

Environmental Product Declaration (EPD)

According to ISO 14025 and EN
15804+A2:2019

HEWI polyamide accessories and dispenser systems

Registration number:	EPD-Kiwa-EE-267176-EN
Issue date:	21-07-2026
Valid until:	21-07-2031
Declaration owner:	HEWI Heinrich Wilke GmbH
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

kiwa



HEWI



1 General information

1.1 PRODUCT

HEWI polyamide accessories and dispenser systems

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-267176-EN

1.3 VALIDITY

Issue date: 21-07-2026

Valid until: 21-07-2031

1.4 PROGRAMME OPERATOR

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1.5 OWNER OF THE DECLARATION

Declaration owner: HEWI Heinrich Wilke GmbH

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Website: www.hewi.com

Production location: HEWI Heinrich Wilke GmbH

Address production location: Hagenstrasse 2, 34454 Bad Arolsen

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+A2:2019 serves as the core PCR.

☐ Internal ☒ External



Anni Oviir, LCA Support

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-EE GPI R.4.0

Kiwa-Ecobility Experts, General Programme Instructions "Product Level", SOP EE 1203_R.4.0 (18.12.2025)

Kiwa-EE GPI R.4.0 Annex B1

Kiwa-Ecobility Experts, General Programme Instructions "Product Level" – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, SOP EE 1203_R.4.0 (18.12.2025)

PCR B

DAPHabitat, PCR – Sanitary Ware [Sanitary facilities and kitchens] – V.1.3 (June 2022)

1 General information

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+A2:2019. 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 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+A2:2019 and ISO 14025.

1.10 CALCULATION BASIS

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

LCA software*: Simapro 9.6

Characterization method: RETHINK characterization method (see references for more details)

LCA database profiles: ecoinvent (for version see references)

Version database: v3.20f (20260507)

** 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 'HEWI polyamide accessories and dispenser systems' with the calculation identifier ReTHiNK-167176.

2 Product

2.1 PRODUCT DESCRIPTION

This worst-case EPD covers a defined group of sanitary accessories predominantly manufactured from polyamide across multiple HEWI series. Polyamide constitutes one of the primary materials and defining components of the products, while stainless steel is used exclusively for necessary mounting and fixing functions and does not determine the material classification of the declared product group. Their inclusion does not alter the overall classification of the products as polyamide-based sanitary accessories, as polyamide remains the predominant material across the declared scope.

The HEWI Large toilet roll holder (477.21.60098) refers to the worst-case product and is considered in the calculation of the EPD as it has the largest environmental impact among the declared products and therefore is chosen as representative of the group. The following products are included in this EPD.

Series	Article group	Article number	Product category
477	477.00...	477.00.100, 477.00.200, 477.00B100, 477.00B200, 477.00D100	Holders
	477.01...	477.01.100, 477.01B100	Mirror holders
	477.02...	477.02.01005, 477.02.02005, 477.02.100, 477.02.200, 477.02B100, 477.02B200, 477.02D100	Soap dishes
	477.03...	477.03.100, 477.03.10005, 477.03.300, 477.03.500, 477.03.510, 477.03B100, 477.03B10005, 477.03B300, 477.03B500, 477.03B510, 477.03D100	Shelves
	477.04...	477.04.020, 477.04B020, 477.04D020	Cups
477.05...		477.05.100, 477.05.10190, 477.05.10198, 477.05.10199, 477.05.10290, 477.05.10298, 477.05.10299, 477.05.20190, 477.05.20198, 477.05.20199, 477.05.20290, 477.05.20298, 477.05.20299, 477.05.20490, 477.05.20498, 477.05.20499, 477.05.20590, 477.05.20598, 477.05.20599, 477.05.300, 477.05B100, 477.05B10198, 477.05B10199, 477.05B10298, 477.05B10299, 477.05B20198, 477.05B20199, 477.05B20298,	Waste bins

