ENVIRONMENTAL PRODUCT DECLARATION

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

GF INSTAFLEX
PIPES DIM 16 – 315MM



Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.EF 3.1.

EPD HUB, HUB-7543
Published on 18.09.2026, last updated on 18.09.2026, valid until 17.09.2031

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Georg Fischer JRG AG
Address	Hauptstrasse 130, CH-4450 Sissach (BL)
Contact details	info.jrg.ps@georgfischer.com
Website	www.gfps.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025 EN 16904 Product Category Rules (PCR) for plastics piping systems inside buildings
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	Thomas Vogel
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub

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

PRODUCT

Product name	GF Instaflex pipes 16mm - 315mm
Additional labels	-
Product reference	-
Place(s) of raw material origin	EU
Place of production	Netherlands, Germany
Place(s) of installation and use	World
Period for data	Calendar year 2025
Averaging in EPD	Multiple factories
Variation in GWP-fossil for A1-A3 (%)	+/- 50%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	7,85

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
Mass of packaging	0,675 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,2
GWP-total, A1-A3 ($kgCO_2e$)	1,56
Secondary material, inputs (%)	0
Total energy use, A1-A3 (kWh)	12,3
Net freshwater use, A1-A3 (m^3)	27,7

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

With a rich history in industrial innovation since 1802, GF is actively reshaping itself to get into top ranking in Flow Solutions for Buildings, Industry and Infrastructure. GF delivers Excellence in Flow through essential products and solutions that enable safe and sustainable transport of water and other fluids worldwide. Following the Uponor acquisition and integration, GF has brought together its collective expertise and technologies into a unified portfolio of Flow Solutions for Buildings. This allows GF to offer reliable systems that perform throughout a building's entire lifecycle – from construction to daily operations – ensuring they are both future-proof and sustainable. Headquartered in Switzerland, GF is listed on the SIX Swiss Exchange.

PRODUCT DESCRIPTION

This EPD covers a product group comprising GF INSTAFLEX polybutene (PB) pipes in dimensions ranging from 16 mm to 315 mm, manufactured at 2 production sites in Germany and the Netherlands. The products included in this EPD are designed for the installation of drinking water distribution systems in residential, commercial, and industrial buildings.
The covered product portfolio includes pipes with varying diameters, wall thicknesses, pressure classes, and application requirements. While the specific technical performance characteristics differ depending on product type and dimension, all products fulfil the same primary function of transporting potable water within building installations.
The environmental results declared in this EPD represent averaged data for the included product and factory group. The declared values are based on production-weighted average datasets representing the manufacturing sites and product variants included within the scope. Product-specific environmental impacts may vary depending on dimensions, material consumption, and manufacturing location. The reported impacts therefore represent the average environmental performance of the covered product portfolio rather than a specific individual product.

Further information can be found at: www.gfps.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	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	0,337

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND

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.

A market-based approach is used in modelling the electricity mix utilized in the factory.
The raw material supply (A1) includes the extraction and processing of polybutylene granulate, sourced from certified suppliers internationally. In this module transportation (A2) by trucks (50/40 km) from the raw material suppliers to the factory gate, as well as internal transport is considered.
Manufacturing (A3) involves energy-efficient pipe extrusion and calibration, followed by cooling, cutting and quality inspection, finally packaging. The manufacturing stages are:
- Raw material preparation (PB granulate + additives)
- Extrusion through annular die head (pipe shaping)
- Calibration (dimension setting)
- Cooling (water-based systems)
- Cutting or coiling
- Quality control
- Packaging

Packaging is designed to maintain product cleanliness during handling and transport. To ensure this, products are typically packed in corrugated cardboard boxes / pipes and pallets. Packaging materials are recyclable and comply with EU environmental and safety standards.
Waste generated during production is minimized; manufacturing plastic waste and residual waste area send to landfill (by truck, 50km); paper and PE-foils are shipped to recycling plants (by truck, 50km).
Main energy used in productions is electricity from hydro-power, follwed by natural gas.
Production losses are considered in phycial properities of waste generated.
The use of renewable energy in manufacturing is demonstrated through contractual instruments (GOs, RECs), and its use is ensured throughout the validity period of this EPD.

