Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

simplesta® SH - System press fittings and system pipes made of stainless steel

Registration number:	EPD-Kiwa-EE-175855-en
Issue date:	14-10-2024
Valid until:	14-10-2029
Declaration owner:	Esta Rohr GmbH
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

simplesta® SH - System press fittings and system pipes made of stainless steel

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-175855-en

1.3 VALIDITY

Issue date: 14-10-2024

Valid until: 14-10-2029

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
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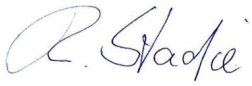
13355 Berlin
DE

Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: Esta Rohr GmbH

Address: Eisenhüttenstarße 11-17, 57074 Siegen, DE

E-mail: info@esta-rohr.de

Website: https://www.esta-rohr.de/

Production location: Esta Rohr GmbH

Address production location: Eisenhüttenstr. 11-17, 57074 Siegen-Kaan-Marienborn, DE

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Elisabeth Amat Guasch, Greenize

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

PCR Guidance-Texts for Building-Related Products and Services, Part B, Requirements on the EPD for Metal pipes for domestic installations, IBU 2023, version 9.0

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of

1 General information

the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.1

Characterization method: EN 15804 +A2 Method v1.0

LCA database profiles: EcoInvent version 3.6

Version database: v3.17 (2024-05-22)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'simplesta® SH - System press fittings and system pipes made of stainless steel ' with the calculation identifier ReTHiNK-75855.

2 Product

2.1 PRODUCT DESCRIPTION

Pipe system for supply technology installations. simplesta® SH system components comprise system press fittings made from stainless steel 1.4401 with sealing element and system pipes made of stainless steel 1.4520. The system press fittings are available with M- and V-shape.

Composition of simplesta® SH system is available in the following table:

Material	Value	Unit
Stainless steel strip material, 1.4520 and 1.4401 (DIN EN 10088)	100	%

This is an average EPD for stainless steel products, specifically simplesta® SH system press fittings and system pipes, with a diameter range of 15-108 mm, following a Cradle to Gate system boundary with the inclusion of modules C1-C4 (end-of-life stages) and Module D (benefits beyond the system boundary).

The table below displays the weight per meter for different diameters of simplesta® SH:

Dimension [mm]	Weight [kg] per 1 meter
15.0x1.0	0.351
18.0x1.0	0.426
22.0x1.2	0.625
28.0x1.2	0.805
35.0x1.5	1.258
42.0x1.5	1.522
54.0x1.5	1.972
76.1x1.5	2.802
88.9x1.5	3.283
108.0x1.5	3.999

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The steel pipe system simplesta® SH is suitable for the following areas of application:

- Heating applications
- Cooling applications
- Industrial applications

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

As the entire life cycle of the product is not considered in the scope of the study, the specification of the reference service life (RSL) is voluntary. According to the information from the manufacturer, the RSL of the product is 50 years.

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.4 TECHNICAL DATA

Technical data of simplesta® SH is available in the following table:

Characteristic	Value	Unit
diameter range	15.0 – 108.0	mm
wall thickness range	1.0 – 1.5	mm
surface roughness	0.0015	mm
heat conductivity stainless steel grade 1.4401	15.0	W/mK
heat conductivity stainless steel grade 1.4520	25.0	W/mK

2.5 SUBSTANCES OF VERY HIGH CONCERN

No substance present in the product with a concentration exceeding 0.1% of the total weight is included on the "List of Substances of Very High Concern" (SVHC) for authorisation under REACH legislation.

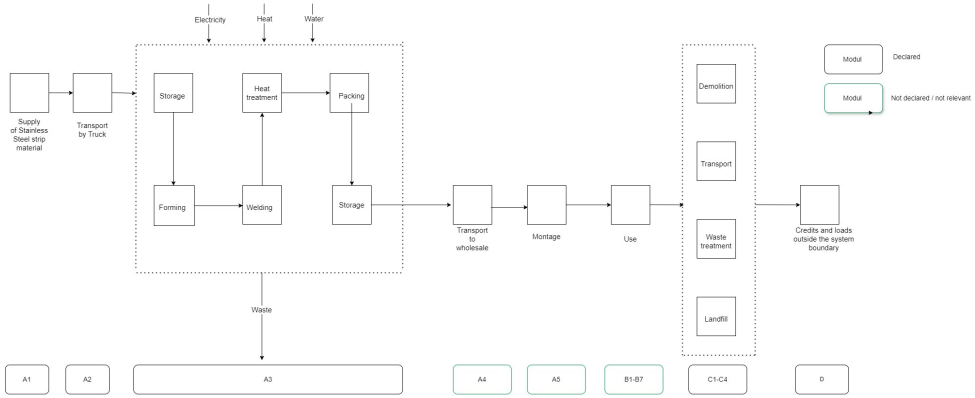
2 Product

2.6 DESCRIPTION PRODUCTION PROCESS

simplesta® SH is produced in Esta Rohr GmbH located in Siegen-Kaan-Marienborn, Germany . The raw materials used in the production of simplesta® SH are sourced and transported from suppliers in Germany and Belgium. The primary market for simplesta® SH is the European Union (EU)

