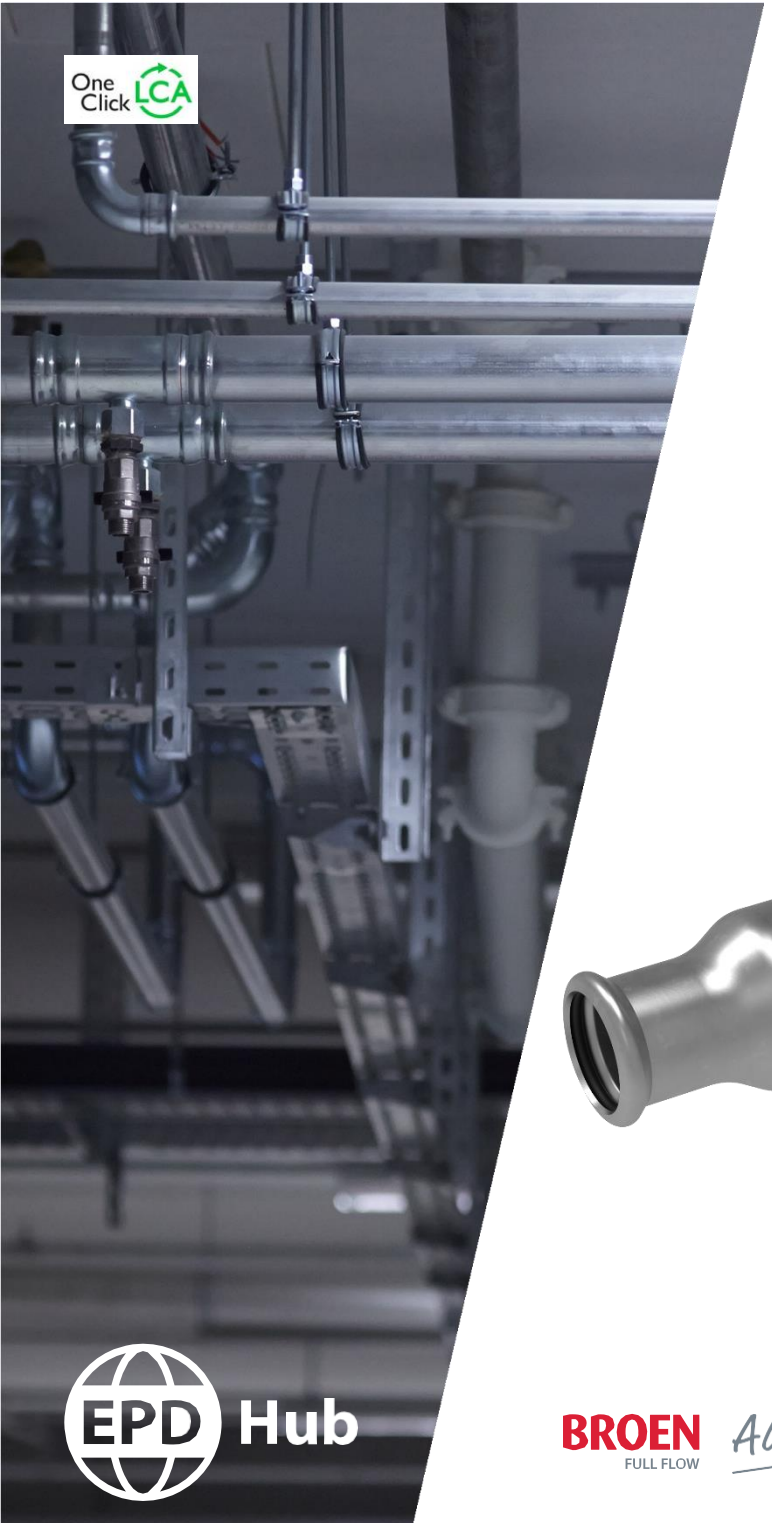


ENVIRONMENTAL PRODUCT DECLARATION

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

BROEN VALVE TECHNOLOGIES

BROEN Full Flow ball valve

- Galvanized steel
- Flexible Connections
- Low stem / High Stem

EPD HUB, HUB-1155

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

BROEN FULL FLOW *All systems – One technology*

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 Full Flow - Galvanized steel
Additional labels	This EPD covers BROEN Full Flow Galvanized steel valves in the range of DN32 to DN50 (See complete range in ANNEX on page 14-15)
Product reference	BROEN Full Flow Galvanized steel 1040001001-0100 High Stem DN40 Press x Press
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	-0 % + 23 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg.
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	6,51E+00
GWP-total, A1-A3 (kgCO2e)	6,29E+00
Secondary material, inputs (%)	75
Secondary material, outputs (%)	60
Total energy use, A1-A3 (kWh)	40,2
Total water use, A1-A3 (m3e)	1,95E-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

