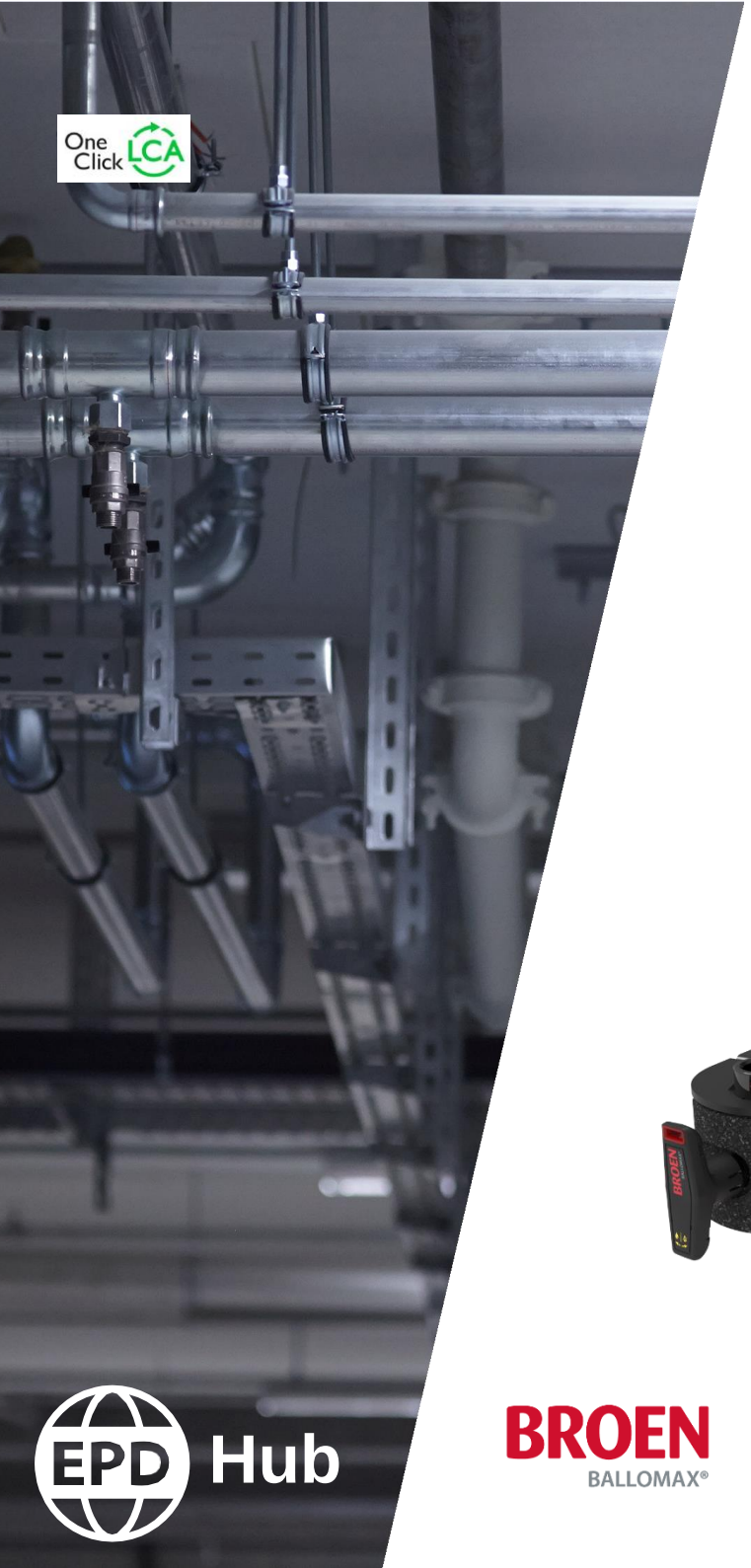


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2:2019 & ISO 14025 / ISO 21930

BROEN BALLOMAX®
Main stop valves

- Carbon steel
- Painted
- Full and Reduced bore
- Low stem
- Wall mounts
- Isolation shells

