

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

PVC-U BALL VALVES
GEORG FISCHER PIPING SYSTEMS LTD.



EPD HUB, EPDHUB-3744, EPD Hub Core PCR Version 1.1 (5 Dec 2023)

Publishing date 01.08.2025, last updated date 11.08.2025,
valid until 31.07.2030

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Georg Fischer Piping Systems Ltd.
Address	Pardisla CH, Löslweg 26, 7212 Seewis im Prättigau, Switzerland
Contact details	sustainability.ps@georgfischer.com
Website	https://www.georgfischer.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
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Veronika Pietrasz, Georg Fischer Piping Systems Ltd.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Haiha Nguyen, 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	PVC-U Ball Valve
Product reference	PVC-U Ball Valve 546 Pro, 161546064 - DN25
Place of production	Seewis, Switzerland
Period for data	Calendar year 2024
Averaging in EPD	No grouping
A1-A3 Specific data (%)	1,34

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO₂e)	4,30E+00
GWP-total, A1-A3 (kgCO₂e)	4,16E+00
Secondary material, inputs (%)	1,71
Secondary material, outputs (%)	10,6
Total energy use, A1-A3 (kWh)	16,1
Net freshwater use, A1-A3 (m³)	0,15

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

GF Piping Systems is the largest division within Georg Fischer Corporation and a leading provider of plastic and metal piping systems with a global market presence. The product portfolio includes pipes, fittings, valves and the corresponding automation and joining 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 environmental awareness is understood as one of the company's core values, internal structures and processes are geared towards sustainability. In this context, Life Cycle Assessments (LCA) are increasingly used to gain insight into the different life cycle phases of our systems.

PRODUCT DESCRIPTION

Ball valves are an indispensable part of every piping system. They come in a variety of different sizes, materials, and actuation possibilities to regulate and control processes in the most diverse fields of application. The ball valve uses a rotating ball with a hole through it that allows straight-through flow in the open position and shuts off flow when the ball is rotated 90°. This valve is mainly used for open/close functions, and for regulating applications. Whether electric, pneumatic or manual operation, including optional accessories, it flexibly meets all requirements.

Ball valves are used across a wide range of applications - from simple water installations to complex industrial processes. Typical fields of use include the chemical industry, microelectronics, measurement and control technology, and the food and beverage industry. Thanks to their corrosion-free materials and robust design, they ensure long-term reliability even under demanding conditions.

OVERVIEW OF PRODUCT DIFFERENCES

All formats in the PVC-U Ball Valves have similar compositions and core manufacturing processes. Their specific GWP's are declared in the Annex.

Ball Valve Type	Unique Features
546 Pro	Lockable lever, data matrix code, interface for flexible automation and accessories
546 Pro Linear	Lockable lever, scale disk and shaped ball for linear flow
546 Pro Vented	Lockable lever, relief bore to prevent gas/liquid accumulation
543 Pro	Lockable lever, L-, T-, and three-way ball configurations
523 Pro	Lockable lever, Scale disk and V-shaped ball opening
542	Simpler version of 546 Pro

Further information can be found at:
<https://www.georgfischer.com/en.html>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	2,213	EU
Minerals	0	-
Fossil materials	97,787	EU
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	0,0409

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	25 years

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	MND	MND	MND	MND	MND	MND	MND	MND	MND		x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use		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.

PVC-U and PP-GF30 are processed using injection molding. The granulated polymers are melted and injected into precision molds to form valve bodies, balls, and other structural components. The process

ensures dimensional accuracy and consistency. After molding or casting, components undergo CNC machining to achieve precise tolerances. This includes drilling, threading, and polishing. The valve is assembled by combining the body, ball, seals, and stem. EPDM gaskets and O-rings are fitted to ensure leak-proof operation. Once approved, valves are cleaned, assembled into final products, and packaged in protective materials for safe transportation. The meticulous manufacturing process ensures that Georg Fischer ball valves meet high standards for quality, durability, and performance across various industries, including water treatment, chemical processing, and microelectronics.

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.

Average distance of transportation from production plant to retailer's site is assumed as approximately 1365 km with lorry and approximately 9702 km with ship. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, this may vary but as the share of transportation emissions in the total result is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as the product is packaged properly. Environmental impacts of installation include generation of waste packaging materials (A5) and release of biogenic carbon dioxide from cardboard boxes.