Applications:
Heating: BROEN Full Flow Galvanized steel is the best solution for heating systems. Before they leave the factory, the compact fittings are subjected to stringent quality assurance and leakage testing throughout the entire production process. Together with laser welding technology, the energy-optimized flow design gives all fittings a very low internal flow resistance.

Cooling: BROEN Full Flow Galvanized steel is the valve of tomorrow for cooling installations, and it provides the same advantages as those for heating installations: It is the optimal energy-efficient solution with the lowest possible flow resistance. Furthermore, you can adapt the choice of material to the individual installation. BROEN Full Flow Galvanized steel valves with increased stem length also provide proper, diffusion-proof insulation for the entire installation.

Air pressure: The BROEN Full Flow Galvanized steel valve can be used for a number of air pressure installations. Depending on the water and oil content it can be used for various pressurized air installations.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	95,55	Europe and Asia
Minerals	-	-
Fossil materials	4,45	Europe and Asia
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	0.0781

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1040001001-0100 scaled to 1 Kg.
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 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
- Press end carbon steel - Annealed
- Male end
- Female end
- Swivel nut

In addition it is possible to choose between 3 different handle options.

- L handle
- T handle
- Gear handle

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

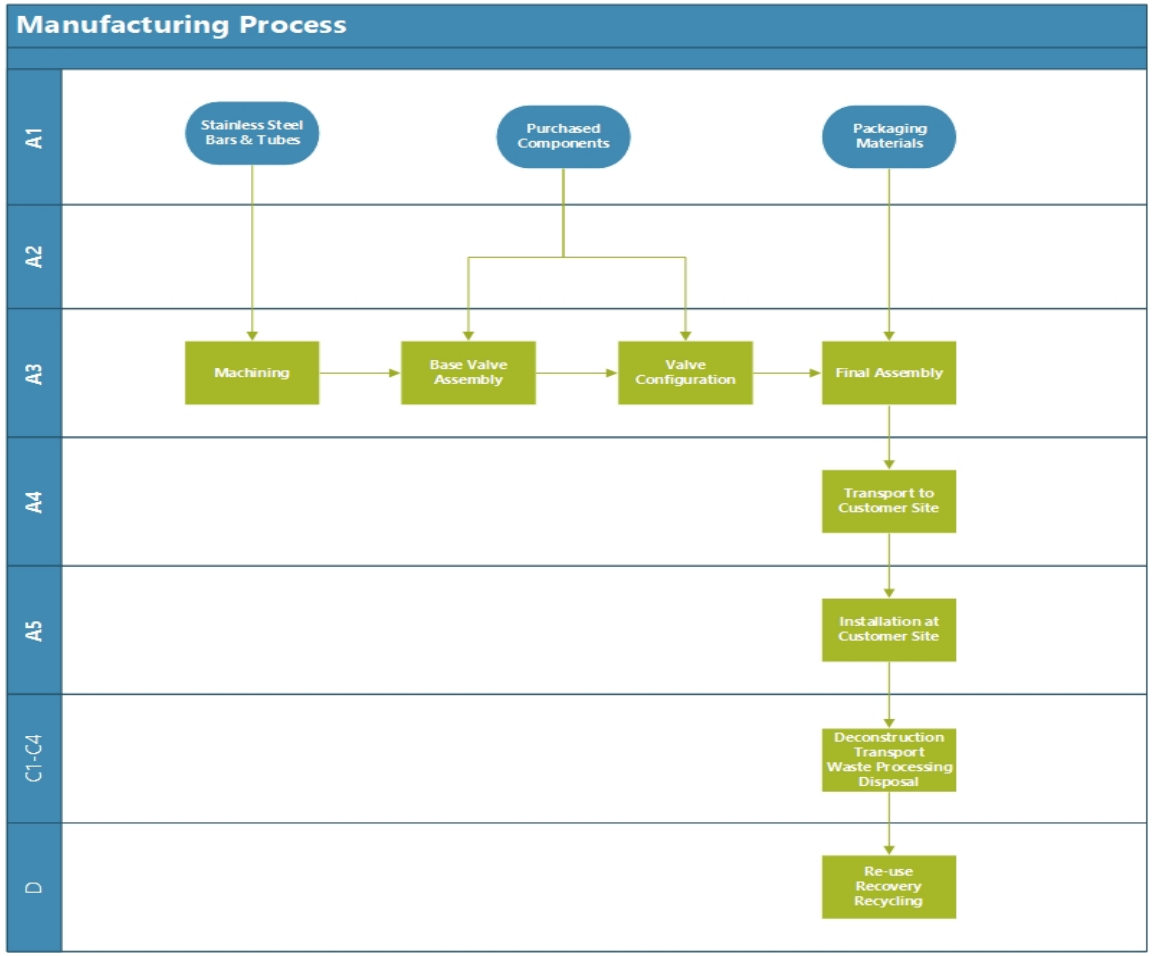
PRODUCT USE AND MAINTENANCE (B1-B7)