The production of simplesta® SH comprises the following process steps:

- Inspection of incoming goods and storage of system press fittings and split material
- Forming and welding of the split material
- Solution annealing of the pipe
- Inspection and Marking
- Cutting to system tubes and deburring of the pipe ends
- Packing and storage in bundle sizes



3 Calculation rules

3.1 DECLARED UNIT

1 ton simplesta® SH-System press fittings and system pipes made of stainless steel

In Life Cycle Assessment (LCA) calculations, the declared unit was defined as 1 ton of average stainless steel products, simplesta® SH-System press fittings and system pipes made of stainless steel, with a diameter range of 15-108 mm.

Reference unit: ton (ton)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	ton
Weight per reference unit	1000.000	kg
Conversion factor to 1 kg	0.001000	ton

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with modules C1-C4 and module D EPD. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for simplesta® SH - System press fittings and system pipes made of stainless steel , a product of Esta Rohr GmbH. The results of this EPD are representative for European Union.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)

All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

3 Calculation rules

Construction process stage (A4-A5)

All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use)of energy use for assembly , etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Use stage (B1-B3)

All (known) input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. emissions to soil, air and water, construction waste, packaging waste, end-of-life waste, etc.) related to the building fabric are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

End of life stage (C1-C4)

All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Benefits and loads beyond the system boundary (Module D)

All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

3.6 ALLOCATION

Allocations were avoided as far as possible. No by-products or co-products are produced during the manufacture of the analysed product. The energy requirements of production were allocated to the individual products on the basis of energy consumption measurements. Specific information on the allocations within the background data can be found in the documentation of the Ecoinvent datasets.

3.7 DATA COLLECTION & REFERENCE PERIOD

Primary data including all raw materials, packaging materials, energy consumption and ancillary materials was comprehensively collected for the reference year of 2022.

3.8 ESTIMATES AND ASSUMPTIONS

- A payload factor of 50 percent was used for all truck transports, which in fact corresponds to a full delivery and empty return trip. A data set for a non-specific truck was used.
- Consumption of 43 MJ diesel per ton of products is assumed for the demolition of end-of-life products.
- The waste scenario for this LCA was determined based on NMD ID 73, which relates to Steel, light. According to this standard, the waste treatment process comprises 87% recycling, 12% Re-use, and 1 % landfill

3.9 DATA QUALITY

All primary data were collected by Esta Rohr GmbH for the reference year of 2022.

For the data, which the manufacturer does not influence, generic data was used. Secondary data were sourced from the regularly updated Ecoinvent database (version 3.6), aligning with EN 15804 standards to ensure background data not exceeding 10 years.

ReTHiNK EPD web application was used to model the life cycle for the production and disposal of the declared product systems. To ensure that the results are comparable, consistent background data from the international database Ecoinvent was used in the LCA (e.g., data records on energy, transport, auxiliary materials, and supplies). Almost all consistent data sets contained in the Ecoinvent database are documented and can be viewed online.

The scenarios included are currently in use and are representative for one of the most likely scenario alternatives.

According to the criteria of the "UN Environmental Global Guidance on LCA database development" mentioned in EN 15804+A2, the data quality for all three representativeness categories (geographical, technical and time) can be described as good.

3.10 POWER MIX

In general, a market-based approach was used for the electricity consumption in production (A3). Since no purchased electricity mix could be provided, the national residual grid mix of Germany was utilized. This mix has a total Global Warming Potential (GWP) of 0.74 kg CO2 eq. per kWh.

3 Calculation rules

4 Scenarios and additional technical information

4.1 DE-CONSTRUCTION, DEMOLITION (C1)

The following information describes the scenario for demolition at end of life.

Description	Amount	Unit
Diesel, burned in machine (incl. emissions)	1.200	l

4.2 TRANSPORT END-OF-LIFE (C2)

The following distances and transport conveyance are assumed for transportation during end of life for the different types of waste processing.

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
Steel, light (NMD ID 73)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0

The transport conveyance(s) used in the scenario(s) for transport during end of life has the following characteristics.

	Value and unit
Vehicle type used for transport	Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.3 END OF LIFE (C3, C4)

The scenario(s) assumed for end of life of the product are given in the following tables. First the assumed percentages per type of waste processing are displayed, followed by the assumed amounts.

