3e depr.	7.30E-01	MND	MND	MND	0.00E+00	4.43E-05	2.86E-05	1.94E-03	-9.64E-03

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all 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 experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	4.54E+00	MND	MND	MND	0.00E+00	1.61E-01	1.26E-02	2.15E-02	-1.64E+00
Human toxicity, cancer effects	CTUh	7.34E-10	MND	MND	MND	0.00E+00	2.18E-12	5.24E-13	4.56E-13	-2.17E-09
Human toxicity, non-cancer effects	CTUh	6.00E-09	MND	MND	MND	0.00E+00	1.22E-10	1.10E-11	1.20E-11	1.62E-09
Ionizing radiation, human health	kBq U235e	1.43E-02	MND	MND	MND	0.00E+00	3.36E-05	3.62E-06	6.90E-05	1.79E-02
Particulate matter	Incidence	1.17E-07	MND	MND	MND	0.00E+00	1.42E-10	6.74E-11	1.56E-10	-4.64E-08
Land use	Pt	2.12E+00	MND	MND	MND	0.00E+00	5.48E-02	1.66E-02	6.17E-03	7.62E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	3.53E+00	MND	MND	MND	0.00E+00	9.35E-03	2.57E-02	5.43E-03	1.58E+00
Use of renewable primary energy resources used as raw materials (PERM)	MJ	2.80E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	3.56E+00	MND	MND	MND	0.00E+00	9.35E-03	2.57E-02	5.43E-03	1.58E+00
Use of non renewable primary energy resources used as energy carrier (PENRE)	MJ	3.89E+01	MND	MND	MND	0.00E+00	1.24E-01	4.31E-02	2.93E-02	-1.05E+01
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non renewable primary energy resources (PENRT)	MJ	3.89E+01	MND	MND	MND	0.00E+00	1.24E-01	4.31E-02	2.93E-02	-1.05E+01
Use of non renewable secondary fuels (NRSF)	MJ	2.34E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials (SM)	kg	2.86E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW)	m3	7.16E-02	MND	MND	MND	0.00E+00	4.62E-06	8.06E-06	4.66E-05	-8.06E-04

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	8.65E-02	MND	MND	MND	0.00E+00	4.98E-12	5.82E-11	7.40E-12	3.79E-09
Non-hazardous waste	kg	7.20E-01	MND	MND	MND	0.00E+00	1.73E-05	2.66E-05	9.65E-02	-2.10E-02
Radioactive waste disposed	kg	4.69E-04	MND	MND	MND	0.00E+00	2.34E-07	3.06E-08	5.03E-07	1.72E-04

OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.63E-01	MND	MND	MND	0.00E+00	0.00E+00	8.96E-01	0.00E+00	-8.24E-01
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy electrical	MJ	1.80E-03	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	3.14E-02	-3.32E-02
Exported energy thermal	MJ	3.29E-03	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	5.63E-02	-5.96E-02

