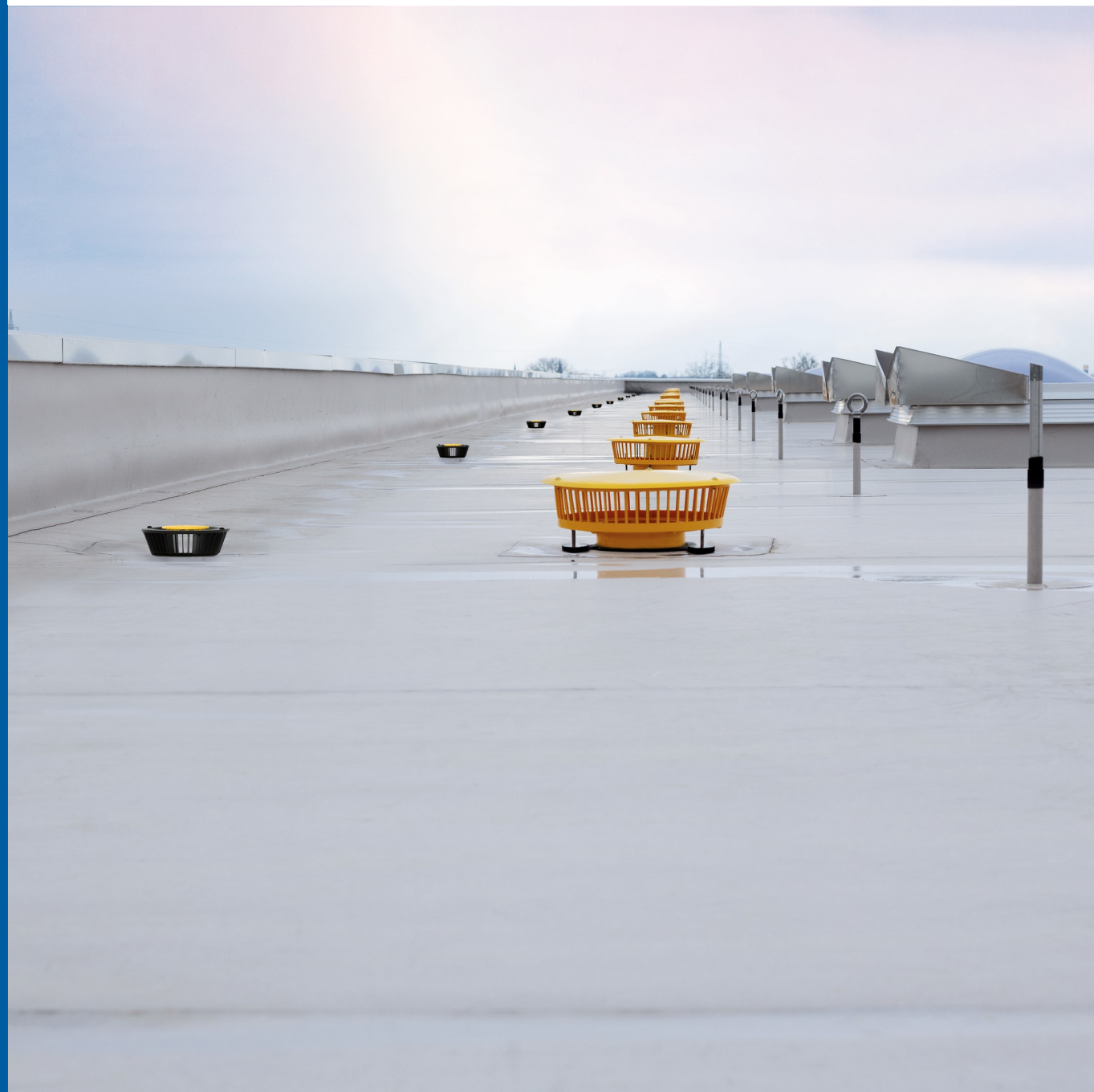
Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

Sita flat-roof outlets



Registration number:	EPD-Kiwa-EE-181397-en
Issue date:	16-09-2024
Valid until:	16-09-2029
Declaration owner:	Sita Bauelemente GmbH
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

Sita flat-roof outlets

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-181397-en

1.3 VALIDITY

Issue date: 16-09-2024

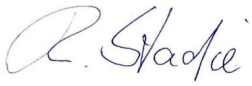
Valid until: 16-09-2029

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
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: Sita Bauelemente GmbH

Address: Ferdinand-Braun-Straße 1, 33378 Rheda-Wiedenbrück

E-mail: info@sita-bauelemente.de

Website: www.sita-bauelemente.de

Production location: Sita Bauelemente GmbH

Address production location: Ferdinand-Baun-Straße 1, 33378 Rheda-Wiedenbrück

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

Lucas Pedro Berman, Senda

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

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

PCR B
Institut Bauen und Umwelt e.V. - Part B: Requirements on the EPD for Line drainage and point drainage products - v1 (2024-03-22)

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

1 General information

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 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 'Sita flat-roof outlets' with the calculation identifier ReTHiNK-81397.

