ENVIRONMENTAL PRODUCT DECLARATION

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

NEOFLOW PRV & PSV

GEORG FISCHER PIPING SYSTEMS LTD.

EPD HUB, HUB-1555
Publishing on 11.07.2024, last updated on 11.07.2024, valid until 11.07.2029

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Georg Fischer Piping Systems Ltd
Address	Ebnatstrasse 111, 8201 Schaffhausen
Contact details	sustainability.ps@georgfischer.com
Website	https://www.gfps.com/com/en.html

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	Construction 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	Niko Dommer, Georg Fischer Piping Systems
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Imane Uald lamkaddam, 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	NeoFlow
Additional labels	NeoFlow PRV and PSV
Product reference	-
Place of production	Seewis, Switzerland
Period for data	2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1kg of NeoFlow
Declared unit mass	1kg
GWP-fossil, A1-A3 (kgCO2e)	4,30E+00
GWP-total, A1-A3 (kgCO2e)	4,17E+00
Secondary material, inputs (%)	41.3
Secondary material, outputs (%)	69.6
Total energy use, A1-A3 (kWh)	18.2
Net fresh water use, A1-A3 (m3)	0.07

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

GF Piping Systems is one of the three divisions within Georg Fischer Corporation and a leading provider of plastic and metal piping systems with global market presence. The product portfolio includes pipes, fittings, valves and the corresponding automation and jointing technology for industry, building technology as well as water and gas utilities. Georg Fischer Piping Systems proactively incorporates its environmental responsibility into its everyday business activities. Because we understand environmental awareness as one of the corporation's core values, internal structures and processes are geared towards sustainability. Within this context, we increasingly utilize Life Cycle Assessments (LCA) to gain insight into the different life cycle phases of our systems.

PRODUCT DESCRIPTION

The NeoFlow pressure-regulation valve is a compact and lightweight solution that helps protecting water distribution networks from excess pressure, reduces leakage rates, and pipe bursts. The polymer valve optimizes pressure management with extreme accuracy and enables stable pressure regulation under any flow conditions for utilities.

Further information: https://www.gfps.com/com/en.html

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	70	Europe
Minerals	-	-
Fossil materials	30	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	0.04

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1kg of NeoFlow
Mass per declared unit	1kg

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 NeoFlow valve is a product composed of various meticulously selected and manufactured components. These encompass POM parts like the main body, the piston or the pilot valve, alongside stainless steel components such as tubes, springs, screws and nuts. Additionally, essential components are crafted from EPDM, including sealing rings or the membrane in the pilot valve. Notably, all these components are sourced from European manufacturers.
The stainless steel parts predominantly consist of low-alloyed stainless steel formed through cold rolling, ensuring both high quality and longevity. Plastic components made from EPDM are primarily injection moulded, facilitating precise shaping. The initial rods for machining the POM parts are produced through extrusion.
Upon arrival at the manufacturing site in Seewis, all components undergo temporary storage before undergoing meticulous assembly. Subsequently, a comprehensive functional check (not included in the EPD) is performed prior to packaging for shipment. The energy utilized for this process is derived from environmentally sustainable hydropower sources.
Transport packaging for components from suppliers to the manufacturing site comprises cardboard boxes. Additionally, NeoFlow units are shielded within these boxes by foam bags to mitigate the risk of damage during transit, with considerations made for potential losses due to packaging.
A notable aspect of the manufacturing process is the minimal waste generated during the assembly of components into the final NeoFlow product, with the exception of packaging materials for individual components. This underscores the dedication to sustainable manufacturing practices and responsible resource management.

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 NeoFlow valve is shipped worldwide to storage distributors and sales companies for local distribution. For transportation, an average distance of 170 km is assumed, for example, from the warehouse in Schaffhausen to the sales company in Albershausen, Germany, via truck. All packaging materials are disposed of by the end user of the product, with partial recycling.
The NeoFlow valves can be integrated in existing or newly manufactured piping systems and they are designed to fit between standard PN10 / PN16 in a wafer type arrangement or ANSI 150

flange connections. Thanks to compact and lightweight polymer body design, NeoFlow is up to nine times lighter and can decrease installation time by up to 40% compared to a standard metal PRV. The installation is done manually, without additional energy or work such as excavations, as these are part of the pipe network installation. Excess packaging is disposed of at location A5 and treated as waste.