EPD HUB, HUB-1159

Publishing date 22 February 2024
Last updated on 11 March 2024
Valid until 22 February 2029

GENERAL INFORMATION

MANUFACTURER

Manufacturer	BROEN A/S
Address	Skovvej 30, DK-5610 Assens
Contact details	BROEN@BROEN.com
Website	https://www.BROEN.com/

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 1.0, 1 Feb 2022
Sector	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	BROEN (A/S), Ibrahim Khaled Matar
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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	BROEN BALLOMAX® Main stop valves
Additional labels	This EPD covers BROEN BALLOMAX® Main stop valves in the range of DN15 to DN25 (See complete range in ANNEX on page 13)
Product reference	BALLOMAX® flex mount DN25 (69603025S78690I) Reduced Bore Female/Copper wallmount with isolation
Place of production	Denmark Skovvej 30, DK-5610 Assens
Period for data	November 2021 - November 2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	-37 % + 6 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	69603025S78690I scaled to 1kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	5,41E+00
GWP-total, A1-A3 (kgCO2e)	5,16E+00
Secondary material, inputs (%)	75
Secondary material, outputs (%)	60
Total energy use, A1-A3 (kWh)	31,1
Total water use, A1-A3 (m3e)	1,33E-01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

BROEN Valve Technologies is a leading international manufacturer of valve technology and we operate on three continents across the world.

BROEN is headquartered in Assens, Denmark and is part of Aalberts N.V. listed on the EuroNext Stock Exchange (NL).

For more than 70 years BROEN has been the global leader in the development and production of valve technology for the control of water, air and gas.

BROEN delivers complete solutions for HVAC building installations and is a leading supplier of district energy valves and valve technology for natural gas.

PRODUCT DESCRIPTION

BROEN BALLOMAX® Main stop valves modern and flexible solution

Based on the heritage from leading edge innovations in Danish district heating, BROEN BALLOMAX® valves offer the most comprehensive range of proven ball valves for distribution and transmission of district energy in residential, commercial and industrial applications and are today a key component in district heating and district cooling networks throughout the world.

The BROEN BALLOMAX® flex brackets offer a range of solutions that are easy to install and designed to maximize the heat efficiency in district heating. The same flex bracket can be used for both single and twin pipes, as both depth and width can be adjusted.
Only one tool is needed to adjust all bolts. The flex bracket is intended to ensure maximum stability and comes with flexible drill holes, reducing the risk of drilling between two bricks.

The insulation shells click tightly around the valve to ensure proper insulation but can be removed without the use of tools. The ergonomic handle can be manually removed without tools and, if necessary, replaced with a lock.
The simple and flexible construction ensures smooth installation of the valve wall brackets and positioning of the valves. The installation guide shows all the steps that need to be followed.

Safety is one of the concepts designed into a BROEN BALLOMAX®. The enormous power rushing through a district heating and cooling system puts great pressure on the components. Consequently, all components of a BROEN BALLOMAX® have been approved. The spindle is mounted from inside and cannot be ejected, and the water-based paint is harmless in the event of welding.

The maintenance of BROEN BALLOMAX® is minimal with no parts requiring replacement or lubrication. Everything has been made from the best raw materials and an annual activation of the ball ensures that it does not get stuck in the retainer. For the customer, the BROEN BALLOMAX® means a minimum of work.

Long life is a very important feature of the BROEN BALLOMAX®. We know that the replacement of a defective valve involves great inconvenience and costs, and when you choose a BROEN BALLOMAX® you are beyond that. We manufacture under the highest quality standards of the market in modern production facilities.

BROEN BALLOMAX® is your certainty of energy efficiency, reliability, and low operating costs.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	85	Europe and Asia
Minerals	0	
Fossil materials	15	Europe and Asia
Bio-based materials	0	

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	0.0781

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	69603025S78690I scaled to 1kg
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	Deconstr./demol.	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, PTFE, PP and composite. The carbon steel is received as tubes or bars in the factory and components are manufactured by processing the bars and tubes. The processes used to process the steel are milling, drilling, cutting and pressing. Scrap material derived from the production are sent to recycling, directly from the factory.