2. ENVIRONMENTAL IMPACT DATA – Ventilation fittings

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	1.19E-02	MND	MND	MND	0.00E+00	1.67E-05	7.32E-06	1.17E-05	-3.07E-03
Climate change – total	kg CO2e	3.00E+00	MND	MND	MND	0.00E+00	9.60E-03	4.42E-03	5.32E-02	-1.34E+00
Climate change – fossil	kg CO2e	3.09E+00	MND	MND	MND	0.00E+00	9.72E-03	4.42E-03	5.32E-02	-1.34E+00
Climate change – biogenic	kg CO2e	-9.33E-02	MND	MND	MND	0.00E+00	-2.13E-04	-4.27E-07	4.80E-07	2.73E-04
Climate change – LULUC	kg CO2e	2.05E-03	MND	MND	MND	0.00E+00	9.96E-05	9.35E-07	4.60E-06	-6.47E-04
Abiotic depletion of fossil resources	MJ	3.65E+01	MND	MND	MND	0.00E+00	1.24E-01	4.48E-02	2.53E-02	-1.03E+01
Eutrophication, aquatic freshwater	kg PO4e	9.54E-04	MND	MND	MND	0.00E+00	2.61E-08	1.53E-09	2.58E-09	-4.79E-07
Eutrophication, aquatic marine	kg Ne	2.74E-03	MND	MND	MND	0.00E+00	7.05E-06	1.61E-06	2.96E-06	-7.39E-04
Eutrophication, terrestrial	mol Ne	2.76E-02	MND	MND	MND	0.00E+00	7.50E-05	1.77E-05	4.17E-05	-7.96E-03
Abiotic depletion, minerals & metals	kg Sbe	2.80E-05	MND	MND	MND	0.00E+00	6.44E-10	6.04E-10	1.18E-10	-1.54E-08
Ozone depletion	kg CFC11e	9.19E-08	MND	MND	MND	0.00E+00	1.61E-15	9.07E-14	7.32E-15	-9.85E-13
Photochemical ozone formation	kg NMVOCe	1.10E-02	MND	MND	MND	0.00E+00	1.50E-05	4.45E-06	8.82E-06	-2.47E-03
Water use	m3e depr.	7.44E-01	MND	MND	MND	0.00E+00	4.43E-05	2.97E-05	4.59E-03	-9.41E-03

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all 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 experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	4.40E+00	MND	MND	MND	0.00E+00	1.61E-01	1.31E-02	1.68E-02	-1.63E+00
Human toxicity. cancer effects	CTUh	7.05E-10	MND	MND	MND	0.00E+00	2.18E-12	5.44E-13	5.17E-13	-2.10E-09
Human toxicity. non-cancer effects	CTUh	6.12E-09	MND	MND	MND	0.00E+00	1.22E-10	1.14E-11	9.00E-12	1.51E-09
Ionizing radiation, human health	kBq U235e	1.24E-02	MND	MND	MND	0.00E+00	3.36E-05	3.76E-06	1.01E-04	1.73E-02
Particulate matter	Incidence	1.19E-07	MND	MND	MND	0.00E+00	1.42E-10	7.00E-11	1.23E-10	-4.50E-08
Land use	Pt	1.84E+00	MND	MND	MND	0.00E+00	5.48E-02	1.73E-02	5.49E-03	6.23E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	3.53E+00	MND	MND	MND	0.00E+00	9.35E-03	2.67E-02	5.05E-03	1.45E+00
Use of renewable primary energy resources used as raw materials (PERM)	MJ	4.13E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	3.57E+00	MND	MND	MND	0.00E+00	9.35E-03	2.67E-02	5.05E-03	1.45E+00
Use of non renewable primary energy resources used as energy carrier (PENRE)	MJ	4.00E+01	MND	MND	MND	0.00E+00	1.24E-01	4.48E-02	2.53E-02	-1.03E+01
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non renewable primary energy resources (PENRT)	MJ	4.00E+01	MND	MND	MND	0.00E+00	1.24E-01	4.48E-02	2.53E-02	-1.03E+01
Use of non renewable secondary fuels (NRSF)	MJ	4.73E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials (SM)	kg	2.92E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW)	m3	7.15E-02	MND	MND	MND	0.00E+00	4.62E-06	8.37E-06	1.08E-04	-7.99E-04

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	8.91E-02	MND	MND	MND	0.00E+00	4.98E-12	6.05E-11	8.13E-12	3.53E-09
Non-hazardous waste	kg	7.30E-01	MND	MND	MND	0.00E+00	1.73E-05	2.77E-05	5.06E-02	-2.04E-02
Radioactive waste disposed	kg	4.66E-04	MND	MND	MND	0.00E+00	2.34E-07	3.18E-08	6.79E-07	1.66E-04

OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.44E-01	MND	MND	MND	0.00E+00	0.00E+00	9.31E-01	0.00E+00	-7.96E-01
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy electrical	MJ	1.80E-03	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	8.08E-02	-8.26E-02
Exported energy thermal	MJ	3.29E-03	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	1.45E-01	-1.48E-01