PRODUCT USE AND MAINTENANCE (B1-B7)

The pilot-operated NeoFlow valves were conceived for the automatic pressure and flow control in networks for the supply and distribution of water. NeoFlow valves are state-of-the-art pressure management technology that can prevent your pipes from over-pressurizing during the use, while providing utilities with precise, stable flow, and increased flow capacity.

At Georg Fischer, we prioritize the longevity and efficiency of our products. As part of our commitment to ensuring optimum performance, we recommend regular maintenance for all NeoFlow valves installed at your site. After one year of operation, we recommend cleaning/rinsing the strainer and the control system, followed by a functional test. As required, but not later than every five years we recommend the maintenance of the control system and the valve body. The EPDM O-rings on the piston and main body are the only two parts which are recommended to be replaced as part of the 5 year service.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end of the economical or technical lifetime of the piping system, the products are taken out together with the pipes. This means that deconstruction is a side activity of new installations, hence zero resources and energy are consumed during de-construction stage C1. The products are assumed to be fully separated into their unique materials. Waste processing and disposal have been modelled to reflect average European scenarios. As conservative assumption the transport distance to waste processing or disposal is 50km by truck. All materials, expect the rubber seal, are assumed to be recycled.

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.

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

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	%

This EPD is product and factory specific and does not contain average calculations.