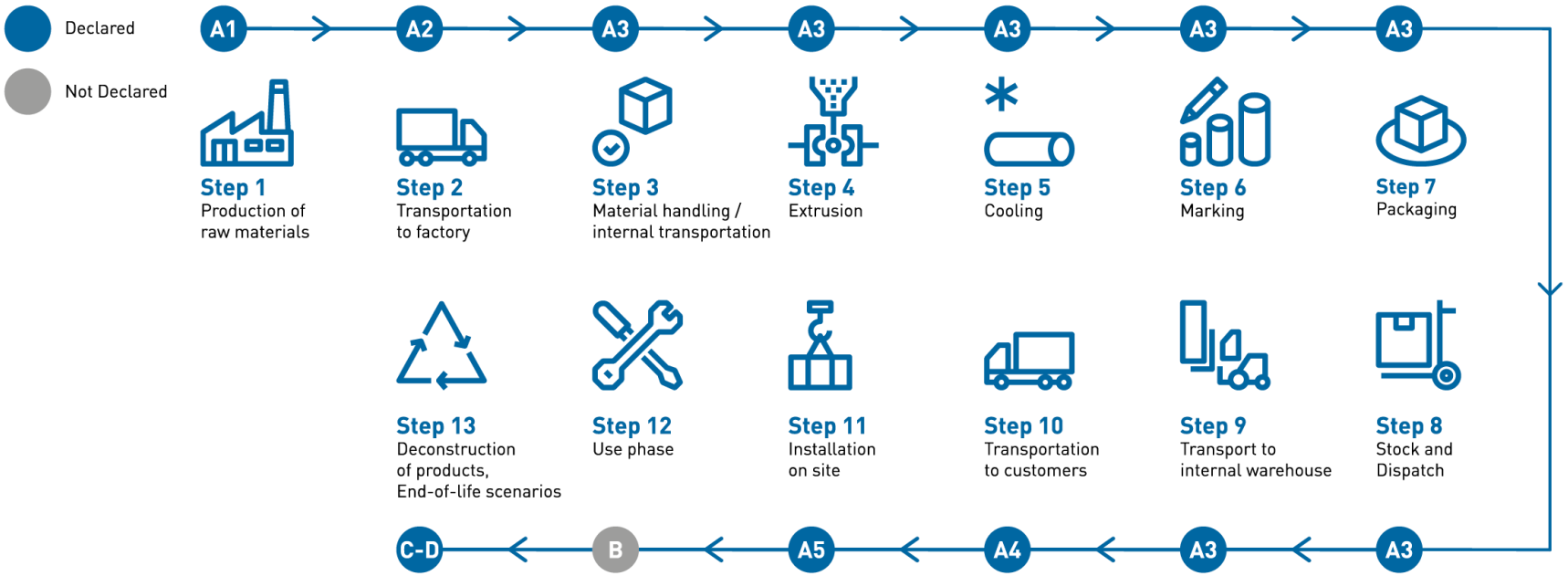
TRANSPORT AND INSTALLATION (A4-A5)