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
Steel, light (NMD ID 73)	NL	0	1	0	87	12

4 Scenarios and additional technical information

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
Steel, light (NMD ID 73)	0.000	10.000	0.000	870.000	120.000
Total	**0.000**	**10.000**	**0.000**	**870.000**	**120.000**

4.4 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The presented Benefits and loads beyond the system boundary in this EPD are based on the following calculated Net output flows in kilograms and Energy recovery displayed in MJ Lower Heating Value.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
Steel, light (NMD ID 73)	520.000	0.000
Total	**520.000**	**0.000**

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. The results of the impact assessment are only relative statements that do not make any statements about end-points of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER TON

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
AP	mol H+ eqv.	2.73E+1	1.75E-1	5.86E+0	3.34E+1	4.11E-2	3.48E-2	0.00E+0	5.00E-4	-3.07E+0
GWP-total	kg CO2 eqv.	4.10E+3	3.03E+1	1.58E+3	5.71E+3	3.94E+0	6.01E+0	0.00E+0	5.28E-2	-7.61E+2
GWP-b	kg CO2 eqv.	4.40E+1	1.40E-2	-4.45E+1	-4.29E-1	1.09E-3	2.77E-3	0.00E+0	1.04E-4	7.54E+0
GWP-f	kg CO2 eqv.	4.06E+3	3.02E+1	1.62E+3	5.71E+3	3.93E+0	6.01E+0	0.00E+0	5.27E-2	-7.69E+2
GWP-luluc	kg CO2 eqv.	3.22E+0	1.11E-2	7.88E-1	4.02E+0	3.10E-4	2.20E-3	0.00E+0	1.47E-5	4.65E-1
EP-m	kg N eqv.	4.48E+0	6.18E-2	1.07E+0	5.62E+0	1.82E-2	1.23E-2	0.00E+0	1.72E-4	-5.64E-1
EP-fw	kg P eq	1.68E-1	3.05E-4	7.41E-2	2.42E-1	1.43E-5	6.06E-5	0.00E+0	5.90E-7	-2.84E-2
EP-T	mol N eqv.	5.17E+1	6.81E-1	1.19E+1	6.42E+1	1.99E-1	1.35E-1	0.00E+0	1.90E-3	-6.59E+0
ODP	kg CFC 11 eqv.	2.38E-4	6.67E-6	9.20E-5	3.37E-4	8.50E-7	1.33E-6	0.00E+0	2.17E-8	-2.12E-5
POCP	kg NMVOC eqv.	1.52E+1	1.94E-1	3.54E+0	1.89E+1	5.48E-2	3.86E-2	0.00E+0	5.51E-4	-4.33E+0
ADP-f	MJ	4.79E+4	4.56E+2	2.72E+4	7.55E+4	5.41E+1	9.06E+1	0.00E+0	1.47E+0	-5.71E+3
ADP-mm	kg Sb-eqv.	1.66E-1	7.66E-4	2.01E-2	1.87E-1	6.03E-6	1.52E-4	0.00E+0	4.82E-7	-4.74E-4
WDP	m3 world eqv.	9.95E+2	1.63E+0	3.08E+2	1.31E+3	7.26E-2	3.24E-1	0.00E+0	6.60E-2	-1.34E+2

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
ETP-fw	CTUe	1.44E+5	4.07E+2	1.77E+4	1.62E+5	3.26E+1	8.08E+1	0.00E+0	9.55E-1	-2.56E+4
PM	disease incidence	3.73E-4	2.72E-6	4.37E-5	4.19E-4	1.09E-6	5.40E-7	0.00E+0	9.72E-9	-4.76E-5
HTP-c	CTUh	7.92E-5	1.32E-8	6.90E-6	8.61E-5	1.14E-9	2.62E-9	0.00E+0	2.21E-11	-6.84E-7
HTP-nc	CTUh	4.09E-4	4.45E-7	5.89E-5	4.69E-4	2.80E-8	8.83E-8	0.00E+0	6.79E-10	1.25E-4
IR	kBq U235 eqv.	1.47E+2	1.91E+0	7.67E+1	2.26E+2	2.32E-1	3.79E-1	0.00E+0	6.04E-3	1.01E+1
SQP	Pt	2.50E+4	3.95E+2	1.07E+4	3.61E+4	6.91E+0	7.85E+1	0.00E+0	3.09E+0	-1.25E+3

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1.33E+4	5.71E+0	2.34E+3	1.56E+4	2.93E-1	1.13E+0	0.00E+0	1.19E-2	1.12E+2
PERM	MJ	0.00E+0	0.00E+0	4.19E+2	4.19E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	1.33E+4	5.71E+0	2.76E+3	1.60E+4	2.93E-1	1.13E+0	0.00E+0	1.19E-2	1.12E+2
PENRE	MJ	5.11E+4	4.84E+2	2.88E+4	8.03E+4	5.75E+1	9.62E+1	0.00E+0	1.56E+0	-5.95E+3
PENRM	MJ	0.00E+0	0.00E+0	2.56E+2	2.56E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	5.11E+4	4.84E+2	2.90E+4	8.06E+4	5.75E+1	9.62E+1	0.00E+0	1.56E+0	-5.95E+3
SM	Kg	4.70E+2	0.00E+0	3.83E+1	5.08E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	3.19E+1	5.55E-2	1.74E+1	4.93E+1	2.79E-3	1.10E-2	0.00E+0	1.57E-3	-2.61E+0