2 Product

2.1 PRODUCT DESCRIPTION

This declaration refers to a representative product of flat-roof outlets manufactured by Sita Bauelemente GmbH, which are made of polyurethane with optional connection sleeve or screw-on flange. Through the standardized specifications and requirements for product use, the manufacturing processes and primary materials in the product group flat-roof outlets are comparable. The largest variant in the product group flat-roof outlets, SitaSani® 165 refurbishment outlet, is used as the representative product in the calculation of the EPD. The total weight of the representative flat-roof outlet is 3.288 kg.

SitaSani® 165 refurbishment outlet, made of polyurethane and measuring 550 mm in height, is thermally insulated, compling with DIN EN 1253-2 and has a discharge rate of 8.2 l/s at 45 mm retaining height. It is designed for refurbishment of internal diameters of 165 to 205 mm. The outlet includes a large foamed-in connection sleeve of choice (495 mm x 495 mm) for homogeneous connection of the roofing membrane, along with the fixing ring for addition securing of the connection sleeve and to hold the dome grate. The package is delivered complete with a dome grate, lubricant, and two differently sized sealing rings for backflow protection. Installation should be carried out to professional standards.

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration EN 1253-2:2015, Gullies for buildings - Part 2: Roof drains and floor gullies without trap and the CE-marking.

For the application and use the respective national provisions apply.

SitaSani® 165 is sold in cardboard box. The composition of the product is listed in the following table:

Component	Value	Unit
Polyurethane	50.1	M.-%
Bitumen	31.8	M.-%
EPDM	14.6	M.-%
Polyamide	3.5	M.-%

Products covered by this EPD also include:

- **SitaStandard vertical**

Size DN	External diameter OD (mm)	Article number
70	75	10 02 xx
100	110	10 04 xx
125	125	10 06 xx
150	160	10 08 xx
200	200	10 10 xx

- **SitaStandard vertical heated**

Size DN	External diameter OD (mm)	Article number
70	75	10 03 xx
100	110	10 05 xx
125	125	10 07 xx
150	160	10 09 xx
200	200	10 11 xx

- **SitaStandard angled**

Size DN	External diameter OD (mm)	Article number
70	75	10 14 xx
100	110	10 16 xx
125	125	10 18 xx

- **SitaStandard angled heated**

Size DN	External diameter OD (mm)	Article number
70	75	10 15 xx
100	110	10 17 xx
125	125	10 19 xx

- **SitaStandard Stepped outlet**

2 Product

Size DN	External diameter OD (mm)	Article number
70	75	10 30 xx

· **SitaStandard Extension unit**

Bridging of thermal insulation (mm)	Article number
60-160	10 25 xx
60-220	10 26 xx
60-520	10 50 xx

· **SitaTrendy vertical**

Size DN	External diameter OD (mm)	Article number
70	75	15 02 xx
90	90	15 01 xx
100	110	15 04 xx
125	125	15 06 xx

· **SitaTrendy vertical heated**

Size DN	External diameter OD (mm)	Article number
70	75	15 03 xx
100	110	15 05 xx
125	125	15 07 xx

· **SitaTrendy angled**

Size DN	External diameter OD (mm)	Article number
70	75	15 14 xx
100	110	15 16 xx
125	125	15 18 xx

· **SitaTrendy angled heated**

Size DN	External diameter OD (mm)	Article number
70	75	15 15 xx
100	110	15 17 xx
125	125	15 19 xx

· **SitaTrendy Extension unit**

Bridging of thermal insulation (mm)	Article number
60-150	15 25 xx
60-220	15 26 xx
60-320	15 27 xx

· **SitaTrendy Screw-on flange vertical**

Size DN	External diameter OD (mm)	Article number
70	75	15 02 99
90	90	15 01 99
100	110	15 04 99
125	125	15 06 99

· **SitaTrendy Screw-on flange vertical heated**

Size DN	External diameter OD (mm)	Article number
70	75	15 03 99
100	110	15 05 99
125	125	15 07 99