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 installation of the GF INSTAFLEX PB piping system for tap water includes cutting and preparation of pipes, positioning of components, and joining by electrofusion, socket fusion, or mechanical fittings. In electrofusion, an electrically controlled welding unit heats the fitting, creating a homogeneous material bond between pipe and fitting. After cooling down, the pipeline is fixed using appropriate supports and subjected to pressure testing prior to commissioning.
Transportation from GF warehouses to sites in EU are considered by truck transportation of 950km (average).
Energy consumption during installation is limited to electricity required for welding equipment and auxiliary tools and is considered by 0,04Wh/kg, as no continuous heating processes or fossil fuels are used. Metal fixation of pipework is also considered by material end low-voltage energy for drilling.
Water use is enclosed for hydrostatic pressure testing and flushing of the system by 0,2kg/kg.
All product packaging delivered to the construction site is assumed to become packaging waste in module A5. The packaging inventory comprises wooden pallets, PE foil and cardboard. Packaging waste treatment is modelled separately for each packaging material using the corresponding One Click LCA European average end-of-life dataset. The treatment assumptions for wooden packaging are based on an EU end-of-life scenario derived from Eurostat data. The environmental burdens of collection, transport and waste processing are included in A5, while potential net benefits from recovered secondary materials or energy are reported in module D.

PRODUCT END OF LIFE (C1-C4, D)

The end-of-life scenarios included in the EPD are currently in use and are representative of one of the most likely scenarios. Product end-of-life primarily takes place in Turkey and Europe. It is assumed that deconstruction is a site activity and that the products are deconstructed after a lifetime of 50 years. Although the plastic components of the product are technically recyclable, due to their material properties, they are conservatively modelled with thermal energy recovery. Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed negligible (C1). At EoL the full pipe installation is disassembled manually (C1 energy = 0).
20% of the product are assumed to be collected seperately and sent to plastics mechanical recycling (C3), 80% is sent to incineration (C3) within other construction waste; the assumed transportation distance is 50km/each by truck (C2). Scenarios included are currently in use and are representative for one of the most likely scenario.
Module D reports the net benefits and loads associated with recovered secondary materials and recovered energy replacing equivalent primary materials and conventional energy production in subsequent product systems. Benefits and loads for packaging waste included in A5 are considered in D stage.
The products are not biodegradable. Products meet the legal requirements at validation date on limited Substances of Very High Concern (SVHC).

LIFE CYCLE FLOW DIAGRAM



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

This study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012 + A2:2019. Excluded modules are use stage modules (B1-B7).
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 process which data are 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. The life cycle analysis includes all industrial processes from raw material acquisition to production, distribution and end-of-life stages.
The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Physical Properties
Packaging material	Physical Properties
Ancillary materials	Physical Properties
Manufacturing energy and waste	Physical Properties

A minor deviation may occur between the results reported for Primary Energy (PENRT, A1–A3, "Total use of non-renewable primary energy resources" in the resource use table) and the ADP fossil fuels indicator (ADPfossil, A1–A3) reported in the impact category results according to EN 15804+A2.
This deviation is due to differences in the underlying methodological approaches and characterisation factors applied for the respective indicators, as well as the specific datasets used within the validated LCA model. While both indicators are related to fossil resource use, they are defined and calculated differently in accordance with EN 15804+A2.
The identified deviation is considered methodologically justified and does not represent an inconsistency in the data quality or modelling approach applied in this EPD.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple factories
Grouping method	Based on average results of product
Variation in GWP-fossil for A1-	+/- 50%

The environmental impacts declared in this EPD are based on average data representing the defined product group of plastic wastewater pipes. The results are representative of the included products, manufacturing processes, and supply chains within the declared scope. While the EPD provides a reliable basis for assessing the average environmental performance of the product family, deviations may occur for individual product variants.
The declared results represent a production-mass-weighted average of the products and manufacturing sites included in the EPD. Differences in manufacturing energy, transport, packaging, production waste, and water-related inputs may affect the individual A1–A3 results.
A conservative GWP-fossil variation range of ±50% relative to the declared weighted-average result is retained to cover the variability within the declared product and site group. This range is not a statistical uncertainty interval and is not applied as an additional factor to the declared results.
The declared results are applicable within the geographical scope defined in this EPD and are representative for regions with comparable production conditions, energy mixes, transport scenarios, and end-of-life treatments.
The applicability of the results outside this scope should be assessed carefully, particularly where significant regional differences exist.
Comparisons with other EPDs are only valid when based on the same standards, system boundaries, and functional or declared units.