PRODUCT USE AND MAINTENANCE (B1-B7)

Use stage is not applicable to the product and is not considered.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

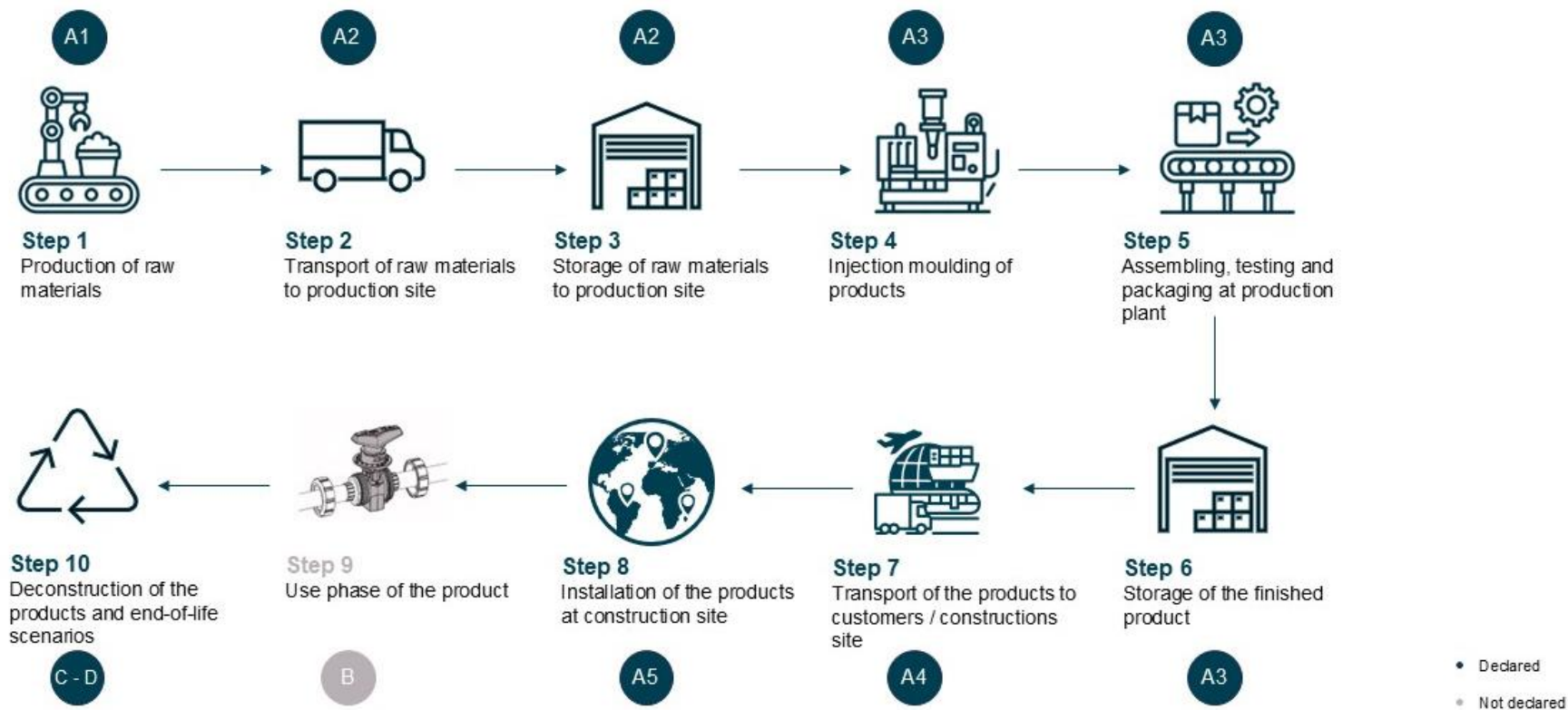
The disassembly of the product is assumed to be done manually, so no environmental impacts are expected in C1. It is assumed that the different waste materials are collected separately and transported to a waste treatment facility. Transportation distance to waste treatment plant is assumed to be 250 km for recycled waste, 150 for incineration and 50 for landfill. The transportation method is assumed to be lorry (C2). The end-of-life scenario is structured based on average global statistics about recycling and incineration rates of the materials.

The recycling rate for PP-GF30, EPDM, PVC, and stainless steel is 9%, while 19% is incinerated with energy recovery. 87% of PTFE is co-incinerated with energy recovery in the EU, while 100% is landfilled.