3. ENVIRONMENTAL IMPACT DATA – Ventilation dampers type POJCN

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	6.96E-03	MND	MND	MND	0.00E+00	1.67E-05	7.30E-06	6.83E-04	-3.50E-03
Climate change – total	kg CO2e	2.71E+00	MND	MND	MND	0.00E+00	9.60E-03	4.41E-03	1.30E+00	-1.53E+00
Climate change – fossil	kg CO2e	2.71E+00	MND	MND	MND	0.00E+00	9.72E-03	4.41E-03	1.30E+00	-1.53E+00
Climate change – biogenic	kg CO2e	-1.51E-02	MND	MND	MND	0.00E+00	-2.13E-04	-4.27E-07	1.09E-04	3.27E-04
Climate change – LULUC	kg CO2e	1.32E-03	MND	MND	MND	0.00E+00	9.96E-05	9.34E-07	1.30E-04	-7.39E-04
Abiotic depletion of fossil resources	MJ	3.29E+01	MND	MND	MND	0.00E+00	1.24E-01	4.47E-02	6.35E-01	-1.16E+01
Eutrophication, aquatic freshwater	kg PO4e	9.93E-06	MND	MND	MND	0.00E+00	2.61E-08	1.53E-09	1.06E-07	-5.41E-07
Eutrophication, aquatic marine	kg Ne	1.55E-03	MND	MND	MND	0.00E+00	7.05E-06	1.61E-06	2.65E-04	-8.42E-04
Eutrophication, terrestrial	mol Ne	1.67E-02	MND	MND	MND	0.00E+00	7.50E-05	1.77E-05	3.03E-03	-9.07E-03
Abiotic depletion, minerals & metals	kg Sbe	2.77E-05	MND	MND	MND	0.00E+00	6.44E-10	6.03E-10	3.13E-09	-1.67E-08
Ozone depletion	kg CFC11e	2.67E-09	MND	MND	MND	0.00E+00	1.61E-15	9.06E-14	2.37E-13	-1.00E-12
Photochemical ozone formation	kg NMVOCe	5.44E-03	MND	MND	MND	0.00E+00	1.50E-05	4.44E-06	6.93E-04	-2.82E-03
Water use	m3e depr.	3.40E-02	MND	MND	MND	0.00E+00	4.43E-05	2.96E-05	1.61E-01	-1.07E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all 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 experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	6.13E+00	MND	MND	MND	0.00E+00	1.61E-01	1.31E-02	3.39E-01	-1.84E+00
Human toxicity, cancer effects	CTUh	1.44E-09	MND	MND	MND	0.00E+00	2.18E-12	5.43E-13	2.16E-11	-2.40E-09
Human toxicity, non-cancer effects	CTUh	1.10E-08	MND	MND	MND	0.00E+00	1.22E-10	1.14E-11	1.64E-09	1.76E-09
Ionizing radiation, human health	kBq U235e	2.15E-02	MND	MND	MND	0.00E+00	3.36E-05	3.75E-06	3.86E-03	1.98E-02
Particulate matter	Incidence	2.46E-07	MND	MND	MND	0.00E+00	1.42E-10	6.98E-11	4.79E-09	-5.13E-08
Land use	Pt	2.46E+00	MND	MND	MND	0.00E+00	5.48E-02	1.72E-02	1.71E-01	7.88E-01

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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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	2.06E+00	MND	MND	MND	0.00E+00	9.35E-03	2.66E-02	1.49E-01	1.71E+00
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8.33E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	2.14E+00	MND	MND	MND	0.00E+00	9.35E-03	2.66E-02	1.49E-01	1.71E+00
Use of non renewable primary energy resources used as energy carrier (PENRE)	MJ	3.24E+01	MND	MND	MND	0.00E+00	1.24E-01	4.47E-02	6.35E-01	-1.16E+01
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non renewable primary energy resources (PENRT)	MJ	3.24E+01	MND	MND	MND	0.00E+00	1.24E-01	4.47E-02	6.35E-01	-1.16E+01
Use of non renewable secondary fuels (NRSF)	MJ	1.23E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials (SM)	kg	6.60E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW)	m3	6.93E-02	MND	MND	MND	0.00E+00	4.62E-06	8.36E-06	3.81E-03	-9.01E-04

