ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Vexve Butterfly Valves DN300 – DN1000
Vexve Oy

EPD HUB, HUB-3463
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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

MANUFACTURER

Manufacturer	Vexve Oy
Address	Pajakatu 11, 38200 Sastamala, Finland
Contact details	vexve@vexve.com
Website	https://www.vexve.com/fi

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Arttu Unkila, Vexve
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Elisabet Amat, as an authorized verifier acting for EPD Hub Limited.

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Vexve Butterfly Valves DN300-DN1000
Additional labels	This EPD covers Vexve Butterfly Valves in the range of DN300 to DN1000 (see complete range in Annex)
Product reference	Vexve Butterfly Valve DN 500, painted, product number BFS500W, welding /welding-end
Place(s) of raw material origin	Europe, Asia
Place of production	Finland, 38200 Sastamala
Period for data	Calendar year 2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	-13 / -11 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	4,61
GWP-total, A1-A3 ($kgCO_2e$)	4,60
Secondary material, inputs (%)	48,3
Secondary material, outputs (%)	85
Total energy use, A1-A3 (kWh)	18,6
Net freshwater use, A1-A3 (m^3)	0,04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Vexve is the leading valve brand for the heating and cooling needs of cities and industry. Vexve valves are manufactured in Finland, and they are used in district energy networks, power plants, and heating and cooling systems of buildings all around the world. The brand offers wide selection of ball and butterfly valves needed in the operation of district heating and cooling systems from shut-off valves to control valves, and special-purpose valves such as hot-tapping and branching valves. Vexve also provides smart monitoring and control solutions, specifically designed to improve the efficiency and reliability of the underground district energy networks. Vexve product portfolio for the HVAC/R systems includes ball and balancing valves in steel and stainless steel with various connection types, including welded, threaded, flanged and press-fit connections.

PRODUCT DESCRIPTION

Vexve butterfly valves – reliability for heating and cooling Our Vexve brand has a complete range of valves, and innovative control and monitoring solutions specifically designed for district heating and cooling. Our safe and secure valves are designed and manufactured in Finland from high-quality materials. Vexve high-performance butterfly valves are optimal for shut-off and control duty in heating and cooling applications in distribution networks, pumping stations and powerplants. The maintenance-free valves are designed to last the entire network life cycle. Our butterfly valves have a fully welded body and the flow bore is optimised to achieve the maximum KV value and reduce your pumping costs. They are 100% tight, completely maintenance-free and offer reliable performance, with a significantly smaller carbon footprint than large-diameter ball valves. Vexve butterfly valves are high-performing solutions for your heating and cooling needs. Vexve is the leading European provider of valve solutions for the energy sector and selected energy-intensive industries. We are known for our superior product quality, the expertise of our personnel, and reliability as a partner. We deliver Vexve products to over 70 countries and employ over 900 people with factories in Finland, Denmark, Czech Republic, Germany and China. We aim to be the leading provider of mission-critical valve solutions in the transition to a low-carbon future.

Further information can be found at https://www.vexve.com/fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	99,6	Europe and Asia
Minerals	-	-
Fossil materials	0,4	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	0,00035

FUNCTIONAL UNIT AND SERVICE LIFE

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

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	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

Modules not declared = MND. Modules not relevant = MNR

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.

The valve is made of carbon steel, stainless steel, rubber and PTFE. Disc components are received as ready-made. Steel is received as castings, forgings, bars or pipes to the factory and components are manufactured by processing the steel raw material. The processes used to process the steel are milling, drilling, cutting and pressing. Scrap material derived from the production is sent to recycling directly from the factory. Rubber and PTFE parts are sourced and directly consumed in the assembly of the valve.

The valve consists of the following components:
- body,
- disc,
- sealing,
- stem,
- stem sealing parts.

Optional combinations of 2 connection ends:
- flange end,
- weld end.

The valve can be operated by manual gear.

Polymer parts include O-rings made of rubber and bearings partly made of PTFE.