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 3.11 and One Click LCA databases as sources of environmental data.
- Allocation used in Ecoinvent environmental data sources follow the methodology allocation, Cut-off, EN 15804+A2.
- EU wooden packaging EoL scenario by EUROSTAT.

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_2e	1,63E+00	1,69E-01	-2,34E-01	1,56E+00	2,27E-01	7,28E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,67E-03	1,89E-01	7,83E-03	-6,63E-01
GWP – fossil	kg CO_2e	1,63E+00	1,61E-01	4,08E-01	2,20E+00	2,15E-01	6,71E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,66E-03	1,88E-01	7,79E-03	-1,35E-01
GWP – biogenic	kg CO_2e	-2,94E-05	1,76E-03	-6,59E-01	-6,57E-01	3,91E-03	6,61E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,53E-06	1,44E-03	3,53E-05	-5,30E-01
GWP – LULUC	kg CO_2e	4,89E-05	6,24E-03	1,72E-02	2,35E-02	8,32E-03	3,89E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,97E-06	2,95E-04	1,96E-06	1,25E-03
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	7,78E-11	6,35E-09	1,15E-08	1,80E-08	8,47E-09	9,29E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,69E-11	1,11E-09	2,62E-10	5,93E-10
Acidification potential	mol H^+e	5,66E-03	5,09E-04	2,08E-03	8,24E-03	6,79E-04	3,03E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,32E-05	3,59E-04	8,78E-05	-2,79E-04
EP-freshwater[2)]	kg Pe	3,82E-07	1,31E-05	3,49E-04	3,62E-04	1,74E-05	2,56E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,22E-07	5,20E-05	1,34E-05	-1,59E-04
EP-marine	kg Ne	3,23E-07	2,30E-04	1,10E-03	1,33E-03	3,07E-04	1,83E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,66E-06	1,03E-04	2,19E-05	-3,20E-04
EP-terrestrial	mol Ne	1,23E-06	1,95E-03	7,84E-03	9,78E-03	2,59E-03	6,96E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,28E-05	6,40E-04	2,36E-04	-2,38E-03
POCP ("smog")[3)]	kg NMVOCe	9,76E-04	7,69E-04	2,23E-03	3,97E-03	1,03E-03	2,46E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,40E-05	2,08E-04	8,54E-05	-5,73E-04
ADP-minerals & metals[4)]	kg Sbe	8,94E-10	6,29E-07	2,48E-06	3,11E-06	8,38E-07	3,73E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,91E-08	7,84E-07	1,35E-08	-3,05E-07
ADP-fossil resources	MJ	4,74E+01	2,30E+00	5,80E+00	5,55E+01	3,07E+00	1,26E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,51E-02	1,30E+00	1,84E-01	1,26E-01
Water use[5)]	m^3e depr.	2,61E-05	1,68E-02	2,48E+00	2,50E+00	2,24E-02	4,39E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,55E-04	4,14E-02	8,71E-03	2,03E-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, 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	2,52E-07	1,54E-08	1,43E-08	2,82E-07	2,05E-08	5,38E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,53E-10	1,68E-09	1,33E-09	-1,22E-09
Ionizing radiation[6)]	kBq U235e	4,99E-06	1,93E-03	3,48E-02	3,67E-02	2,57E-03	1,14E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,97E-05	3,43E-02	2,33E-04	1,46E-02
Ecotoxicity (freshwater)	CTUe	1,02E-03	8,79E-01	1,13E+02	1,14E+02	1,17E+00	2,25E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,97E-02	2,19E+00	9,88E+00	4,01E+00
Human toxicity, cancer	CTUh	2,95E-13	3,55E-11	5,45E-10	5,81E-10	4,73E-11	2,86E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,05E-12	3,69E-11	3,14E-12	-4,70E-12
Human tox. non-cancer	CTUh	1,35E-12	1,71E-09	2,85E-08	3,02E-08	2,28E-09	1,38E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,91E-11	1,25E-09	1,97E-10	1,68E-10
SQP[7)]	-	3,04E-03	2,44E+00	1,27E+01	1,51E+01	3,26E+00	5,16E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,49E-02	3,48E-01	4,55E-01	-3,42E+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	7,50E-01	5,00E-02	1,11E+01	1,19E+01	6,66E-02	-9,93E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,32E-03	3,38E-01	3,54E-03	-4,40E+00