· **SitaTrendy Screw-on flange angled**

2 Product

Size DN	External diameter OD (mm)	Article number
70	75	15 14 99
100	110	15 16 99
125	125	15 18 99

· SitaTrendy Screw-on flange angled heated

Size DN	External diameter OD (mm)	Article number
70	75	15 15 99
100	110	15 17 99
125	125	15 19 99

· SitaTrendy Extension unit

Bridging of thermal insulation (mm)	Article number
60-150	15 25 99
60-220	15 26 99
60-320	15 27 99

· SitaDSS Profi with Airstop

Size DN	External diameter OD (mm)	Article number
56	56	14 02 xx
90	70	14 04 xx

· SitaDSS Profi without Airstop

Size DN	External diameter OD (mm)	Article number
56	56	14 32 xx
90	70	14 34 xx

· SitaDSS Profi Screw-on flange with Airstop

Size DN	External diameter OD (mm)	Article number
56	56	14 02 99
90	70	14 04 99

· SitaDSS Profi Screw-on flange without Airstop

Size DN	External diameter OD (mm)	Article number
56	56	14 32 99
90	70	14 34 99

· SitaDSS Profi Extension unit

Bridging of thermal insulation (mm)	Article number
60-150	14 25 xx
60-220	14 26 xx
60-320	14 27 xx

· SitaTrendy Profi Screw-on flange Extension unit

Bridging of thermal insulation (mm)	Article number
60-150	14 25 99
60-220	14 26 99
60-320	14 27 99

· SitaIndra

Size DN	External diameter OD (mm)	Article number
70	75	10 72 xx

· SitaVasant Single

Size DN	External diameter OD (mm)	Article number

2 Product

100	110	50 03 xx

· **SitaEasy**

Size DN	External diameter OD (mm)	Article number
50	50	18 30 xx
70	75	18 32 xx
100	110	18 34 xx

· **SitaEasy Go**

Size DN	External diameter OD (mm)	Article number
70	75	18 36 00
100	110	18 38 00

· **SitaEasy Plus**

Size DN	External diameter OD (mm)	Article number
70	75	18 02 xx
100	110	18 04 xx
125	125	18 06 xx
150	160	18 08 xx

· **SitaMini vertical**

Size DN	External diameter OD (mm)	Article number
50/70	50	16 02 xx

· **SitaMini angled**

Size DN	External diameter OD (mm)	Article number
50	50	16 12 xx
70	75	16 14 xx

· **SitaCompact vertical**

Size DN	External diameter OD (mm)	Article number
50	50	19 00 xx
70	75	19 02 xx

· **SitaCompact angled**

Size DN	External diameter OD (mm)	Article number
50	50	19 12 xx
70	75	19 14 xx

· **SitaCompact Extension unit**

Bridging of thermal insulation (mm)	Article number
60-220	19 26 xx

· **SitaCompact Screw-on flange vertical**

Size DN	External diameter OD (mm)	Article number
50	50	19 00 99
70	75	19 02 99

· **SitaCompacht Screw-on flange angled**

Size DN	External diameter OD (mm)	Article number
50	50	19 12 99
70	75	19 14 99

· **SitaCompact Screw-on flange Extension unit**

2 Product

Bridging of thermal insulation (mm)	Article number
60-220	19 26 99

· SitaCompact Near

Size DN	External diameter OD (mm)	Article number
70	75	19 05 xx

· SitaCarport

Execution	Article number
With copper closure cap	29 29 xx
With zinc closure cap	29 28 xx

· SitaSani 63

Execution (mm)	Article number
550	10 63 xx

· SitaSani 63 Screw-on flange

Execution (mm)	Article number
550	10 63 99

· SitaSani 70

Execution (mm)	Article number
255	10 36 xx

· SitaSani 70 Screw-on flange

Execution (mm)	Article number
255	10 36 99

· SitaSani 90

Execution (mm)	Article number
550	10 32 xx

· SitaSani 90 Screw-on flange

Execution (mm)	Article number
550	10 32 99

· SitaSani 95

Execution (mm)	Article number
250	10 28 xx
550	10 38 xx

· SitaSani 105

Execution (mm)	Article number
550	10 33 xx

· SitaSani 105 Screw-on flange

Execution (mm)	Article number
550	10 33 99

· SitaSani 115

Execution (mm)	Article number

2 Product

255	10 35 xx

· **SitaSani 125**

Execution (mm)	Article number
250	10 27 xx
550	10 37 xx

· **SitaSani 165**

Execution (mm)	Article number
200	10 29 xx
550	10 40 xx

· **SitaSani 165 Screw-on flange**

Execution (mm)	Article number
550	10 40 99

· **SitaSani 160 DSS**

Execution (mm)	Article number
200	10 60 xx
550	10 61 xx

· **SitaSani 160 DSS Screw-on flange**

Execution (mm)	Article number
550	10 61 99

· **SitaVent Base plate**

Size DN	Article number
100	17 54 xx
150	17 58 xx

XX: connection sleeve of choice

The product SitaSani® 165 refurbishment outlet is shown In the following picture.