Module C3 accounts for energy and resource inputs for sorting and treating of materials for recycling. Landfilled materials are included in module C4. Due to the material recovery potential of the product, and material and energy recovery potential of its 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.

Based on average European waste-to-energy performance, the energy recovery efficiency is assumed to be 38%, of which 16% corresponds to electricity and 22% to heat.

MANUFACTURING PROCESS AND SYSTEM BOUNDARY



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 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	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 v3.10.1 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

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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 ₂ e	4,14E+00	4,33E-02	-2,35E-02	4,16E+00	1,43E+00	1,54E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,24E-02	4,25E-01	5,45E-02	-9,72E-02
GWP – fossil	kg CO ₂ e	4,14E+00	4,33E-02	1,22E-01	4,30E+00	1,43E+00	3,61E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-02	4,27E-01	5,46E-02	-9,58E-02
GWP – biogenic	kg CO ₂ e	7,17E-04	0,00E+00	-1,50E-01	-1,49E-01	0,00E+00	1,50E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,57E-06	-2,06E-03	-1,38E-04	-1,33E-03
GWP – LULUC	kg CO ₂ e	8,67E-04	1,57E-05	4,19E-03	5,07E-03	6,16E-04	1,98E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,65E-06	4,55E-05	2,43E-06	-1,35E-04
Ozone depletion pot.	kg CFC-11e	4,64E-05	8,64E-10	2,74E-09	4,64E-05	2,26E-08	3,65E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,44E-10	1,35E-09	2,00E-10	-8,87E-10
Acidification potential	mol H ⁺ e	9,48E-03	1,00E-04	4,94E-04	1,01E-02	4,51E-03	1,46E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,82E-05	2,51E-04	4,43E-05	-5,85E-04
EP-freshwater ²⁾	kg Pe	2,63E-04	2,92E-06	5,65E-05	3,23E-04	1,09E-04	8,05E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,53E-07	1,47E-05	5,23E-07	-5,80E-05
EP-marine	kg Ne	8,64E-04	2,68E-05	2,56E-04	1,15E-03	1,43E-03	2,35E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,28E-06	9,02E-05	1,10E-03	-8,94E-05
EP-terrestrial	mol Ne	9,03E-03	2,90E-04	1,73E-03	1,10E-02	1,55E-02	4,61E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,87E-05	7,38E-04	1,95E-04	-8,96E-04
POCP (“smog”) ³⁾	kg NMVOCe	5,77E-03	1,65E-04	4,51E-04	6,38E-03	6,76E-03	1,76E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,67E-05	2,30E-04	8,43E-05	-2,92E-04
ADP-minerals & metals ⁴⁾	kg Sbe	3,01E-05	1,39E-07	4,80E-07	3,07E-05	4,15E-06	2,33E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,91E-08	4,13E-07	1,47E-08	-3,76E-07
ADP-fossil resources	MJ	3,71E+01	6,13E-01	1,48E+00	3,92E+01	2,07E+01	3,30E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,78E-01	5,09E-01	1,49E-01	-1,45E+00
Water use ⁵⁾	m ³ e depr.	3,60E-01	3,07E-03	6,31E-02	4,27E-01	1,02E-01	9,03E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,88E-04	3,50E-01	9,45E-04	-3,20E-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, EF 3.1