Renew. PER as material	MJ	2,52E-04	0,00E+00	1,04E+01	1,04E+01	0,00E+00	-1,04E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-2,02E-04	-5,04E-05	5,14E+00
Total use of renew. PER	MJ	7,51E-01	5,00E-02	2,15E+01	2,23E+01	6,66E-02	-2,03E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,32E-03	3,38E-01	3,49E-03	7,44E-01
Non-re. PER as energy	MJ	2,40E+01	2,35E+00	5,79E+00	3,21E+01	3,13E+00	1,03E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,51E-02	-4,86E+00	1,84E-01	6,21E+00
Non-re. PER as material	MJ	4,74E+01	0,00E+00	5,92E-02	4,75E+01	0,00E+00	-5,92E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-3,79E+01	-9,48E+00	1,12E-01
Total use of non-re. PER	MJ	7,14E+01	2,35E+00	5,85E+00	7,96E+01	3,13E+00	9,67E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,51E-02	-4,28E+01	-9,29E+00	6,32E+00
Secondary materials	kg	4,70E-07	1,09E-03	3,20E-01	3,21E-01	1,45E-03	3,90E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,98E-05	2,62E-04	5,90E-05	1,98E-01
Renew. secondary fuels	MJ	1,18E-08	1,44E-05	1,26E-01	1,26E-01	1,92E-05	1,27E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,19E-07	3,88E-06	1,11E-06	-3,05E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	2,76E+01	5,90E-04	5,78E-02	2,77E+01	7,87E-04	2,76E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,36E-05	8,69E-04	-2,20E-03	1,45E-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	2,31E-03	1,69E-02	1,50E-01	1,69E-01	2,25E-02	6,46E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,08E-04	4,43E-03	2,92E-04	1,17E-02
Non-hazardous waste	kg	2,01E-03	2,38E-01	5,86E-01	8,26E-01	3,18E-01	1,30E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,20E-02	3,60E-01	2,60E+00	-1,36E+00
Radioactive waste	kg	1,22E-09	4,64E-07	5,80E-05	5,85E-05	6,18E-07	3,41E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,91E-08	8,80E-06	5,60E-08	3,80E-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	ND	ND	ND	ND	ND	ND	ND	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	1,86E-02	1,86E-02	0,00E+00	5,80E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,00E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	6,72E-03	6,72E-03	0,00E+00	6,72E-05	ND	ND	ND	ND	ND	ND	ND	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	6,77E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,82E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,95E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,63E+00	1,66E-01	3,36E-01	2,13E+00	2,22E-01	1,07E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,63E-03	1,86E-01	7,73E-03	-1,31E-01
Ozone depletion Pot.	kg $CFC_{-11}e$	5,23E-11	5,07E-09	7,23E-09	1,23E-08	6,76E-09	7,42E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,73E-11	9,43E-10	2,09E-10	4,45E-10
Acidification	kg SO_2e	5,18E-03	3,81E-04	1,05E-03	6,62E-03	5,08E-04	2,41E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,77E-05	3,00E-04	7,04E-05	-1,45E-04
Eutrophication	kg PO_4^3e	1,18E-03	4,83E-04	6,21E-04	2,29E-03	6,44E-04	1,16E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,79E-06	5,11E-05	1,93E-05	4,06E-05
POCP (“smog”)	kg C_2H_4e	5,77E-04	4,21E-05	9,40E-05	7,13E-04	5,61E-05	2,90E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,54E-06	2,40E-05	4,55E-06	-2,96E-05
ADP-elements	kg Sbe	8,85E-10	6,22E-07	1,33E-06	1,95E-06	8,30E-07	3,57E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,86E-08	7,76E-07	1,31E-08	-3,13E-07
ADP-fossil	MJ	7,71E+01	2,27E+00	3,88E+00	8,32E+01	3,03E+00	1,34E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,38E-02	6,94E-01	1,80E-01	-1,33E-01