2 Product

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The product is used for main and emergency drainage, and is designed for refurbishment into the downpipe of old roof outlets in flat and slightly pitched, used and unused roof surfaces.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

As the entire life cycle of the Sita flat-roof outlet is not considered in the scope of the study, the specification of the reference service life (RSL) is voluntary. According to BBSR Table 2017 / No. 363.714, the RSL of Sita flat-roof outlet is 20 years.

USED RSL (YR) IN THIS LCA CALCULATION:

20

2.4 TECHNICAL DATA

As the technical information in the PCR refers to drainage channels and gully tops for the vehicular and pedestrian areas (DIN EN 1433 and DIN EN 124-1), while the product in the EPD refers to gullies for buildings (DIN EN 1253-2), the technical specifications listed in the PCR do not apply to the product.

- Attributes

Article no.	104000
Connection type	Bitumen-sleeve
Execution (mm)	550
External diameter OD (mm)	160
a (mm)	490
b (mm)	60
c (mm)	146
Temperature resistance min. (°C)	-40
Temperature resistance max. (°C)	80
Building material class	Euroclass E / B2 normal flammability
Backflow safe for refurbishing internal diameters from– to (mm) with lip sealing ring	165 - 178
Backflow safe for refurbishing internal diameters from– to (mm) with profiled sealing ring	178 - 205

- Streamflow

2 Product

Size DN	Back-up Heigh (mm)	Discharge rate according to DIN EN 1253-2 in l/s
165	5	0.8
	10	1.5
	15	2.2
	20	3.4
	25	4.5
	30	5.5
	35	6.4
	40	7.3
	45	8.2
	50	9
	55	9.7
	60	9.7
	65	9.7
	70	9.7
	75	9.7
	80	9.7
	85	9.7
	90	9.7
	95	9.7
	100	9.7

2.5 SUBSTANCES OF VERY HIGH CONCERN

- **This declaration applies to all Sita products except those mentioned under the second section in this paragraph.**

The manufacturer hereby declares that the products it sells are free from tin, cadmium and lead stabilizers. In addition, the SVHC (Substances of Very High Concern) content is ≤ 0.1 %. The raw materials used to manufacture the polyurethane foam do not contain any of the following substances:

- CMR substances (carcinogenic, mutagenic, toxic for reproduction)
- Alkylphenol ethoxylates (APEO)
- Volatile aromatic hydrocarbons (VOC)
- Semi-volatile organic compounds (SVOC)
- Heavy metals
- Polyvinyl chloride (PVC)
- Organohalogen compounds
- Organohalogen compounds in the packaging
- Biocides
- Free formaldehyde

- **Information obligation according to Art. 33 REACH Regulation (SVHC/candidate list):**

According to REACH Regulation Art. 33, the manufactuer is obliged to inform that the brass components used by Sita in selected products* and SitaPipe flat roof branch contain more than 0.1 % lead (EC No. 231-100-4 / CAS No. (EC list) 7439-92-1). As lead is firmly bound as an alloy component and therefore no exposure is to be expected, no additional information on safe use is necessary.

* Brass nuts, brass sleeves and brass bushes are included in:

- SitaMore retaining element
- SitaDrain®
- SitaGreen roof shaft
- SitaTurbo vapor barrier plate
- SitaTurbo terrace kit + height compensation set
- SitaEasy dome grate
- Screw sets from: SitaTurbo, SitaDSS Ravana, SitaRondo, SitaKaskade Inside, SitaMulti