A BROEN Full Flow ball 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

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	-0 % + 23 %

The BROEN Full Flow Galvanized steel DN40 Press/ Press (1040001001-0100) valve has been selected as the representative valve. It has two identical connections, and initial calculations revealed that it was closest to the general average of mass for a BROEN Full Flow 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. 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	5,09E+00	1,63E-01	1,04E+00	6,29E+00	6,34E-02	2,93E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,01E-01	1,57E-03	-2,89E-01
GWP – fossil	kg CO_2e	5,08E+00	1,63E-01	1,26E+00	6,51E+00	6,33E-02	6,90E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,01E-01	1,57E-03	-6,32E-01
GWP – biogenic	kg CO_2e	-1,35E-03	0,00E+00	-2,85E-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	3,43E-01
GWP – LULUC	kg CO_2e	5,24E-03	6,44E-05	6,61E-02	7,14E-02	2,98E-05	3,82E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,31E-05	7,74E-07	-1,08E-04
Ozone depletion pot.	kg CFC_{-11}e	2,47E-07	3,72E-08	8,42E-08	3,69E-07	1,40E-08	5,69E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,32E-09	3,17E-10	-2,33E-08
Acidification potential	mol H^+e	2,54E-02	1,02E-03	6,91E-03	3,33E-02	7,70E-04	2,52E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,34E-04	7,51E-06	-3,15E-03
EP-freshwater[2)]	kg Pe	1,70E-04	1,28E-06	1,43E-04	3,15E-04	4,36E-07	1,60E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,39E-07	9,07E-09	-2,09E-05
EP-marine	kg Ne	5,06E-03	2,84E-04	1,32E-03	6,67E-03	1,99E-04	7,02E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,31E-05	3,45E-06	-6,49E-04
EP-terrestrial	mol Ne	5,12E-02	3,14E-03	1,08E-02	6,51E-02	2,21E-03	6,63E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,06E-04	2,85E-05	-6,75E-03
POCP ("smog")[3)]	kg NMVOCe	1,72E-02	9,40E-04	3,42E-03	2,15E-02	6,11E-04	2,03E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,68E-04	8,46E-06	-2,76E-03
ADP-minerals & metals[4)]	kg Sbe	7,01E-05	3,72E-07	8,55E-06	7,90E-05	1,31E-07	7,35E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,33E-06	1,95E-09	-8,47E-06
ADP-fossil resources	MJ	4,41E+01	2,42E+00	2,66E+01	7,32E+01	9,07E-01	6,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,49E-01	2,17E-02	-5,97E+00
Water use[5)]	m^3e depr.	2,72E+00	1,06E-02	4,97E+00	7,70E+00	3,72E-03	1,18E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	6,85E-03	7,50E-05	-9,51E-02