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	1,63E+00	1,67E-01	4,25E-01	2,22E+00	2,23E-01	6,75E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,67E-03	1,88E-01	7,79E-03	-1,33E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation 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_2e	1,63E+00	1,65E-01	3,34E-01	2,13E+00	2,21E-01	1,02E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,57E-03	1,83E-01	7,61E-03	-1,28E-01
Ozone Depletion	kg CFC_{-11}e	7,00E-11	6,67E-09	9,22E-09	1,60E-08	8,90E-09	9,51E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,02E-10	1,17E-09	2,77E-10	6,07E-10
Acidification	kg SO_2e	4,32E-03	4,52E-04	1,20E-03	5,97E-03	6,02E-04	2,49E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,09E-05	3,03E-04	7,48E-05	-3,14E-04
Eutrophication	kg Ne	4,32E-04	2,42E-04	8,21E-04	1,50E-03	3,23E-04	1,70E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,84E-06	5,97E-05	9,28E-06	-1,58E-04
POCP (“smog”)	kg O_3e	3,34E-03	1,20E-02	2,27E-02	3,81E-02	1,60E-02	3,83E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,23E-04	3,63E-03	1,45E-03	-1,28E-02
ADP-fossil	MJ	1,11E+01	0,00E+00	-2,32E-02	1,11E+01	0,00E+00	3,86E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-7,55E-01

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Natural gas, high pressure, import from DE, Switzerland, Ecoinvent, 0.35 kgCO2e/m3
2. Unsaturated hydrocarbons production, steam cracking operation, average, Rest-of-Europe, Ecoinvent, 1.90 kgCO2e/kg
3. Electricity production, hydro, reservoir, alpine region, Switzerland, Ecoinvent, 0.0066 kgCO2e/kWh
4. Electricity production, hydro, reservoir, alpine region, Switzerland, Ecoinvent, 0.0066 kgCO2e/kWh
5. Electricity production, hydro, reservoir, alpine region, Switzerland, Ecoinvent, 0.0066 kgCO2e/kWh
6. Electricity production, hydro, reservoir, alpine region, Switzerland, Ecoinvent, 0.0066 kgCO2e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry, 16-32 metric ton, diesel, EURO 5, 950.0 km

Transport to the building site (A4) - Scenario documentation

Scenario parameter	Value
Capacity utilization (including empty return) %	80
Bulk density of transported products	299
Volume capacity utilization factor	<1

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	low voltage electricity 0,04kWh/kg for plastic welding, low voltage energy 0,0012 kWh/kg for drilling and fixation.
Water use (m^3)	0,2kg/kg for cleaning and pressure testing
Ancillary materials: type and mass (kg)	1% of products lost due to installation mistakes or damage, 20% to mechanical recycling (separately collected), 80% incineration within mixed waste). All A5 product packaging (wooden pallets, PE-foil, cardboard) is modelled by OCLCA average scenarios (mix of recycling, incineration and landfill).
Waste materials: type and mass (kg)	20% recycling/80% incineration of plastic, all with distance to final plant of 50km by truck.
Waste materials: output routes	50km transportation by trucks
Direct emissions (kg)	-

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	0,2
Collection process: Mixed waste (kg)	0,8
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0,2
Recovery: energy recovery (kg)	0,8
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	50km by truck to next landfill/incineration plant.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub Limited
18.09.2026