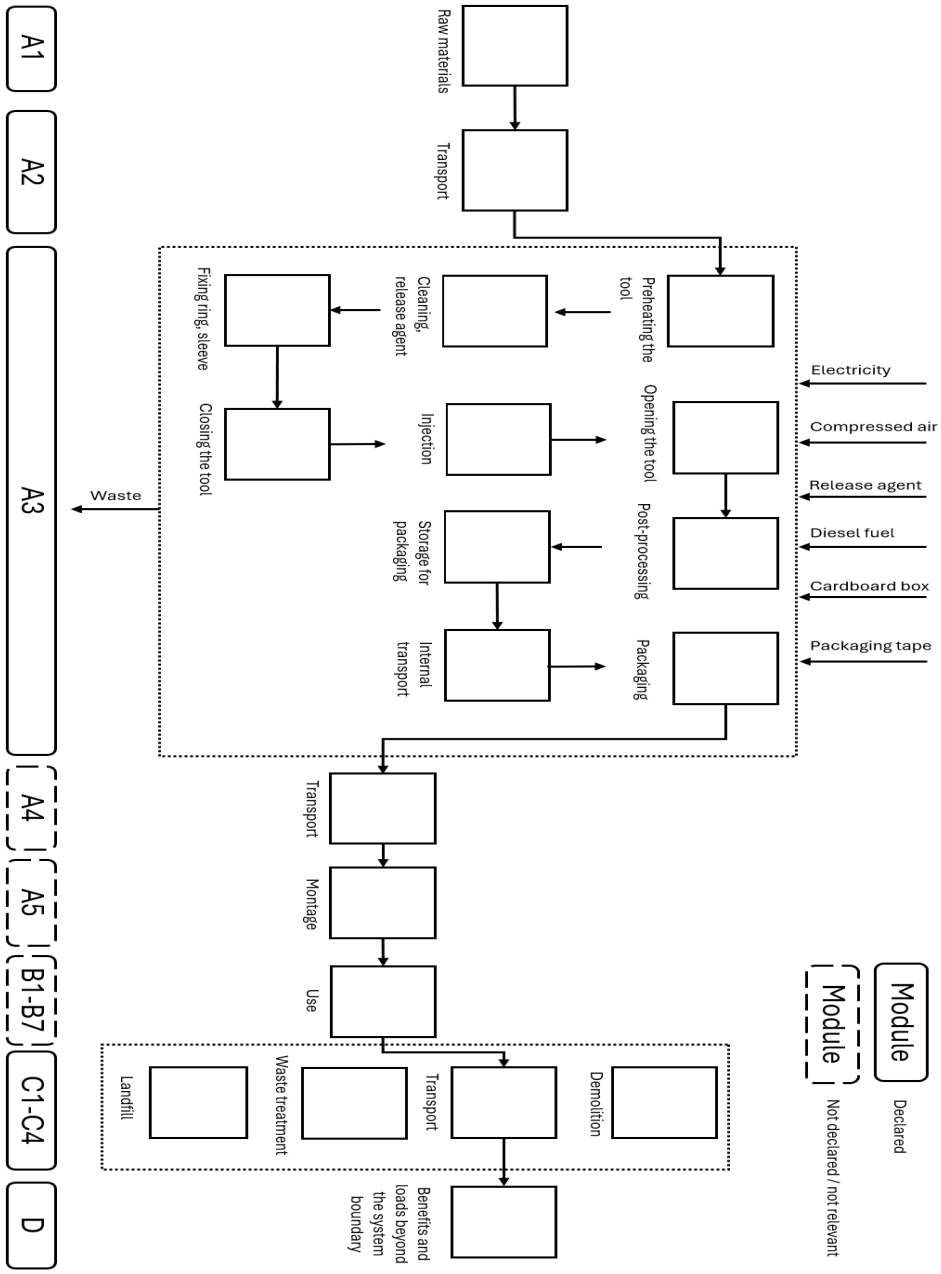
2 Product

2.6 DESCRIPTION PRODUCTION PROCESS

The manufacture of SitaSani® 165 refurbishment outlet takes place in Rheda-Wiedenbrück, Germany. The production includes the following steps after the delivery of raw materials:

- Preheating the tool
- Cleaning and releasing agent
- Processing the fixing ring and sleeve
- Closing the tool
- Production of polyurethane through injection
- Opening the tool
- Post-processing
- Storage for packaging
- Internal transport
- Packaging

Afterwards, the product is transported to the building site and installed. A simplified process flow chart of the product is shown in the following figure:



3 Calculation rules

3.1 DECLARED UNIT

Piece

1 piece flat-roof outlet made of polyurethane with optional connection sleeve or screw-on flange

Reference unit: piece (p)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	p
Weight per reference unit	3.288	kg
Conversion factor to 1 kg	0.304136	p/kg

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 Sita flat-roof outlets, a product of Sita Bauelemente GmbH. The results of this EPD are representative for Germany.

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

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.