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	3,33E-07	1,79E-08	4,18E-08	3,93E-07	5,81E-09	4,60E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,12E-09	1,51E-10	-5,64E-08
Ionizing radiation[6)]	kBq U235e	3,75E-01	1,15E-02	6,87E-01	1,07E+00	4,28E-03	6,15E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,66E-03	9,91E-05	-1,48E-02
Ecotoxicity (freshwater)	CTUe	1,48E+02	2,14E+00	2,43E+01	1,74E+02	7,57E-01	2,00E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,12E+00	1,60E-02	4,38E+00
Human toxicity, cancer	CTUh	6,09E-08	5,73E-11	1,08E-09	6,20E-08	2,58E-11	1,08E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,30E-11	3,86E-13	-4,98E-10
Human tox. non-cancer	CTUh	1,16E-07	2,09E-09	1,86E-08	1,37E-07	7,00E-10	1,35E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,60E-09	9,59E-12	-2,68E-11
SQP[7)]	-	2,80E+01	2,65E+00	8,19E+00	3,89E+01	8,19E-01	5,49E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,85E-01	4,69E-02	-8,89E+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	1,21E+01	2,67E-02	3,85E+01	5,06E+01	9,24E-03	4,51E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,18E-02	2,12E-04	-2,10E+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	-2,30E+00
Total use of renew. PER	MJ	1,21E+01	2,67E-02	4,10E+01	5,31E+01	9,24E-03	-2,50E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,18E-02	2,12E-04	-4,40E+00
Non-re. PER as energy	MJ	6,61E+01	2,42E+00	2,56E+01	9,40E+01	9,07E-01	6,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,49E-01	2,17E-02	-5,95E+00
Non-re. PER as material	MJ	1,65E+00	0,00E+00	2,02E-02	1,67E+00	0,00E+00	-2,02E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,40E+00	-2,47E-01	-2,03E-02
Total use of non-re. PER	MJ	6,77E+01	2,42E+00	2,56E+01	9,57E+01	9,07E-01	4,04E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,15E+00	-2,26E-01	-5,97E+00
Secondary materials	kg	1,01E+00	7,00E-04	2,03E-01	1,22E+00	2,92E-04	1,10E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,74E-04	4,85E-06	-1,25E-01
Renew. secondary fuels	MJ	1,70E-03	6,56E-06	1,39E-02	1,56E-02	2,19E-06	5,19E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,36E-05	1,35E-07	-1,40E-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	7,80E-02	3,05E-04	1,17E-01	1,95E-01	1,03E-04	3,19E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,48E-04	2,37E-05	-5,47E-03

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	2,48E+00	3,22E-03	1,17E-01	2,60E+00	1,21E-03	5,31E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,05E-03	0,00E+00	-2,28E-01
Non-hazardous waste	kg	6,40E+00	5,12E-02	6,05E+00	1,25E+01	1,74E-02	1,10E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,91E-02	1,45E-01	-9,92E-01
Radioactive waste	kg	1,79E-04	1,63E-05	1,98E-04	3,93E-04	6,16E-06	3,42E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,43E-06	0,00E+00	-7,77E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	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	4,85E-05	0,00E+00	2,89E-01	2,89E-01	0,00E+00	1,96E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,32E-01	1,45E-01	0,00E+00
Materials for energy rec	kg	3,07E-13	0,00E+00	0,00E+00	3,07E-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	1,01E+00	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	5,04E+00	1,62E-01	1,33E+00	6,53E+00	6,27E-02	8,47E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,00E-01	1,40E-03	-6,12E-01
Ozone depletion Pot.	kg CFC_{-11}e	2,51E-07	2,95E-08	7,06E-08	3,51E-07	1,11E-08	4,63E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,88E-09	2,51E-10	-2,45E-08
Acidification	kg SO_2e	2,17E-02	8,00E-04	5,78E-03	2,83E-02	6,11E-04	1,98E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,87E-04	5,68E-06	-2,54E-03
Eutrophication	kg PO_4^3e	7,56E-03	1,47E-04	4,75E-03	1,24E-02	8,55E-05	2,26E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,47E-04	4,72E-05	-1,15E-03
POCP (“smog”)	kg C_2H_4e	1,51E-03	2,72E-05	2,62E-04	1,80E-03	1,77E-05	2,11E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,54E-06	3,42E-07	-3,10E-04
ADP-elements	kg Sbe	7,70E-05	3,60E-07	8,29E-06	8,56E-05	1,28E-07	7,29E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,33E-06	1,92E-09	-8,26E-06
ADP-fossil	MJ	6,47E+01	2,42E+00	2,66E+01	9,38E+01	9,07E-01	6,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,49E-01	2,17E-02	-5,95E+00