Composite and PTFE parts are sourced and are directly consumed in the assembly of the valve.

The valve consist of following components.

- Retaining ring
- Stem
- Stem guide
- Lock ring for sealing box
- Support ring
- Body carbon steel
- Ball
- Optional combinations of 2 connection ends
- Male end
- Female end
- Weld end
- Copper pipe
- Valve holder
- Bracket for stop valve
- Valve holder
- Insulation shell
- Bolts and nuts
- T handle

The handles are made from composite and carbon steel.
The ball is made of stainless steel.
Other polymer parts include O-rings made from EPDM and seats made of PTFE.
Additional processes used to manufacture the valves are welding, testing, painting and packaging.

The transport assumptions are based on the actual distances between the supplier and BROEN for each component. The production loss is metal scrap from the processing of metals. CO2 emissions from the consumption of electricity is based on the actual emission provided by the supplier, where at least 50% comes from renewable sources. Created with One Click LCA 5.

For packaging a cardboard package is used, and no other material. The cardboards transportation distance is defined as the distance between the supplier and BROEN, both located in Denmark. The ancillaries for the production is tap water, mineral oils for lubrication purposes and argon gas. The tap water waste is run to treatment facilities via pipes, the argon gas cannot be collected and is simply diffused in air and the mineral oils are collected then send for waste treatment. The mineral oils transportation is defined as the distance between BROEN and the treatment facility in Denmark. The obtained scrap from the metal processing is send to authorised recycling facilities, and the transportation is defined as the distance between BROEN and the facilities.

TRANSPORT AND INSTALLATION (A4-A5)

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

The transportation is defined according to the PCR. Distance of transportation from production to building site, is estimated from the countries with the largest sales volume, The transportation method is a combination of lorry and containership, depending on the country. Vehicle capacity utilization volume factor is assumed to be 1 which means full loads, it may vary but as role of transportation emission in total results are small, the variety is assumed to be negligible. Empty returns are not taken into account as it is assumed that the return trip is used by the transportation company to serve the needs of other clients. 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.

The only waste in A5 for the product comes from the packaging. The transportation from building site to recycling station is assumed to be 100 km in all scenarios.

Transportation estimates in A2 between BROEN Danmark and BROEN Poland is assumed to be 2000 km both ways. The wall mounts are send to Poland for welding, thus this distance is added in A2.