The following processes are excluded:

- Manufacturing of equipment used in production, buildings or any other capital asset
- Transportation of personnel to the plant
- Transportation of personnel within the plant
- Research and development activities
- Long-term emissions

3.6 ALLOCATION

The energy consumption and the amount of packaging materials used are calculated based on the total consumption at the production site in 2023 (for all products manufactured) and are converted into the amount used solely for the production of the declared product. The amount of electricity and packaging is given per piece of product manufactured.

3.7 DATA COLLECTION & REFERENCE PERIOD

All process-specific data are collected for the reference year 2023.

3.8 ESTIMATES AND ASSUMPTIONS

For all raw materials used (raw materials, operating materials, packaging), the transportation distance was recorded, with the exception of the transport of packaging tapes, which is estimated as transportation from the center point of India to Port Neendakara by truck of an unspecific type, from Port Neendakara to Port Rotterdam by transoceanic freight ship, and then from Port Rotterdam to the production site by truck of an unspecific type. A payload factor of 50 % is used for all truck transports (suppliers, disposal transports and internal transports), which corresponds to a full delivery and empty return journey.

A consumption of 43 MJ diesel per ton of products is assumed for the demolition of end-of-life products.

Excluded are the manufacturing of capital equipment, construction undertakings, and infrastructure development, along with the maintenance and operation of capital equipment. Additionally, activities related to personnel, as well as energy and water consumption associated with company management and sales, are also excluded.

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

3.9 DATA QUALITY

The data are based on the annual average. Generic datasets from the ecoinvent database are used for the secondary data. This database is regularly maintained and meets the requirements of EN 15804+A2 (background data not older than 10 years). All consistent datasets contained in the ecoinvent database are documented and can be viewed in the online ecoinvent documentation. In the operating data survey all relevant process-specific data could be collected. The quality of the data can be thus considered as good.

The primary data are collected and provided by Sita Bauelemente GmbH. Most of the datasets selected in the LCA for raw materials refer to Europe as the geographical reference, while one rest-of-the-world dataset is used for packaging tapes manufactured in India.

3.10 POWER MIX

The use of green electricity is included in the calculation of the environmental impact, which is based on the purchased residual electricity mix, refering to the market based approach. The proportion of the total electricity consumption covered by green electricity is 100 %. For green electricity, 58.9 % comes from the EEG (German Renewable Energy Sources Act). The remaining 41.1 % relates to other renewable energy sources, which are also assumed to be sourced from the EEG in the calculation.

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)	0.004	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]
finishes (adhered to wood, plastic, metal) (NMD ID 2)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
plastics, via residue (NMD ID 43)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
bitumen (i.a. roofing material) (NMD ID 16)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	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 Scenarios and additional technical information

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 [%]
finishes (adhered to wood, plastic, metal) (NMD ID 2)	NL	0	0	100	0	0
plastics, via residue (NMD ID 43)	NL	0	20	80	0	0
bitumen (i.a. roofing material) (NMD ID 16)	NL	0	5	90	5	0
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	NL	0	10	85	5	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	0.000	1.647	0.000	0.000
plastics, via residue (NMD ID 43)	0.000	0.023	0.092	0.000	0.000
bitumen (i.a. roofing material) (NMD ID 16)	0.000	0.052	0.941	0.052	0.000
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	0.000	0.048	0.409	0.024	0.000
Total	**0.000**	**0.123**	**3.088**	**0.076**	**0.000**

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]
finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	0.000
plastics, via residue (NMD ID 43)	0.000	2.833
bitumen (i.a. roofing material) (NMD ID 16)	0.052	37.808
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	0.024	11.117
Total	**0.076**	**51.757**