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

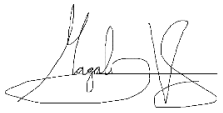
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried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

	Spindle	Valve size	Connection 1	Connection 2	Handle
OPTIONS	High Low	DN10 DN15 DN20 DN25 DN32 DN40 DN50	Press Female Male Swivel	Press Female Male Swivel	L-handle T-handle Gear handle

BROEN FULL FLOW GALVANIZED STEEL - SIZES AND VARIANTS

ANNEX

Size	Product number	Size2	Handle	Connections	TOTAL GWP (A1-A3)
DN32	1032000100-1100	Low	L	35x35	7,53
DN32	1032000100-1200	Low	GEAR	35x35	7,84
DN32	1032000100-1400	Low	T	35x35	7,34
DN32	1032000101-1100	High	L	35x35	7,95
DN32	1032000101-1200	High	GEAR	35x35	8,25
DN32	1032000101-1400	High	T	35x35	7,76
DN32	1032001000-1100	Low	L	G1¼x35	8,42
DN32	1032001000-1200	Low	GEAR	G1¼x35	8,73
DN32	1032001000-1400	Low	T	G1¼x35	8,23
DN32	1032001001-1100	High	L	G1¼x35	8,82
DN32	1032001001-1200	High	GEAR	G1¼x35	9,13
DN32	1032001001-1400	High	T	G1¼x35	8,63
DN32	1032001200-1100	Low	L	G1¼Ax35	8,55
DN32	1032001200-1200	Low	GEAR	G1¼Ax35	8,86
DN32	1032001200-1400	Low	T	G1¼Ax35	8,36
DN32	1032001201-1100	High	L	G1¼Ax35	8,95
DN32	1032001201-1200	High	GEAR	G1¼Ax35	9,26
DN32	1032001201-1400	High	T	G1¼Ax35	8,76
DN32	1032001400-1100	Low	L	G1½x35	7,68
DN32	1032001400-1200	Low	GEAR	G1½x35	7,99
DN32	1032001400-1400	Low	T	G1½x35	7,49
DN32	1032001401-1100	High	L	G1½x35	8,09
DN32	1032001401-1200	High	GEAR	G1½x35	8,40
DN32	1032001401-1400	High	T	G1½x35	7,91
DN32	1032002000-1100	Low	L	G1¼xG1¼	9,22
DN32	1032002000-1200	Low	GEAR	G1¼xG1¼	9,53
DN32	1032002000-1400	Low	T	G1¼xG1¼	9,03
DN32	1032002001-1100	High	L	G1¼xG1¼	9,62
DN32	1032002001-1200	High	GEAR	G1¼xG1¼	9,93
DN32	1032002001-1400	High	T	G1¼xG1¼	9,43
DN32	1032002200-1100	Low	L	G1¼xG1½SW	8,57
DN32	1032002200-1200	Low	GEAR	G1¼xG1½SW	8,88
DN32	1032002200-1400	Low	T	G1¼xG1½SW	8,38
DN32	1032002201-1100	High	L	G1¼xG1½SW	8,97
DN32	1032002201-1200	High	GEAR	G1¼xG1½SW	9,28
DN32	1032002201-1400	High	T	G1¼xG1½SW	8,78
DN32	1032002400-1100	Low	L	G1¼xG1¼A	9,35
DN32	1032002400-1200	Low	GEAR	G1¼xG1¼A	9,65
DN32	1032002400-1400	Low	T	G1¼xG1¼A	9,16
DN32	1032002401-1100	High	L	G1¼xG1¼A	9,75
DN32	1032002401-1200	High	GEAR	G1¼xG1¼A	10,05
DN32	1032002401-1400	High	T	G1¼xG1¼A	9,56
DN40	1040000100-1100	Low	L	42x42	10,06
DN40	1040000100-1200	Low	GEAR	42x42	10,97
DN40	1040000101-1100	High	L	42x42	10,91
DN40	1040000101-1200	High	GEAR	42x42	11,82
DN40	1040001000-1100	Low	L	G1½x42	11,10
DN40	1040001000-1200	Low	GEAR	G1½x42	12,01
DN40	1040001001-1100	High	L	G1½x42	11,94
DN40	1040001001-1200	High	GEAR	G1½x42	12,85
DN40	1040001200-1100	Low	L	G1½Ax42	11,45
DN40	1040001200-1200	Low	GEAR	G1½Ax42	12,36
DN40	1040001201-1100	High	L	G1½Ax42	12,29
DN40	1040001201-1200	High	GEAR	G1½Ax42	13,20
DN40	1040001400-1100	Low	L	G1¾x42	10,19
DN40	1040001400-1200	Low	GEAR	G1¾x42	11,10