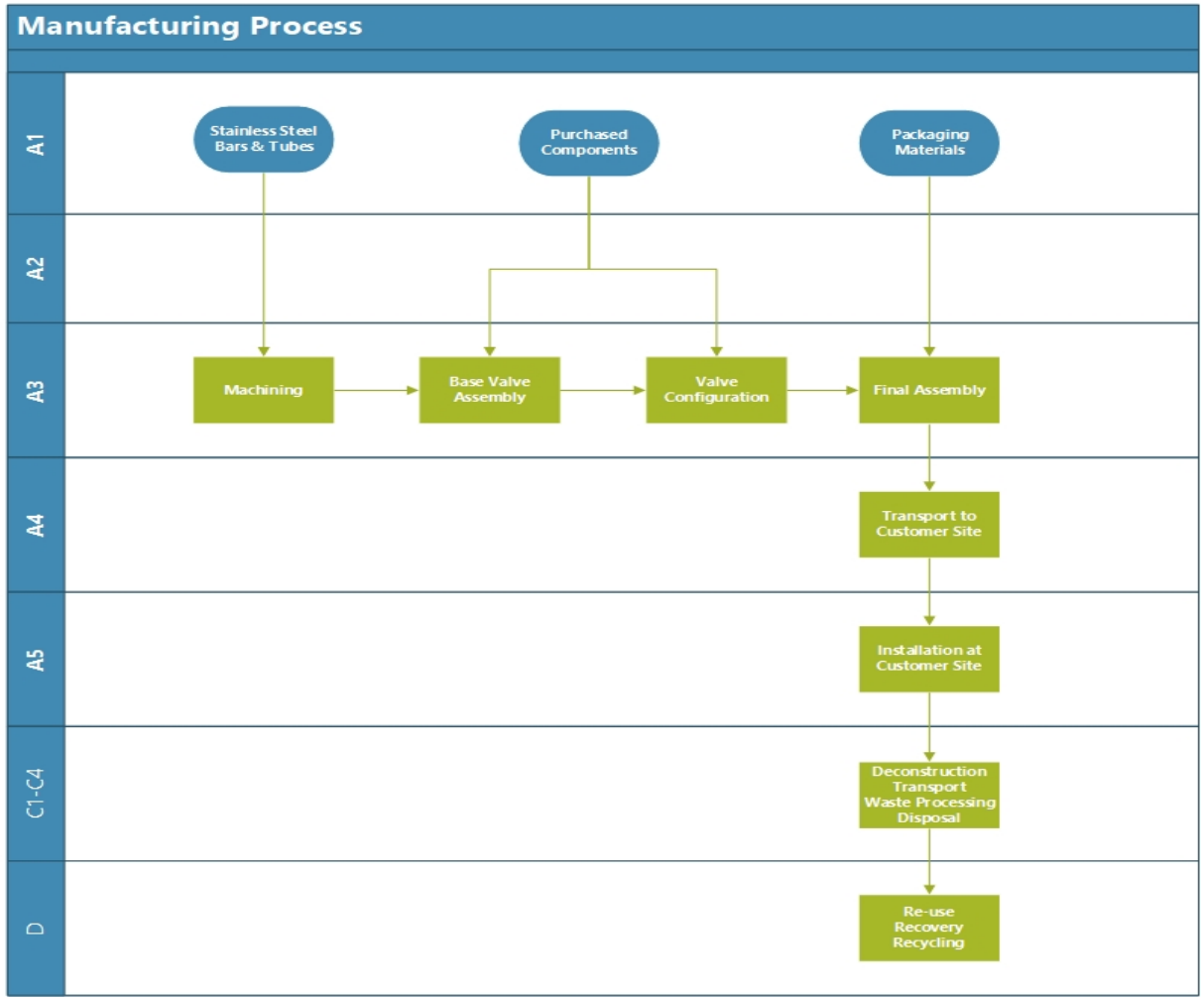
PRODUCT USE AND MAINTENANCE (B1-B7)

A BROEN BALLOMAX® Main stop valve needs no maintenance, repair or refurbishment and has no operational water or energy use during its lifetime.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The consumption of energy and natural resources for disassembling the end-of-life is assumed to be negligible, as the disassembly of the product is done by the buyer or the recycling facilities (C1). The end-of-life product is assumed to be sent to the closest facilities by lorry, which is dependent on the individual country (C2). 85% of the product is sent for recycling, and 85% of polymer parts are sent for incineration with energy recovery (C3). 15% of the end-of-life product is assumed to go to a landfill or be lost in the processing (C4). Due to the recycling and incineration potential of metals and plastics, the end-of-life is converted into recycled materials, while heat is produced from material incineration (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. There is no materials used in the installation stage. The installation process uses hand tools or electrical hand tools. The amount of energy use to install 1 KG of valve is considered neglectable.
The valves are welded on the valve holders, the emission from this process is considered neglectable as only small welding is done.

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 materials	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	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	-37 % + 6 %

BALLOMAX® flex mount DN25 (69603025S78690I) Reduced Bore Female/Copper wallmount with isolation valve has been selected as the representative valve. It has two different connections, and initial calculations revealed that it was closest to the general average of mass for a BROEN BALLOMAX® main stop valves.