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	2,21E-07	3,41E-09	5,89E-09	2,30E-07	1,36E-07	1,96E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,02E-09	2,87E-09	1,05E-09	-5,77E-09
Ionizing radiation ⁶⁾	kBq U235e	8,82E-02	7,80E-04	1,13E-02	1,00E-01	1,97E-02	2,16E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,17E-04	1,95E-03	2,15E-04	-2,50E-02
Ecotoxicity (freshwater)	CTUe	4,28E+00	7,97E-02	9,47E-01	5,31E+00	2,89E+00	1,18E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,30E-02	1,47E+01	2,46E-01	-2,55E-01
Human toxicity, cancer	CTUh	2,38E-09	7,24E-12	3,83E-11	2,42E-09	2,37E-10	2,61E-12	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,07E-12	1,01E-10	2,22E-12	-1,95E-11
Human tox. non-cancer	CTUh	1,85E-08	3,90E-10	9,08E-10	1,98E-08	1,33E-08	1,39E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,13E-10	1,63E-09	3,32E-10	-8,22E-10
SQP ⁷⁾	-	3,79E+00	4,21E-01	3,93E+00	8,14E+00	1,92E+01	2,43E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,33E-01	3,11E-01	3,57E-01	-5,57E-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	3,89E+00	1,06E-02	1,16E+01	1,55E+01	2,99E-01	-1,59E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,98E-03	4,82E-02	3,89E-03	-2,99E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,28E+00	1,28E+00	0,00E+00	-1,28E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E-02
Total use of renew. PER	MJ	3,89E+00	1,06E-02	1,29E+01	1,68E+01	2,99E-01	-2,87E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,98E-03	4,82E-02	3,89E-03	-2,86E-01
Non-re. PER as energy	MJ	4,39E+01	6,13E-01	-2,25E+00	4,23E+01	2,07E+01	3,29E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,78E-01	-7,63E+00	-1,71E+01	-1,73E+00
Non-re. PER as material	MJ	2,09E+01	0,00E+00	4,19E-03	2,09E+01	0,00E+00	-4,19E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,56E+01	-5,32E+00	1,63E+00
Total use of non-re. PER	MJ	6,48E+01	6,13E-01	-2,24E+00	6,32E+01	2,07E+01	2,88E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,78E-01	-2,32E+01	-2,24E+01	-1,03E-01
Secondary materials	kg	1,71E-02	2,81E-04	9,95E-02	1,17E-01	8,96E-03	5,44E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,02E-05	4,41E-04	5,75E-05	8,85E-03
Renew. secondary fuels	MJ	1,81E-03	3,55E-06	9,29E-03	1,11E-02	1,14E-04	3,07E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,01E-06	4,61E-05	1,01E-06	-6,49E-05
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	m³	1,45E-01	8,50E-05	1,47E-03	1,46E-01	3,01E-03	-1,86E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,49E-05	8,08E-03	-2,65E-03	-1,13E-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	1,58E-01	8,91E-04	8,08E-03	1,67E-01	3,41E-02	5,58E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,62E-04	8,33E-02	2,34E-04	-1,14E-02
Non-hazardous waste	kg	4,43E+00	1,86E-02	2,95E-01	4,74E+00	6,46E-01	6,31E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,37E-03	3,90E-01	3,45E+00	-1,60E-01
Radioactive waste	kg	2,24E-05	1,94E-07	2,88E-06	2,54E-05	4,84E-06	5,51E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,37E-08	4,98E-07	5,07E-08	-6,42E-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	6,84E-02	6,84E-02	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	0,00E+00	0,00E+00	0,00E+00	8,30E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,06E-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	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	3,90E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,49E-01	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	1,60E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,78E-01	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	2,30E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	4,72E-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 ₂ e	3,86E+00	4,30E-02	1,28E-01	4,03E+00	1,43E+00	1,37E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-02	4,28E-01	5,23E-02	-9,55E-02
Ozone depletion Pot.	kg CFC-11e	5,40E-05	6,88E-10	2,24E-09	5,40E-05	1,80E-08	2,98E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,94E-10	1,28E-09	1,60E-10	-7,43E-10
Acidification	kg SO ₂ e	8,29E-03	7,91E-05	3,54E-04	8,72E-03	3,47E-03	1,11E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,24E-05	1,97E-04	3,23E-05	-4,95E-04
Eutrophication	kg PO ₄ ³ e	2,92E-03	2,00E-05	1,96E-04	3,14E-03	8,49E-04	1,67E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,61E-06	4,15E-05	3,70E-05	-1,28E-04
POCP ("smog")	kg C ₂ H ₄ e	8,89E-04	8,12E-06	3,34E-05	9,30E-04	3,17E-04	3,29E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,30E-06	1,89E-05	1,05E-05	-2,71E-05
ADP-elements	kg Sbe	2,96E-05	1,36E-07	4,73E-07	3,02E-05	4,05E-06	2,29E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,82E-08	2,88E-07	1,42E-08	-3,74E-07
ADP-fossil	MJ	6,03E+01	6,00E-01	1,28E+00	6,22E+01	2,04E+01	2,92E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,74E-01	4,78E-01	1,46E-01	-1,01E+00