Additional processes used to manufacture the valves are welding, testing, painting and packing. The manufacturing process requires electricity and fuels for powering the production equipment. Lubricating oil is used for maintenance of manufacturing machines and to ensure smooth manufacturing process. Wastewater treatment is also included.

The transportation information is based on the actual distances between the

supplier and Vexve for each component where information was available.

The production loss is metal scrap from the processing of metals. The obtained scrap from the metal processing is sent to authorized recycling facility, and the transportation is defined as the distance between Vexve and the facility in Finland.

A wooden pallet and additional wood, metal wire, paper, board, and packaging film are used as packaging materials for transporting the valves to the dedicated marketplaces. The packaging material transportation distances are defined as the distance between the suppliers and Vexve, all located in Finland.

The ancillaries of the production are tap water, mineral oils for lubrication purposes and welding shielding gas. Wastewater is discharged to treatment facilities via pipes. Welding shielding gas cannot be collected and is diffused in air. Mineral oil is collected and sent for waste treatment. The transportation of mineral oils is defined as the distance between Vexve and the treatment facility in Finland.

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.

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

Distance of transportation from production to building site is estimated from the countries with the largest sales volume, the transportation method is mainly lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full loads. It may vary but as the role of transportation emission in total results are small, the variety is assumed to be negligible. Transportation does not cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products.

PRODUCT USE AND MAINTENANCE (B1-B7)

A Vexve Butterfly Valve needs no maintenance, repair or refurbishment. 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.

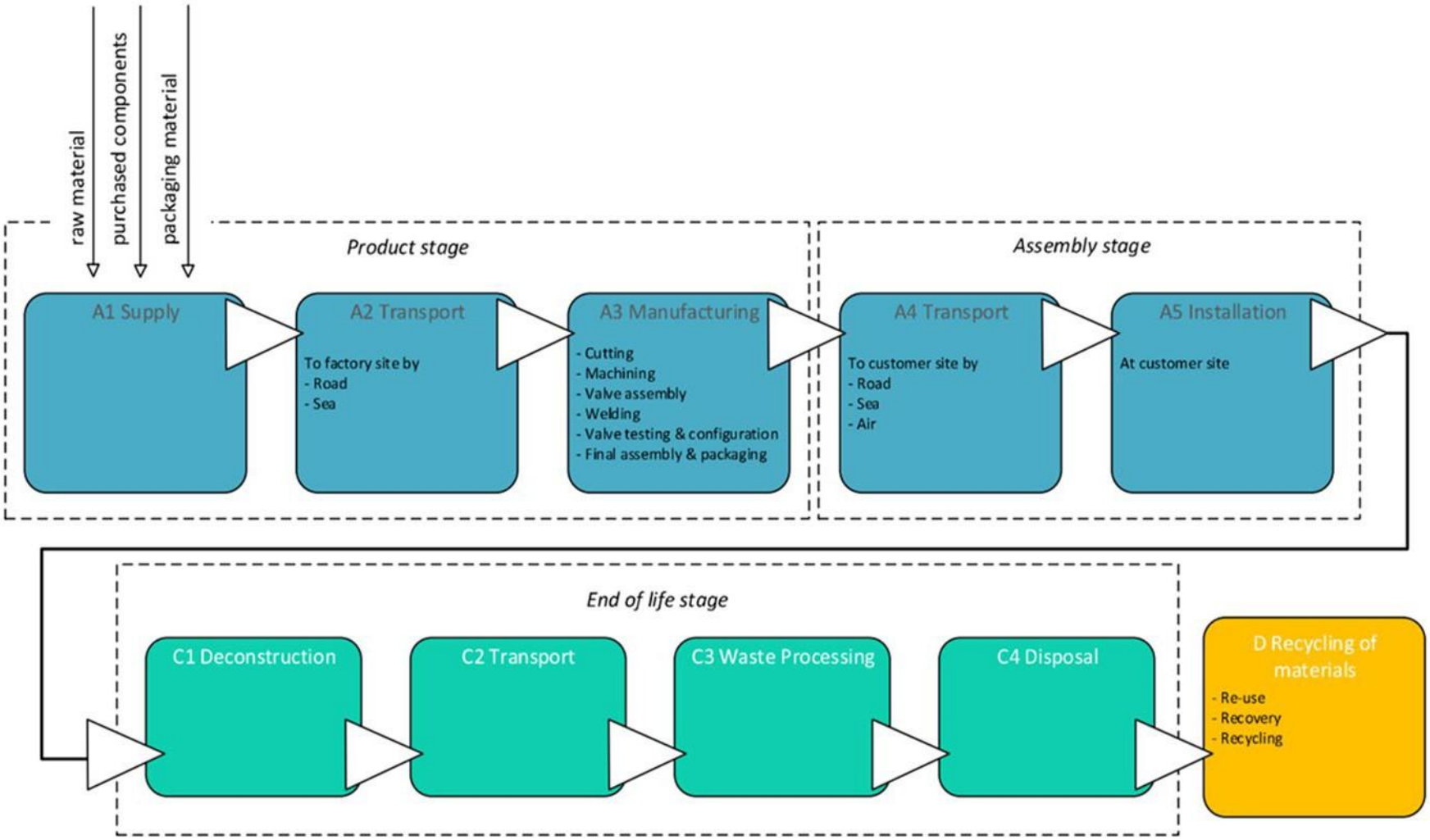
PRODUCT END OF LIFE (C1-C4, D)