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. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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	3,99E+00	3,19E-01	8,51E-01	5,16E+00	6,32E-02	2,93E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,35E-01	1,91E-02	-2,82E+00
GWP – fossil	kg CO_2e	3,99E+00	3,19E-01	1,10E+00	5,41E+00	6,32E-02	6,90E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,35E-01	1,91E-02	-2,82E+00
GWP – biogenic	kg CO_2e	-2,41E-03	0,00E+00	-2,84E-01	-2,86E-01	0,00E+00	2,86E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	3,62E-03	1,19E-04	3,71E-02	4,09E-02	2,98E-05	3,82E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,91E-05	9,75E-06	-2,46E-03
Ozone depletion pot.	kg CFC_{-11}e	2,31E-07	7,33E-08	7,03E-08	3,75E-07	1,40E-08	5,69E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,02E-09	8,31E-10	-8,20E-08
Acidification potential	mol H^+e	3,88E-02	1,46E-03	6,89E-03	4,71E-02	7,73E-04	2,52E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,20E-04	2,66E-05	-1,80E-02
EP-freshwater[2)]	kg Pe	1,63E-04	2,59E-06	1,05E-04	2,70E-04	4,35E-07	1,60E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	7,89E-07	5,00E-08	-1,15E-04
EP-marine	kg Ne	4,36E-03	4,27E-04	1,29E-03	6,08E-03	2,00E-04	7,02E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,64E-05	9,94E-06	-2,82E-03
EP-terrestrial	mol Ne	4,92E-02	4,71E-03	1,11E-02	6,51E-02	2,22E-03	6,62E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,29E-04	1,04E-04	-2,94E-02
POCP ("smog")[3)]	kg NMVOCe	1,70E-02	1,49E-03	3,39E-03	2,19E-02	6,13E-04	2,03E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,16E-04	3,85E-05	-9,54E-03
ADP-minerals & metals[4)]	kg Sbe	5,45E-04	7,45E-07	6,70E-06	5,52E-04	1,31E-07	7,35E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,94E-06	1,09E-08	-1,34E-05
ADP-fossil resources	MJ	3,34E+01	4,79E+00	1,77E+01	5,59E+01	9,05E-01	6,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,14E-01	6,37E-02	-2,68E+01
Water use[5)]	m^3e depr.	2,22E+00	2,13E-02	3,04E+00	5,29E+00	3,71E-03	1,18E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,10E-03	6,74E-03	-4,94E-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, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	2,68E-07	3,65E-08	3,69E-08	3,41E-07	5,78E-09	4,60E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,43E-08	7,98E-09	-3,13E-07
Ionizing radiation[6)]	kBq U235e	2,25E-01	2,28E-02	4,22E-01	6,70E-01	4,27E-03	6,14E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,25E-03	2,80E-04	-1,11E-01
Ecotoxicity (freshwater)	CTUe	2,98E+02	4,29E+00	2,14E+01	3,23E+02	7,55E-01	2,00E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,07E+00	6,61E-01	-9,33E+01
Human toxicity, cancer	CTUh	2,77E-08	1,07E-10	7,42E-10	2,86E-08	2,58E-11	1,08E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,83E-10	3,11E-11	-5,65E-09
Human tox. non-cancer	CTUh	3,74E-07	4,24E-09	1,42E-08	3,92E-07	6,97E-10	1,35E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,09E-09	2,01E-10	-3,91E-08
SQP[7)]	-	1,89E+01	5,47E+00	8,29E+00	3,26E+01	8,15E-01	5,49E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,34E-01	1,09E-01	-1,95E+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	5,60E+00	5,37E-02	2,38E+01	2,94E+01	9,21E-03	4,51E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,50E-02	1,07E-03	-4,28E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,50E+00	2,50E+00	0,00E+00	-2,50E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	5,60E+00	5,37E-02	2,63E+01	3,19E+01	9,21E-03	-2,50E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,50E-02	1,07E-03	-4,28E+00
Non-re. PER as energy	MJ	5,90E+01	4,79E+00	1,88E+01	8,27E+01	9,05E-01	6,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,14E-01	6,37E-02	-2,68E+01
Non-re. PER as material	MJ	5,40E-01	0,00E+00	2,02E-02	5,61E-01	0,00E+00	-2,02E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-4,59E-01	-8,11E-02	0,00E+00
Total use of non-re. PER	MJ	5,96E+01	4,79E+00	1,89E+01	8,32E+01	9,05E-01	4,04E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,45E-01	-1,74E-02	-2,68E+01
Secondary materials	kg	1,05E+00	1,34E-03	2,00E-01	1,25E+00	2,92E-04	1,10E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,31E-04	4,70E-04	-2,38E-01
Renew. secondary fuels	MJ	9,24E-04	1,33E-05	1,38E-02	1,48E-02	2,18E-06	5,19E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,14E-05	1,42E-06	-1,24E-02
Non-ren. secondary fuels	MJ	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
Use of net fresh water	m^3	6,08E-02	6,17E-04	7,17E-02	1,33E-01	1,02E-04	3,19E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,23E-04	-1,52E-05	-1,17E-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	8,54E-01	6,34E-03	9,79E-02	9,58E-01	1,21E-03	5,31E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,76E-03	4,61E-05	-4,59E-01
Non-hazardous waste	kg	8,87E+00	1,04E-01	4,28E+00	1,33E+01	1,73E-02	1,10E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,82E-02	2,92E-01	-4,54E+00
Radioactive waste	kg	1,47E-04	3,20E-05	1,26E-04	3,05E-04	6,14E-06	3,42E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,24E-06	1,38E-08	-4,76E-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	6,34E-05	0,00E+00	5,20E-01	5,20E-01	0,00E+00	1,96E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	7,93E-01	3,11E-01	0,00E+00
Materials for energy rec	kg	4,02E-13	0,00E+00	0,00E+00	4,02E-13	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
Exported energy	MJ	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	3,84E-01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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	3,97E+00	3,16E-01	1,14E+00	5,42E+00	6,26E-02	8,46E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,29E-01	1,79E-02	-2,74E+00
Ozone depletion Pot.	kg CFC_{-11}e	2,49E-07	5,81E-08	5,84E-08	3,65E-07	1,11E-08	4,63E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,63E-09	6,62E-10	-7,43E-08
Acidification	kg SO_2e	3,42E-02	1,13E-03	5,79E-03	4,11E-02	6,14E-04	1,98E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,74E-04	1,99E-05	-1,51E-02
Eutrophication	kg PO_4^3e	9,82E-03	2,47E-04	3,56E-03	1,36E-02	8,57E-05	2,26E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,98E-03	3,48E-04	-4,50E-03
POCP (“smog”)	kg C_2H_4e	2,03E-03	4,30E-05	2,42E-04	2,32E-03	1,78E-05	2,11E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,47E-05	6,20E-06	-9,68E-04
ADP-elements	kg Sbe	5,54E-04	7,21E-07	6,80E-06	5,61E-04	1,27E-07	7,29E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,94E-06	1,04E-08	-1,32E-05
ADP-fossil	MJ	6,04E+01	4,79E+00	1,99E+01	8,50E+01	9,05E-01	6,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,14E-01	6,37E-02	-2,68E+01