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	Kg	4.32E-2	1.16E-3	2.35E-2	6.78E-2	1.47E-4	2.30E-4	0.00E+0	2.20E-6	-9.03E-2
NHWD	Kg	5.38E+3	2.89E+1	4.98E+2	5.90E+3	6.41E-2	5.75E+0	0.00E+0	1.00E+1	-6.90E+1
RWD	Kg	1.34E-1	2.99E-3	8.62E-2	2.23E-1	3.76E-4	5.95E-4	0.00E+0	9.67E-6	2.47E-3

HWD=hazardous waste disposed | **NHWD**=non hazardous waste disposed | **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	9.60E+0	9.60E+0	0.00E+0	0.00E+0	1.20E+2	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	7.04E+1	7.04E+1	0.00E+0	0.00E+0	8.70E+2	0.00E+0	0.00E+0
MER	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	0.00E+0	0.00E+0	-2.98E+1	-2.98E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	MJ	0.00E+0	0.00E+0	-1.73E+1	-1.73E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

5 Results

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER TON

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per ton:

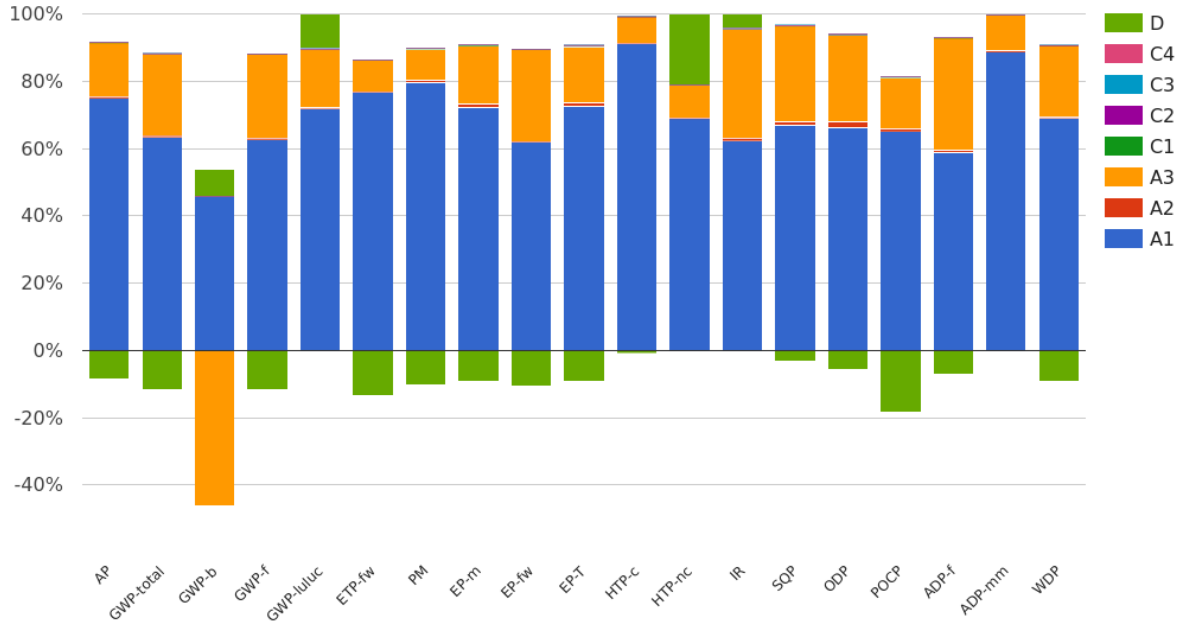
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	13.52	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of carbon dioxide uptake is taken into account. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic Carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

Uptake Biogenic Carbon dioxide	Amount	Unit
Packaging	49.59	kg CO2 (biogenic)

6 Interpretation of results



The figure illustrates the impact categories for 1 ton of the simplesta® SH - System press fittings and system pipes made of stainless steel. As depicted, Modules A1, A3, and D emerge as the most significant contributors to all assessed indicators. The contribution of raw materials (A1) is notably higher, whereas transportation (A2 and C2) exhibits a comparatively minor impact.

For most indicators, Module D indicates environmental benefits or credits.

7 References

ISO 14040
ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

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PCR B, Requirements on the EPD for Metal pipes for domestic installations
PCR Guidance-Texts for Building-Related Products and Services, Part B, Requirements on the EPD for Metal pipes for domestic installations, IBU 2023, version 9.0

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