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	3.99E-07	MND	MND	MND	0.00E+00	4.98E-12	6.04E-11	2.93E-10	4.12E-09
Non-hazardous waste	kg	6.62E-02	MND	MND	MND	0.00E+00	1.73E-05	2.76E-05	2.23E-01	-2.33E-02
Radioactive waste disposed	kg	7.50E-06	MND	MND	MND	0.00E+00	2.34E-07	3.18E-08	2.56E-05	1.90E-04

OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.59E-01	MND	MND	MND	0.00E+00	0.00E+00	9.29E-01	0.00E+00	-9.11E-01
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy electrical	MJ	1.24E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	1.46E+00	-6.12E-02
Exported energy thermal	MJ	2.26E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	2.74E+00	-1.10E-01

4. ENVIRONMENTAL IMPACT DATA – Ventilation dampers type POJCS

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	7.24E-03	MND	MND	MND	0.00E+00	1.67E-05	7.16E-06	6.89E-04	-3.48E-03
Climate change – total	kg CO2e	2.79E+00	MND	MND	MND	0.00E+00	9.60E-03	4.33E-03	1.37E+00	-1.53E+00
Climate change – fossil	kg CO2e	2.80E+00	MND	MND	MND	0.00E+00	9.72E-03	4.33E-03	1.37E+00	-1.53E+00
Climate change – biogenic	kg CO2e	-1.79E-02	MND	MND	MND	0.00E+00	-2.13E-04	-4.18E-07	1.11E-04	2.76E-04
Climate change – LULUC	kg CO2e	1.90E-03	MND	MND	MND	0.00E+00	9.96E-05	9.15E-07	1.31E-04	-7.31E-04
Abiotic depletion of fossil resources	MJ	3.44E+01	MND	MND	MND	0.00E+00	1.24E-01	4.38E-02	6.46E-01	-1.18E+01
Eutrophication, aquatic freshwater	kg PO4e	1.80E-05	MND	MND	MND	0.00E+00	2.61E-08	1.50E-09	1.08E-07	-5.55E-07
Eutrophication, aquatic marine	kg Ne	1.64E-03	MND	MND	MND	0.00E+00	7.05E-06	1.58E-06	2.67E-04	-8.39E-04
Eutrophication, terrestrial	mol Ne	1.77E-02	MND	MND	MND	0.00E+00	7.50E-05	1.74E-05	3.06E-03	-9.04E-03
Abiotic depletion, minerals & metals	kg Sbe	2.76E-05	MND	MND	MND	0.00E+00	6.44E-10	5.91E-10	3.19E-09	-1.95E-08
Ozone depletion	kg CFC11e	4.57E-09	MND	MND	MND	0.00E+00	1.61E-15	8.88E-14	2.42E-13	-1.39E-12
Photochemical ozone formation	kg NMVOCe	5.77E-03	MND	MND	MND	0.00E+00	1.50E-05	4.35E-06	6.98E-04	-2.80E-03
Water use	m3e depr.	6.35E-02	MND	MND	MND	0.00E+00	4.43E-05	2.90E-05	1.67E-01	-1.07E-02

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ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	7.19E+00	MND	MND	MND	0.00E+00	1.61E-01	1.28E-02	3.43E-01	-1.90E+00
Human toxicity, cancer effects	CTUh	1.44E-09	MND	MND	MND	0.00E+00	2.18E-12	5.32E-13	2.20E-11	-2.36E-09
Human toxicity, non-cancer effects	CTUh	1.18E-08	MND	MND	MND	0.00E+00	1.22E-10	1.12E-11	1.65E-09	1.62E-09
Ionizing radiation, human health	kBq U235e	2.27E-02	MND	MND	MND	0.00E+00	3.36E-05	3.68E-06	3.95E-03	1.94E-02
Particulate matter	Incidence	2.47E-07	MND	MND	MND	0.00E+00	1.42E-10	6.85E-11	4.86E-09	-5.08E-08
Land use	Pt	2.65E+00	MND	MND	MND	0.00E+00	5.48E-02	1.69E-02	1.75E-01	5.33E-01