The end-of-life product is assumed to be sent to the closest facilities by lorry, transportation distance is assumed to be 50 km (C2).

Module C3 accounts for energy and resource inputs for sorting and treating of steel, rubber and PTFE for recycling and incineration with energy recovery with efficiency greater than 60%. 85 % of steel is sent for recycling. Additionally, waste that is incinerated without energy recovery or landfilled is included in Module C4.

Due to the material and energy recovery potential of parts in the product and in packaging, recycled raw materials lead to avoided virgin material production and the energy recovered from incineration replaces electricity and heat from primary sources. Benefits and loads from incineration and recycling are included in Module D. The benefits and burdens of waste packaging in A5 are also considered in module D.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

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/AC2021 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

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3 (%)	-13 /- 11 %

Vexve Butterfly Valve (painted) DN500 has been selected as the representative valve. It has two different connection possibilities; for this product group the welding-welding end was chosen as the representative connection. Initial calculations revealed that it was closest to the general average of mass for Vexve Butterfly Valve.

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[1)]	kg CO_2e	3,97E+00	3,15E-01	3,02E-01	4,59E+00	2,47E+00	2,55E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,85E-02	2,63E-02	9,63E-04	-1,01E+00
GWP – fossil	kg CO_2e	3,97E+00	3,15E-01	3,14E-01	4,60E+00	2,47E+00	1,28E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,85E-02	2,62E-02	9,63E-04	-1,01E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,27E-02	-1,27E-02	0,00E+00	1,27E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,86E-04
GWP – LULUC	kg CO_2e	3,48E-03	1,27E-04	2,07E-04	3,81E-03	1,00E-03	7,28E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,15E-05	2,73E-05	5,39E-07	1,41E-04
Ozone depletion pot.	kg CFC_{-11}e	1,42E-07	6,22E-09	7,00E-09	1,55E-07	4,88E-08	9,84E-12	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,63E-10	2,53E-10	2,73E-11	-2,36E-09
Acidification potential	mol H^+e	2,00E-02	9,59E-04	7,07E-04	2,17E-02	7,53E-03	4,43E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,36E-05	2,49E-04	6,68E-06	-3,14E-03
EP-freshwater[2)]	kg Pe	1,47E-03	2,49E-05	3,10E-05	1,53E-03	1,96E-04	1,69E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,27E-06	1,26E-05	7,75E-08	-4,38E-04
EP-marine	kg Ne	3,80E-03	3,00E-04	1,79E-04	4,28E-03	2,35E-03	3,95E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,63E-05	5,54E-05	2,67E-06	-7,95E-04
EP-terrestrial	mol Ne	3,98E-02	3,27E-03	1,32E-03	4,44E-02	2,56E-02	1,77E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,86E-04	6,24E-04	2,78E-05	-8,73E-03
POCP ("smog")[3)]	kg NMVOCe	1,32E-02	1,43E-03	1,00E-03	1,57E-02	1,12E-02	5,44E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,27E-04	1,84E-04	9,96E-06	-3,16E-03
ADP-minerals & metals[4)]	kg Sbe	7,53E-05	1,39E-06	5,98E-07	7,73E-05	1,10E-05	4,87E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,27E-07	1,36E-06	1,50E-09	-2,62E-08
ADP-fossil resources	MJ	4,45E+01	4,38E+00	5,10E+00	5,40E+01	3,44E+01	8,51E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,97E-01	2,76E-01	2,31E-02	-8,78E+00
Water use[5)]	m^3e depr.	1,43E+00	2,50E-02	4,22E-02	1,50E+00	1,96E-01	4,60E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,27E-03	5,67E-03	6,69E-05	-1,43E-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	3,28E-07	1,83E-08	6,61E-09	3,53E-07	1,43E-07	5,78E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,65E-09	3,46E-09	1,52E-10	-5,54E-08
Ionizing radiation[6)]	kBq U235e	2,77E-01	8,15E-03	9,51E-03	2,95E-01	6,43E-02	3,78E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,43E-04	9,95E-04	1,46E-05	6,51E-02
Ecotoxicity (freshwater)	CTUe	1,37E+01	7,76E-01	5,76E-01	1,50E+01	6,12E+00	1,20E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,07E-02	2,11E-01	3,93E-03	-1,86E+00
Human toxicity, cancer	CTUh	6,34E-09	5,81E-11	4,29E-11	6,44E-09	4,56E-10	8,80E-13	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,26E-12	1,88E-11	1,74E-13	1,04E-10