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 PIECE

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
AP	mol H+ eqv.	7.41E-2	1.77E-3	6.53E-3	8.24E-2	1.35E-4	3.75E-4	1.30E-3	1.50E-5	-2.09E-3
GWP-total	kg CO2 eqv.	1.28E+1	3.05E-1	3.31E-1	1.34E+1	1.30E-2	6.48E-2	7.70E+0	1.79E-2	-2.21E+0
GWP-b	kg CO2 eqv.	7.03E-2	1.41E-4	-1.08E+0	-1.01E+0	3.60E-6	2.99E-5	6.13E-4	1.29E-5	-2.26E-4
GWP-f	kg CO2 eqv.	1.27E+1	3.05E-1	1.40E+0	1.44E+1	1.29E-2	6.47E-2	7.70E+0	1.79E-2	-2.21E+0
GWP-luluc	kg CO2 eqv.	6.15E-3	1.12E-4	7.62E-3	1.39E-2	1.02E-6	2.37E-5	6.84E-5	6.61E-7	-7.72E-5
EP-m	kg N eqv.	1.76E-2	6.24E-4	1.32E-3	1.96E-2	5.98E-5	1.32E-4	4.70E-4	1.11E-5	-5.81E-4
EP-fw	kg P eqv.	6.49E-4	3.08E-6	1.47E-4	8.00E-4	4.71E-8	6.53E-7	2.80E-6	2.47E-8	-3.06E-6
EP-T	mol N eqv.	1.37E-1	6.87E-3	1.61E-2	1.60E-1	6.56E-4	1.46E-3	5.20E-3	4.22E-5	-6.38E-3
ODP	kg CFC 11 eqv.	2.24E-6	6.73E-8	3.46E-6	5.77E-6	2.80E-9	1.43E-8	2.47E-8	4.06E-10	-3.20E-7
POCP	kg NMVOC eqv.	5.14E-2	1.96E-3	4.05E-3	5.74E-2	1.80E-4	4.16E-4	1.34E-3	1.62E-5	-2.17E-3
ADP-f	MJ	2.69E+2	4.60E+0	2.07E+1	2.94E+2	1.78E-1	9.76E-1	1.28E+0	3.12E-2	-3.96E+1
ADP-mm	kg Sb-eqv.	6.66E-4	7.73E-6	1.22E-5	6.86E-4	1.99E-8	1.64E-6	1.48E-6	1.41E-8	-9.21E-7
WDP	m3 world eqv.	9.75E+0	1.65E-2	4.36E-1	1.02E+1	2.39E-4	3.49E-3	3.13E-2	1.33E-3	-1.83E-1

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	7.68E+2	4.10E+0	4.23E+1	8.14E+2	1.07E-1	8.70E-1	7.31E+0	5.24E-2	-3.45E+0
PM	disease incidence	8.01E-7	2.74E-8	6.02E-8	8.89E-7	3.59E-9	5.82E-9	1.01E-8	2.17E-10	-6.59E-9
HTP-c	CTUh	1.13E-7	1.33E-10	8.71E-10	1.14E-7	3.75E-12	2.82E-11	5.45E-9	8.76E-13	-1.51E-10
HTP-nc	CTUh	1.11E-6	4.49E-9	1.63E-8	1.13E-6	9.23E-11	9.52E-10	1.94E-8	2.27E-11	-2.38E-9
IR	kBq U235 eqv.	6.21E-1	1.93E-2	9.56E-2	7.35E-1	7.64E-4	4.09E-3	3.95E-3	1.24E-4	-2.29E-2
SQP	Pt	3.73E+1	3.99E+0	1.09E+2	1.50E+2	2.27E-2	8.46E-1	6.93E-1	7.32E-2	-8.33E-1

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	1.25E+1	5.76E-2	1.43E+1	2.69E+1	9.64E-4	1.22E-2	7.48E-2	5.99E-4	-1.03E-1
PERM	MJ	0.00E+0	0.00E+0	9.05E+0	9.05E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	1.25E+1	5.76E-2	2.34E+1	3.59E+1	9.64E-4	1.22E-2	7.48E-2	5.99E-4	-1.03E-1
PENRE	MJ	2.29E+2	4.89E+0	1.63E+1	2.50E+2	1.89E-1	1.04E+0	1.37E+0	3.31E-2	-4.15E+1
PENRM	MJ	5.86E+1	0.00E+0	5.62E+0	6.42E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-2.25E+0
PENRT	MJ	2.87E+2	4.89E+0	2.19E+1	3.14E+2	1.89E-1	1.04E+0	1.37E+0	3.31E-2	-4.38E+1
SM	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
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	2.50E-1	5.61E-4	1.68E-2	2.67E-1	9.18E-6	1.19E-4	3.32E-3	3.25E-5	-2.73E-3

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	1.39E-4	1.17E-5	5.36E-5	2.04E-4	4.85E-7	2.47E-6	7.88E-6	4.72E-8	-4.64E-5
NHWD	Kg	8.23E-1	2.92E-1	1.92E-1	1.31E+0	2.11E-4	6.19E-2	1.67E-1	1.24E-1	-1.60E-2
RWD	Kg	7.36E-4	3.02E-5	1.09E-4	8.75E-4	1.24E-6	6.41E-6	4.41E-6	1.86E-7	-3.52E-5