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

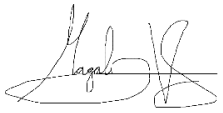
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
Updated 11.03.2024



VERIFIED ISO 14025

BALLOMAX® valves with Mounts				
Size	**Product number**	**Spindle**	**HANDLE**	**TOTAL GWP (A1-A3)**
DN20	69600020S785700	LOW	T	9,17
DN20	69600020S785700I	LOW	T	10,16
DN20	69600020S785800	LOW	T	12,08
DN20	69600020S785800I	LOW	T	13,08
DN25	69600025S785900	LOW	T	11,73
DN25	69600025S785900I	LOW	T	12,6
DN25	69600025S786000	LOW	T	14,65
DN25	69600025S786000I	LOW	T	15,52
DN20	69603020S786700	LOW	T	11,32
DN20	69603020S786700I	LOW	T	12,27
DN25	69603025S786900	LOW	T	12,97
DN25	69603025S78690I	LOW	T	14,26
DN15	69600015 025I	LOW	T	13,80
DN20	69600020 025I	LOW	T	16,37
DN15	69601015 025I	LOW	T	13,71
DN20	69601020 025I	LOW	T	15,79
DN15	69602015 025I	LOW	T	13,64
DN20	69602020 025I	LOW	T	14,43
DN20	69603020 025I	LOW	T	16,10
DN25	69603025 025I	LOW	T	17,76

ANNEX