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	2,96E-05	1,36E-07	4,73E-07	3,02E-05	4,05E-06	2,29E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,82E-08	2,88E-07	1,42E-08	-3,74E-07
Hazardous waste disposed	kg	2,50E-01	8,91E-04	8,08E-03	2,59E-01	3,41E-02	5,58E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,62E-04	8,33E-02	2,34E-04	-1,14E-02
Non-haz. waste disposed	kg	6,76E+00	1,86E-02	2,95E-01	7,08E+00	6,46E-01	6,31E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,37E-03	3,90E-01	3,45E+00	-1,60E-01
Air pollution	m³	5,15E+02	8,21E+00	2,99E+01	5,53E+02	3,28E+02	8,82E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,45E+00	1,64E+01	1,33E+00	-3,74E+01
Water pollution	m³	2,00E+01	3,39E-01	1,01E+00	2,14E+01	9,88E+00	2,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	9,65E-02	2,38E-01	8,81E-02	-8,31E-01

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-GHG9)	kg CO2e	4,14E+00	4,33E-02	1,27E-01	4,31E+00	1,43E+00	3,61E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,23E-02	4,27E-01	5,46E-02	-9,59E-02

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.

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 ₂ e	4,06E+00	4,26E-02	1,27E-01	4,23E+00	1,41E+00	1,26E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,21E-02	4,27E-01	4,84E-02	-9,49E-02
Ozone Depletion	kg CFC ₁₁ e	5,40E-05	9,11E-10	2,84E-09	5,40E-05	2,39E-08	3,85E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,57E-10	1,40E-09	2,11E-10	-9,38E-10
Acidification	kg SO ₂ e	7,86E-03	8,62E-05	4,04E-04	8,35E-03	3,99E-03	1,28E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,42E-05	2,51E-04	4,08E-05	-4,88E-04
Eutrophication	kg Ne	1,30E-03	1,10E-05	2,61E-04	1,57E-03	4,35E-04	3,45E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,12E-06	3,80E-05	5,92E-05	-8,66E-05
POCP ("smog")	kg O ₃ e	5,67E+00	1,97E-03	7,91E-03	5,68E+00	9,94E-02	2,51E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,41E-04	4,26E-03	1,22E-03	-5,03E-03
ADP-fossil	MJ	1,62E+01	6,14E-01	-2,25E+00	1,46E+01	2,07E+01	3,30E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,78E-01	-7,63E+00	-1,71E+01	-1,73E+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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited

01.08.2025



ANNEX I

SCALING TABLE

The Global Warming Potential (GWP) of ball valves varies due to their unique functional designs and material compositions. While all valves are made from similar materials- PVC-U, PP-GF, EPDM, PTFE and stainless steel -certain product-specific characteristics significantly impact their environmental footprint.

All valves were assessed at a nominal diameter of DN25 and scaled to a reference unit of 1 kg for comparability within the product group.

Impact category		Unit	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
Product Type		PVC-U Ball Valve	546 Pro	546 Pro Linear	546 Pro Vented	543 Pro	523 Pro	542
Product Weight		kg	1	1	1	1	1	1
EN 15804+A2, PEF	GWP - total	kg CO2e	4,16E+00	4,13E+00	4,16E+00	4,29E+00	4,13E+00	4,52E+00
	GWP - fossil	kg CO2e	4,30E+00	4,27E+00	4,30E+00	4,43E+00	4,27E+00	4,66E+00
	GWP - biogenic	kg CO2e	-1,49E-01	-1,49E-01	-1,49E-01	-1,49E-01	-1,49E-01	-1,49E-01
	GWP - luluc	kg CO2e	5,07E-03	5,91E-03	5,07E-03	6,14E-03	5,91E-03	5,87E-03

ANNEX II

GF Piping systems incorporates a share of sustainable raw material on the basis of mass balance from voluntary schemes listed in the Renewable Energy Directive EU 2018/2001. The current EPD Standards do not allow for the claim of these benefits, therefore the actual improvements are modelled here.

Currently (2025) GF Piping Systems uses up to 20% of Bio-Attributed PVC as a standard in the PVC-U Ball Valves:

- Type 546 Pro
- Type 546 Pro Linear
- Type 546 Pro Vented
- Type 543 Pro
- Type 523 Pro
- Type 542

Given the significance of the CO₂e emissions from the raw material production itself, the use of Bio Attributed PVC-U holds the biggest potential in reducing these, contributing to a more sustainable product.

The use of 20% Bio-Attributed PVC-U material reduces the CO₂e emissions by 7.1% (A1-A3).

The exact quantities may vary due to material availability and are published in the GF sustainability report.

Global Warming Potential, CO₂e per kg of PVC-U Ball Valve
Life-cycle stages A1-A3