Human tox. non-cancer	CTUh	1,80E-07	2,66E-09	1,56E-09	1,84E-07	2,08E-08	3,57E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,41E-10	1,19E-09	4,15E-12	-3,42E-10
SQP[7)]	-	1,80E+01	1,85E+00	1,33E+00	2,12E+01	1,44E+01	9,73E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,66E-01	5,19E-01	4,55E-02	-1,53E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	8,77E+00	1,05E-01	1,63E-01	9,04E+00	8,31E-01	-1,19E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,61E-03	4,26E-02	2,24E-04	4,34E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,05E-01	1,05E-01	0,00E+00	-1,05E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,03E-03
Total use of renew. PER	MJ	8,77E+00	1,05E-01	2,67E-01	9,14E+00	8,31E-01	-2,24E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,61E-03	4,26E-02	2,24E-04	4,37E-01
Non-re. PER as energy	MJ	4,45E+01	4,39E+00	4,45E+00	5,33E+01	3,44E+01	-3,96E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,97E-01	2,46E-01	1,61E-02	-8,78E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	3,17E-03	3,17E-03	0,00E+00	-3,17E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,71E-01
Total use of non-re. PER	MJ	4,45E+01	4,39E+00	4,46E+00	5,33E+01	3,44E+01	-4,00E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,97E-01	2,46E-01	1,61E-02	-8,60E+00
Secondary materials	kg	4,96E-01	2,39E-03	4,26E-03	5,03E-01	1,88E-02	1,99E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,17E-04	3,20E-04	5,82E-06	7,14E-01
Renew. secondary fuels	MJ	9,41E-04	2,59E-05	2,43E-03	3,40E-03	2,03E-04	1,74E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,35E-06	1,45E-05	1,20E-07	3,00E-05
Non-ren. secondary fuels	MJ	4,76E-08	0,00E+00	0,00E+00	4,76E-08	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	3,57E-02	6,91E-04	1,01E-03	3,74E-02	5,43E-03	-9,62E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,28E-05	1,51E-04	2,26E-05	-8,12E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3,15E+00	6,82E-03	9,04E-03	3,17E+00	5,36E-02	1,79E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,19E-04	3,44E-03	2,56E-05	4,22E-02
Non-hazardous waste	kg	1,15E+01	1,65E-01	3,26E+00	1,49E+01	1,30E+00	2,70E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,50E-02	6,68E-02	2,49E-03	-2,73E+00
Radioactive waste	kg	7,02E-05	2,04E-06	2,40E-06	7,46E-05	1,61E-05	9,61E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,86E-07	2,45E-07	3,56E-09	1,68E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	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	2,91E+00	2,91E+00	0,00E+00	1,00E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,50E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	6,85E-07	0,00E+00	0,00E+00	6,85E-07	0,00E+00	5,08E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	9,45E-04	0,00E+00	0,00E+00	9,45E-04	0,00E+00	6,74E-02	MND	MND	MND	MND	MND	MND	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	2,81E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,29E-03	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,93E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,86E-02	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	3,95E+00	3,13E-01	3,13E-01	4,58E+00	2,46E+00	1,34E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,83E-02	2,62E-02	9,53E-04	-1,00E+00
Ozone depletion Pot.	kg CFC_{-11}e	1,56E-07	4,96E-09	5,66E-09	1,67E-07	3,89E-08	8,05E-12	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,49E-10	2,10E-10	2,17E-11	-3,17E-09
Acidification	kg SO_2e	1,65E-02	7,38E-04	5,83E-04	1,78E-02	5,80E-03	3,28E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,43E-05	2,00E-04	4,94E-06	-2,47E-03
Eutrophication	kg PO_4^{3}e	2,62E-03	1,88E-04	5,63E-04	3,37E-03	1,48E-03	1,72E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,68E-05	2,86E-05	1,58E-06	-5,40E-04
POCP (“smog”)	kg C_2H_4e	1,28E-03	6,91E-05	6,14E-05	1,41E-03	5,42E-04	4,46E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,13E-06	1,19E-05	4,70E-07	-5,65E-04
ADP-elements	kg Sbe	9,22E-05	1,35E-06	5,88E-07	9,41E-05	1,07E-05	4,73E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-07	1,36E-06	1,47E-09	-3,51E-08
ADP-fossil	MJ	4,00E+01	4,25E+00	4,94E+00	4,92E+01	3,33E+01	7,86E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,84E-01	2,60E-01	2,29E-02	-9,93E+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[9)]	kg CO_2e	3,97E+00	3,15E-01	3,14E-01	4,60E+00	2,47E+00	1,28E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,85E-02	2,63E-02	9,63E-04	-1,01E+00