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 v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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	4,01E+00	3,76E-02	1,21E-01	4,17E+00	1,77E-02	2,05E-01	MND	MND	MND	MND	MND	MND	MND	MNR	4,69E-03	3,90E-01	9,42E-03	-1,85E+00
GWP – fossil	kg CO_2e	3,99E+00	3,76E-02	2,69E-01	4,30E+00	1,77E-02	5,65E-02	MND	MND	MND	MND	MND	MND	MND	MNR	4,69E-03	3,99E-01	1,14E-02	-1,77E+00
GWP – biogenic	kg CO_2e	1,19E-02	0,00E+00	-1,49E-01	-1,37E-01	0,00E+00	1,49E-01	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	-9,38E-03	-1,95E-03	-8,30E-02
GWP – LULUC	kg CO_2e	3,53E-03	1,39E-05	4,89E-04	4,04E-03	6,36E-06	4,31E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,73E-06	2,93E-05	1,34E-06	-5,84E-04
Ozone depletion pot.	kg $CFC_{-11}e$	1,84E-07	8,65E-09	3,84E-08	2,31E-07	4,23E-09	4,49E-10	MND	MND	MND	MND	MND	MND	MND	MNR	1,08E-09	2,23E-09	4,60E-10	-7,42E-08
Acidification potential	mol H^+e	2,21E-02	1,59E-04	1,74E-03	2,40E-02	7,39E-05	3,73E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,99E-05	2,46E-04	1,19E-05	-8,18E-03
EP-freshwater[2)]	kg Pe	1,60E-04	3,07E-07	2,14E-05	1,82E-04	1,21E-07	1,04E-07	MND	MND	MND	MND	MND	MND	MND	MNR	3,84E-08	9,46E-07	1,87E-08	-7,01E-05
EP-marine	kg Ne	3,53E-03	4,73E-05	5,31E-04	4,11E-03	2,24E-05	1,51E-05	MND	MND	MND	MND	MND	MND	MND	MNR	5,90E-06	6,80E-05	5,93E-06	-1,47E-03
EP-terrestrial	mol Ne	4,02E-02	5,22E-04	3,80E-03	4,46E-02	2,46E-04	1,53E-04	MND	MND	MND	MND	MND	MND	MND	MNR	6,51E-05	7,53E-04	4,46E-05	-1,69E-02
POCP ("smog")[3)]	kg NMVOCe	1,32E-02	1,67E-04	1,35E-03	1,47E-02	7,93E-05	4,08E-05	MND	MND	MND	MND	MND	MND	MND	MNR	2,08E-05	2,03E-04	1,53E-05	-7,19E-03
ADP-minerals & metals[4)]	kg Sbe	1,02E-04	8,81E-08	3,87E-06	1,06E-04	4,15E-08	4,33E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1,10E-08	1,88E-06	3,94E-09	-1,97E-05
ADP-fossil resources	MJ	5,59E+01	5,64E-01	5,52E+00	6,20E+01	2,71E-01	4,74E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,59E-01	3,33E-02	-2,32E+01
Water use[5)]	m^3e depr.	1,48E+00	2,53E-03	3,85E-01	1,87E+00	1,25E-03	5,38E-03	MND	MND	MND	MND	MND	MND	MND	MNR	3,15E-04	1,60E-02	1,57E-04	-5,30E-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	2,96E-07	4,33E-09	2,31E-08	3,23E-07	2,08E-09	1,42E-09	MND	MND	MND	MND	MND	MND	MND	MNR	5,41E-10	6,32E-09	2,38E-10	-1,20E-07
Ionizing radiation[6)]	kBq U235e	4,02E-01	2,69E-03	3,90E-02	4,44E-01	1,40E-03	2,08E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,36E-04	2,32E-03	1,56E-04	-8,15E-02
Ecotoxicity (freshwater)	CTUe	1,18E+02	5,07E-01	1,70E+01	1,35E+02	2,25E-01	3,88E-01	MND	MND	MND	MND	MND	MND	MND	MNR	6,34E-02	1,23E+00	2,92E-02	-5,02E+01
Human toxicity, cancer	CTUh	8,19E-08	1,25E-11	2,54E-09	8,45E-08	5,94E-12	2,06E-11	MND	MND	MND	MND	MND	MND	MND	MNR	1,56E-12	7,75E-11	8,40E-13	-8,11E-09
Human tox. non-cancer	CTUh	9,49E-08	5,02E-10	2,66E-08	1,22E-07	2,38E-10	4,12E-10	MND	MND	MND	MND	MND	MND	MND	MNR	6,27E-11	1,84E-09	1,79E-11	-3,46E-08
SQP[7)]	-	2,06E+01	6,50E-01	2,04E+01	4,16E+01	3,16E-01	4,87E-02	MND	MND	MND	MND	MND	MND	MND	MNR	8,12E-02	4,60E-01	7,60E-02	-2,81E+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	1,01E+01	6,37E-03	2,78E+00	1,29E+01	3,51E-03	2,36E-03	MND	MND	MND	MND	MND	MND	MND	MNR	7,94E-04	3,70E-02	4,68E-04	-2,48E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,40E+00	1,40E+00	0,00E+00	-1,40E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	6,89E-01
Total use of renew. PER	MJ	1,01E+01	6,37E-03	4,18E+00	1,43E+01	3,51E-03	-1,40E+00	MND	MND	MND	MND	MND	MND	MND	MNR	7,94E-04	3,70E-02	4,68E-04	-1,79E+00
Non-re. PER as energy	MJ	4,79E+01	5,64E-01	4,09E+00	5,25E+01	2,71E-01	4,74E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,59E-01	3,33E-02	-1,87E+01
Non-re. PER as material	MJ	8,07E+00	0,00E+00	1,42E+00	9,49E+00	0,00E+00	-1,43E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	-6,06E+00	-2,01E+00	1,66E-02
Total use of non-re. PER	MJ	5,60E+01	5,64E-01	5,51E+00	6,20E+01	2,71E-01	-1,38E+00	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	-5,80E+00	-1,97E+00	-1,87E+01
Secondary materials	kg	4,13E-01	1,57E-04	9,23E-04	4,14E-01	7,63E-05	1,09E-04	MND	MND	MND	MND	MND	MND	MND	MNR	1,96E-05	5,48E-04	9,62E-06	-8,48E-02
Renew. secondary fuels	MJ	1,24E-03	1,58E-06	3,95E-04	1,64E-03	6,73E-07	8,17E-07	MND	MND	MND	MND	MND	MND	MND	MNR	1,97E-07	1,31E-05	3,30E-07	-1,38E-04
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	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	6,14E-02	7,31E-05	9,29E-03	7,07E-02	3,59E-05	3,29E-05	MND	MND	MND	MND	MND	MND	MND	MNR	9,13E-06	1,72E-04	3,60E-05	-1,24E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3,54E+00	7,47E-04	2,06E-02	3,56E+00	2,90E-04	2,07E-03	MND	MND	MND	MND	MND	MND	MND	MNR	9,34E-05	2,14E-03	0,00E+00	-5,84E-01
Non-hazardous waste	kg	7,16E+00	1,23E-02	4,87E-01	7,66E+00	5,05E-03	3,57E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,53E-03	1,72E-01	1,79E-01	-3,41E+00
Radioactive waste	kg	1,37E-04	3,78E-06	1,40E-05	1,55E-04	1,87E-06	1,46E-07	MND	MND	MND	MND	MND	MND	MND	MNR	4,71E-07	1,19E-06	0,00E+00	-3,71E-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	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,76E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	6,96E-01	0,00E+00	0,00E+00
Materials for energy rec	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	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	8,81E-02	8,81E-02	0,00E+00	8,73E-01	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	2,73E+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	3,89E+00	3,72E-02	2,61E-01	4,19E+00	1,75E-02	5,72E-02	MND	MND	MND	MND	MND	MND	MND	MNR	4,64E-03	3,99E-01	9,33E-03	-1,69E+00
Ozone depletion Pot.	kg CFC-$_{11}$e	1,61E-07	6,85E-09	3,59E-08	2,04E-07	3,35E-09	3,76E-10	MND	MND	MND	MND	MND	MND	MND	MNR	8,55E-10	1,83E-09	3,64E-10	-7,27E-08
Acidification	kg SO_2e	1,85E-02	1,24E-04	1,39E-03	2,00E-02	5,72E-05	2,75E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,54E-05	1,92E-04	9,02E-06	-6,74E-03
Eutrophication	kg PO_4^3e	6,64E-03	2,81E-05	1,31E-03	7,98E-03	1,28E-05	1,03E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,51E-06	1,84E-04	4,08E-04	-2,89E-03
POCP (“smog”)	kg C_2H_4e	9,52E-04	4,82E-06	2,17E-04	1,17E-03	2,25E-06	2,13E-06	MND	MND	MND	MND	MND	MND	MND	MNR	6,02E-07	8,71E-06	1,76E-06	-7,48E-04
ADP-elements	kg Sbe	1,02E-04	8,53E-08	3,00E-06	1,05E-04	4,04E-08	4,16E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1,06E-08	1,87E-06	3,83E-09	-1,96E-05
ADP-fossil	MJ	5,59E+01	5,64E-01	5,52E+00	6,20E+01	2,71E-01	4,74E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,59E-01	3,33E-02	-2,32E+01

ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-elements	kg Sbe	1,02E-04	8,53E-08	3,00E-06	1,05E-04	4,04E-08	4,16E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1,06E-08	1,87E-06	3,83E-09	-1,96E-05
Hazardous waste disposed	kg	3,54E+00	7,47E-04	2,06E-02	3,56E+00	2,90E-04	2,07E-03	MND	MND	MND	MND	MND	MND	MND	MNR	9,34E-05	2,14E-03	0,00E+00	-5,83E-01
Non-haz. waste disposed	kg	7,16E+00	1,23E-02	4,87E-01	7,66E+00	5,05E-03	3,57E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,53E-03	1,72E-01	1,79E-01	-3,41E+00
Air pollution	m^3	2,06E+03	6,74E+00	7,36E+01	2,14E+03	2,95E+00	2,11E+00	MND	MND	MND	MND	MND	MND	MND	MNR	8,42E-01	1,09E+01	3,23E-01	-6,85E+02
Water pollution	m^3	3,29E+01	3,98E-02	1,79E+00	3,47E+01	2,08E-02	2,71E-01	MND	MND	MND	MND	MND	MND	MND	MNR	4,96E-03	6,77E-01	4,74E-01	-6,86E+00

ENVIRONMENTAL IMPACTS – TRACI 2.1. / 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	3,84E+00	3,72E-02	2,57E-01	4,14E+00	1,75E-02	5,69E-02	MND	MND	MND	MND	MND	MND	MND	MNR	4,64E-03	3,99E-01	8,17E-03	-1,69E+00
Ozone Depletion	kg CFC-$_{11}$e	1,60E-07	6,84E-09	3,59E-08	2,03E-07	3,35E-09	3,75E-10	MND	MND	MND	MND	MND	MND	MND	MNR	8,54E-10	1,83E-09	3,64E-10	-7,34E-08
Acidification	kg SO_2e	9,82E-01	7,57E-03	7,40E-02	1,06E+00	3,52E-03	1,95E-03	MND	MND	MND	MND	MND	MND	MND	MNR	9,45E-04	1,19E-02	5,84E-04	-3,47E-01
Eutrophication	kg Ne	6,61E-04	1,58E-05	4,80E-04	1,16E-03	7,64E-06	7,29E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,98E-06	2,43E-05	3,65E-06	-3,07E-04
POCP (“smog”)	kg O_3e	9,22E-03	1,22E-04	1,02E-03	1,04E-02	5,78E-05	3,59E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,53E-05	1,72E-04	1,12E-05	-9,34E-03
ADP-fossil	MJ	4,73E+00	7,72E-02	5,88E-01	5,40E+00	3,75E-02	5,19E-03	MND	MND	MND	MND	MND	MND	MND	MNR	9,63E-03	2,51E-02	4,52E-03	-1,86E+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.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited
11.07.2024