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	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	4.90E-3	4.90E-3	0.00E+0	0.00E+0	7.63E-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	-1.10E+0	-1.10E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.60E+1
EEE	MJ	0.00E+0	0.00E+0	-6.38E-1	-6.38E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-9.32E+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 PIECE

BIOGENIC CARBON CONTENT

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

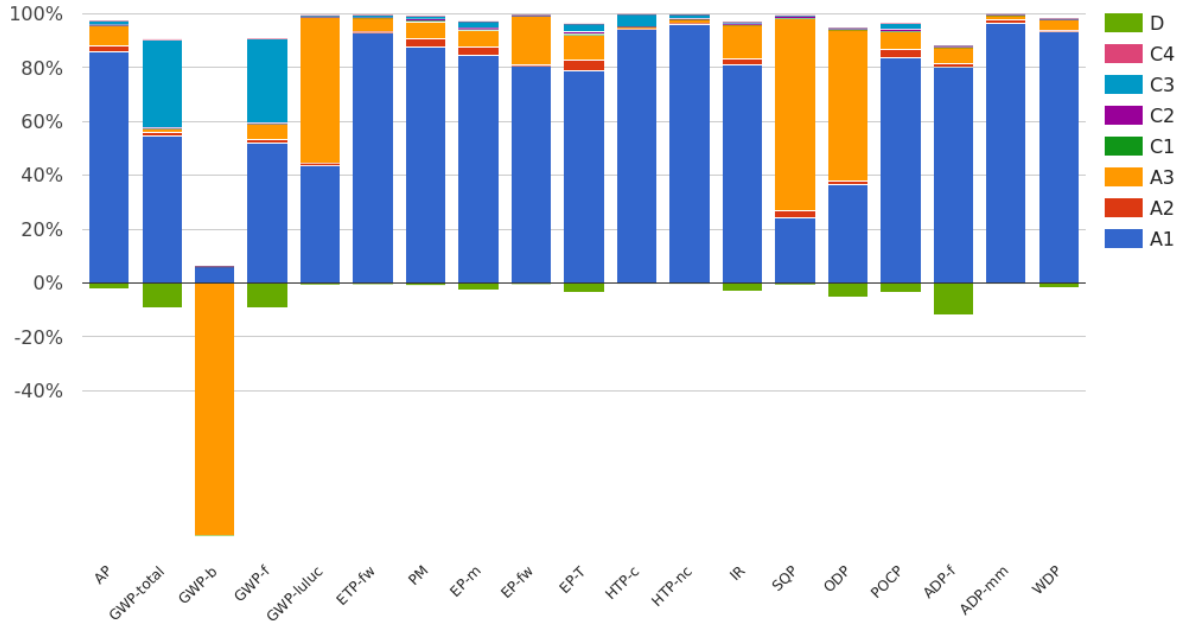
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.2584	kg C

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	0.9473	kg CO2 (biogenic)

6 Interpretation of results



In almost all impact categories, the environmental impact of SitaSani® 165 is predominantly determined by the extraction and processing of raw materials (Module A1). Within the impact category of global warming potential (GWP-total), the waste processing of products (Module C3) results in the second largest environmental impact after Module A1. Among the raw materials, Isocyanate results in the largest environmental impact, accounting for 52.8 % of GWP-total, followed by Polyol with 20.4 %. The negative value of the global warming potential-biogenic (GWP-b) is primarily attributed to the packaging materials (Module A3) while the imbalance of GWP-b can be explained by the fact that waste processing of packaging (Module A5) is not declared in this EPD.

7 References

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

ISO 14044
ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14040:2006

ISO 14025
ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2
EN 15804+A2: 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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

PCR B
Institut Bauen und Umwelt e.V. - Part B: Requirements on the EPD for Line drainage and point drainage products - v1 (2024-03-22)

BBSR
BBSR, NBB 2017, Nutzungsdauern_von_Bauteilen Table 2017 / No. 363.714, 2017-02-24

DIN EN 1253-2
DIN EN 1253-2:2015-03, Gullies for buildings - Part 2: Roof drains and floor gullies without trap; German version EN 1253-2:2015

8 Contact information

Publisher	Operator	Owner of declaration

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin, DE

E-mail:
DE.Ecobility.Experts@kiwa.com
Website:
https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin, DE

E-mail:
DE.Ecobility.Experts@kiwa.com
Website:
https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/

Sita Bauelemente GmbH
Ferdinand-Braun-Straße 1
33378 Rheda-Wiedenbrück, DE

E-mail:
info@sita-bauelemente.de
Website:
www.sita-bauelemente.de

Kiwa-Ecobility Experts is established member of the ECO PLATFORM