DN40	**1040001401-1100**	High	**L**	G1¾x42	11,04
DN40	**1040001401-1200**	High	**GEAR**	G1¾x42	11,95
DN40	**1040002000-1100**	Low	**L**	G1½xG1½	12,02
DN40	**1040002000-1200**	Low	**GEAR**	G1½xG1½	12,93
DN40	**1040002001-1100**	High	**L**	G1½xG1½	12,86
DN40	**1040002001-1200**	High	**GEAR**	G1½xG1½	13,77
DN40	**1040002200-1100**	Low	**L**	G1½xG1¾SW	11,23
DN40	**1040002201-1100**	High	**L**	G1½xG1¾SW	12,07
DN40	**1040002210-1100**	Low	**L**	G1½xG1¾SW	11,35
DN40	**1040002210-1200**	Low	**GEAR**	G1½xG1¾SW	12,26
DN40	**1040002211-1100**	High	**L**	G1½xG2SW	12,20
DN40	**1040002211-1200**	High	**GEAR**	G1½xG2SW	13,11
DN40	**1040002400-1100**	Low	**L**	G1½xG1½A	12,37
DN40	**1040002400-1200**	Low	**GEAR**	G1½xG1½A	13,28
DN40	**1040002401-1100**	High	**L**	G1½xG1½A	13,21
DN40	**1040002401-1200**	High	**GEAR**	G1½xG1½A	14,12
DN50	**1050000100-1100**	Low	**L**	54x54	15,23
DN50	**1050000100-1200**	Low	**GEAR**	54x54	16,14
DN50	**1050000101-1100**	High	**L**	54x54	16,06
DN50	**1050000101-1200**	High	**GEAR**	54x54	16,97
DN50	**1050001000-1100**	Low	**L**	G2x54	17,61
DN50	**1050001000-1200**	Low	**GEAR**	G2x54	18,52
DN50	**1050001001-1100**	High	**L**	G2x54	18,45
DN50	**1050001001-1200**	High	**GEAR**	G2x54	19,36
DN50	**1050001200-1100**	Low	**L**	G2Ax54	18,87
DN50	**1050001200-1200**	Low	**GEAR**	G2Ax54	19,78
DN50	**1050001201-1100**	High	**L**	G2Ax54	19,70
DN50	**1050001201-1200**	High	**GEAR**	G2Ax54	20,61
DN50	**1050001400-1100**	Low	**L**	G2¼x54	15,54
DN50	**1050001400-1200**	Low	**GEAR**	G2¼x54	16,45
DN50	**1050001401-1100**	High	**L**	G2¼x54	16,38
DN50	**1050001401-1200**	High	**GEAR**	G2¼x54	17,29
DN50	**1050002000-1100**	Low	**L**	G2xG2	19,99
DN50	**1050002000-1200**	Low	**GEAR**	G2xG2	20,89
DN50	**1050002001-1100**	High	**L**	G2xG2	20,82
DN50	**1050002001-1200**	High	**GEAR**	G2xG2	21,73
DN50	**1050002200-1100**	Low	**L**	G2xG2¼SW	17,93
DN50	**1050002200-1200**	Low	**GEAR**	G2xG2¼SW	18,84
DN50	**1050002201-1100**	High	**L**	G2xG2¼SW	18,76
DN50	**1050002201-1200**	High	**GEAR**	G2xG2¼SW	19,67
DN50	**1050002400-1100**	Low	**L**	G2xG2A	21,24
DN50	**1050002400-1200**	Low	**GEAR**	G2xG2A	22,15
DN50	**1050002401-1100**	High	**L**	G2xG2A	7,48
DN50	**1050002401-1200**	High	**GEAR**	G2xG2A	7,48