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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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	2.21E+00	MND	MND	MND	0.00E+00	9.35E-03	2.61E-02	1.52E-01	1.53E+00
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8.33E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	2.29E+00	MND	MND	MND	0.00E+00	9.35E-03	2.61E-02	1.52E-01	1.53E+00
Use of non renewable primary energy resources used as energy carrier (PENRE)	MJ	3.45E+01	MND	MND	MND	0.00E+00	1.24E-01	4.38E-02	6.46E-01	-1.18E+01
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non renewable primary energy resources (PENRT)	MJ	3.45E+01	MND	MND	MND	0.00E+00	1.24E-01	4.38E-02	6.46E-01	-1.18E+01
Use of non renewable secondary fuels (NRSF)	MJ	1.23E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials (SM)	kg	6.60E-02	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW)	m3	7.00E-02	MND	MND	MND	0.00E+00	4.62E-06	8.20E-06	3.94E-03	-9.26E-04

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	4.55E-06	MND	MND	MND	0.00E+00	4.98E-12	5.92E-11	2.99E-10	3.77E-09
Non-hazardous waste	kg	6.67E-02	MND	MND	MND	0.00E+00	1.73E-05	2.71E-05	2.24E-01	-2.30E-02
Radioactive waste disposed	kg	2.15E-05	MND	MND	MND	0.00E+00	2.34E-07	3.11E-08	2.62E-05	1.86E-04

OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.59E-01	MND	MND	MND	0.00E+00	0.00E+00	9.11E-01	0.00E+00	-8.93E-01
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy electrical	MJ	1.24E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	1.57E+00	-1.67E-01
Exported energy thermal	MJ	2.26E-01	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	2.93E+00	-2.99E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, medium voltage, production mix (Reference product: electricity, medium voltage), Poland, 2024
Electricity CO2e / kWh	0.664 kg CO2 / kWh

End of life scenario documentation

Scenario parameter	Value
Collection process – % collected separately	100
Collection process – % collected with mixed waste	-
Recovery process – % for re-use	-
Steel – % for recycling	95
Steel– % for final deposition	5
EPDM Gasket – % for thermal waste treatment	100
Mineral-Wool– % for final deposition	100
HDPE plastic	100
Scenario assumptions for transportation	End-of-life product is transported 100 km with Truck, Euro mix, 24.7t payload capacity

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EPD VERIFICATION:

The verification procedure for this Environmental Product Declaration (EPD) has been carried out in accordance with the requirements of ISO 14025 standards. Once the verification process is complete, the EPD remains valid for a period of 5 years. There is no need to recalculate the parameters contained in the EPD during this period, provided that the data underlying the declaration have not changed substantially.

EPD CONTRIBUTORS

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Note: The sole ownership, liability, and liability of this declaration are with the owner. Construction product declarations may not be comparable if they do not comply with EN 15804. For detailed information on comparability, please refer to EN 15804 and ISO 14025.

EPD Polska Certificate

CERTIFICATE

TYPE III EPD DECLARATION

(ENVIRONMENTAL PRODUCT DECLARATION)

Reg. No. EPD-P 04.12.2025

This document confirms that the Environmental Product Declaration developed by **Ciecholewski-Wentylacje Sp. z o.o.** for:

1. Ventilation noise silencers
2. Ventilation fittings
3. Ventilation dampers type POJCN
4. Ventilation dampers type POJCS

manufactured in accordance with standards:
EN 1505, EN 1506, **EN 1507** and **EN 12237**
meets the requirements of standards **EN 15804:2012+A2:2019** and **ISO 14025**, and that the data contained therein has been prepared correctly.

The Declaration was published on December 31, 2025 and is valid until December 31, 2030, or until it is deregistered or its publication on the website www.epd.org.pl is discontinued.

Authenticity of this certificate can be confirmed in the public register at www.epd.org.pl

Daniel Wałach, Ph.D.
EPD Polska Verifier

Grzegorz Suwara
CEO Multicert Sp. z o.o.

Warsaw, December 31, 2025