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 - CH4 fossil, CH4 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 CO2 is set to zero.

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elisabet Amat, as an authorized verifier acting for EPD Hub Limited.
15.06.2025

ANNEX

Product number	Weight (kg)
Control and shut-off butterfly valves, full bore, flange/flange, Δp = 16 bar	
BFC300F1/E	102
BFC350F1/E	136,7
BFC400F1/E	174
BFC450F1/E	230
BFC500F1/E	282
BFC600F1/E	460
BFC700F1/E	581
BFC800F1/E	904
Control and shut-off butterfly valves, full bore, flange/flange, Δp = 25 bar	
BFC300F2/E	121
BFC350F2/E	168,33
BFC400F2/E	174
BFC450F2/E	285
BFC500F2/E	351
BFC600F2/E	515
BFC700F2/E	701
BFC800F2/E	1073
Control and shut-off butterfly valves, full bore, welding/welding, EN(DIN), Δp = 16 bar	
BFC300W1/E	60
BFC350W1/E	74
BFC400W1/E	95
BFC450W1/E	136
BFC500W1/E	160
BFC600W1/E	277
BFC700W1/E	392
BFC800W1/E	663
Control and shut-off butterfly valves, full bore, welding/welding, EN(DIN), Δp = 25 bar	
BFC300W2/E	60
BFC350W2/E	74
BFC400W2/E	95
BFC450W2/E	136
BFC500W2/E	160
BFC600W2/E	277
BFC700W2/E	392
BFC800W2/E	663
Shut-off butterfly valves, full bore, flange/flange, Δp = 16 bar	
BFS300F1/E	97
BFS350F1/E	131,2
BFS400F1/E	167
BFS450F1/E	222
BFS500F1/E	274
BFS600F1/E	445
BFS700F1/E	565
BFS800F1/E	869
Shut-off butterfly valves, full bore, flange/flange, Δp = 25 bar	
BFS300F2/E	116

**/E = Valve without manual gear*

BFS350F2/E	163,91
BFS400F2/E	212
BFS450F2/E	277
BFS500F2/E	342
BFS600F2/E	500
BFS700F2/E	685
BFS800F2/E	1039
Shut-off butterfly valves, full bore, welding/welding, EN(DIN), Δp = 16 bar	
BFS300W1/E	54
BFS350W1/E	68
BFS400W1/E	89
BFS450W1/E	128
BFS500W1/E	152
BFS600W1/E	262
BFS700W1/E	376
BFS800W1/E	628
Shut-off butterfly valves, full bore, welding/welding, EN(DIN), Δp = 25 bar	
BFS300W2/E	54
BFS350W2/E	68
BFS400W2/E	89
BFS450W2/E	128
BFS500W2/E	152
BFS600W2/E	262
BFS700W2/E	376
BFS800W2/E	628

Shut-off butterfly valves, reduce bore, welding/welding, EN(DIN), Δp = 16 bar	
BRS900W1/E	833
BRS1000W1/E	1049
Shut-off butterfly valves, reduce bore, welding/welding, EN(DIN), Δp = 25 bar	
BRS900W2/E	833
BRS1000W2/E	1049
Control and shut-off butterfly valves, reduce bore, welding/welding, EN(DIN), Δp = 16 bar	
BRC900W1/E	892
BRC1000W1/E	1113
Control and shut-off butterfly valves, reduce bore, welding/welding, EN(DIN), Δp = 25 bar	
BRC900W2/E	892
BRC1000W2/E	1113
Shut-off butterfly valves, reduce bore, flange/flange, EN(DIN), Δp = 16 bar	
BRS900F1/E	1144
BRS1000F1/E	1509
Shut-off butterfly valves, reduce bore, flange/flange, EN(DIN), Δp = 25 bar	
BRS900F2/E	1347
BRS1000F2/E	1753
Control and shut-off butterfly valves, reduce bore, flange/flange, EN(DIN), Δp = 16 bar	
BRC900F1/E	1199
BRC1000F1/E	1573

**/E = Valve without manual gear*

Control and shut-off butterfly valves, reduce bore, flange/flange, EN(DIN), Δp = 25	
BRC900F2/E	1406
BRC1000F2/E	1817
Shut-off butterfly valves, reduce bore, welding/welding, GOST, Δp = 16 bar	
BRS900W1/GS/E	837
BRS1000W1/GS/E	837
Shut-off butterfly valves, reduce bore, welding/welding, GOST, Δp = 25 bar	
BRS900W2/GS/E	837
BRS1000W2/GS/E	1058
Control and shut-off butterfly valves, reduce bore, welding/welding, GOST, Δp = 16 bar	
BRC900W1/GS/E	896
BRC1000W1/GS/E	1122
Control and shut-off butterfly valves, reduce bore, welding/welding, GOST, Δp = 25 bar	
BRC900W2/GS/E	896
BRC1000W2/GS/E	1122

**/E = Valve without manual gear*