Series	Article group	Article number	Product category
		477.05B20299, 477.05B20498, 477.05B20499, 477.05B20598, 477.05B20599, 477.05B300, 477.05D100	
	477.06...	477.06.10005, 477.06.10190, 477.06.10198, 477.06.10199, 477.06.10290, 477.06.10298, 477.06.10299, 477.06.10390, 477.06.10398, 477.06.10399, 477.06.10490, 477.06.10498, 477.06.10499, 477.06.10590, 477.06.10598, 477.06.10599, 477.06.11005, 477.06.11015, 477.06.11025, 477.06.11035, 477.06.60005, 477.06.60190, 477.06.60198, 477.06.60199, 477.06.750, 477.06B10005, 477.06B10198, 477.06B10199, 477.06B10298, 477.06B10299, 477.06B10398, 477.06B10399, 477.06B10498, 477.06B10499, 477.06B10598, 477.06B10599, 477.06B11005, 477.06B11015, 477.06B11025, 477.06B11035, 477.06B60005, 477.06B60198, 477.06B60199, 477.06B750, 477.06D10005, 477.06D60005, 477.09.100, 477.09.101, 477.09.200, 477.09.201, 477.09.300, 477.09B100, 477.09B200, 477.09B300, 477.09D100	Dispensers
	477.20...	477.20.010, 477.20.100, 477.20.10005, 477.20.101, 477.20.102, 477.20.103, 477.20.200, 477.20B010, 477.20B100, 477.20B10005, 477.20B101, 477.20B102, 477.20B103, 477.20B200, 477.20D010, 477.20D100	Toilet brushes
	477.21...	477.21.100, 477.21.150, 477.21.200, 477.21.300, 477.21.60090, 477.21.60098, 477.21.60099, 477.21B100, 477.21B150, 477.21B200, 477.21B300, 477.21B60098, 477.21B60099, 477.21D100, 477.21D200	Toilet paper holders
	477.30...	477.30.020, 477.30.100, 477.30.110, 477.30.200, 477.30.210, 477.30.300, 477.30.310, 477.30.320,	Towel rails

2 Product

Series	Article group	Article number	Product category
		477.30.330, 477.30.3S, 477.30.E01, 477.30B010, 477.30B020, 477.30B100, 477.30B110, 477.30B200, 477.30B210, 477.30B300, 477.30B310, 477.30B320, 477.30B330, 477.30D100, 477.30D200, 477.30D300, 477.30D310, 477.30D3S, 477.30US110, 477.30US210	
	477.31...	477.31.100, 477.31.110, 477.31.200, 477.31B100, 477.31B110, 477.31B200, 477.31D100, 477.31US110, 477.32.100, 477.32B100	Grab rails
	477.33...	477.33.100, 477.33.103, 477.33.104, 477.33.110, 477.33.120, 477.33B100, 477.33B103, 477.33B110, 477.33B120	Shower rail holders
	477.90...	477.90.010, 477.90.015, 477.90.025, 477.90.030, 477.90.035, 477.90.040, 477.90.045, 477.90.050, 477.90.051, 477.90.052, 477.90.054, 477.90.060, 477.90.061, 477.90.070, 477.90.071, 477.90.080, 477.90.081, 477.90.99010, 477.90.99025, 477.90.99045, 477.90B010, 477.90B015, 477.90B025, 477.90B030, 477.90B035, 477.90B040, 477.90B045, 477.90B050, 477.90B051, 477.90B052, 477.90B054, 477.90B060, 477.90B061, 477.90B070, 477.90B071, 477.90B080, 477.90B081, 477.90D010, 477.90D025, 477.90D050	Hooks
	477.93...	477.93.010, 477.93.020, 477.93.030	Hooks
	477.99...	477.99.001, 477.99.002, 477.99.003, 477.99.004, 477.99.005, 477.99.006, 477.99B001, 477.99B002, 477.99B003, 477.99B004, 477.99B006	Sets
700	700.03...	700.03.00000, 700.03.00100, 700.03.00200	Shelves
	700.04...	700.04.00000	Cups
	700.06...	700.06.00000	Dispensers
	700.20...		

Series	Article group	Article number	Product category
		700.20.00000, 700.20.00100, 700.20.00200, 700.20.00300, 700.20.00400, 700.20.00500, 700.20.00600, 700.20.00700	Toilet brushes
	700.21...	700.21.00000, 700.21.00100	Toilet paper holders
	700.33...	700.33.00000	Shower holders
	700.50...	700.50.00000	Accessories (SKG)
	700.90...	700.90.00000, 700.90.00100, 700.90.00200	Hooks
800	800.04...	800.04B010	Cups
	800.06...	800.06B010	Dispensers
801	801.00...	801.00.100, 801.00B100	Holders
	801.03...	801.03.100, 801.03B100	Shelves
	801.04...	801.04.020, 801.04B020	Cups
	801.20...	801.20.010, 801.20.020, 801.20.100, 801.20.200, 801.20B010, 801.20B020, 801.20B100, 801.20B200	Toilet brushes
	801.21...	801.21.201, 801.21.202, 801.21.203, 801.21.300, 801.21.401, 801.21.402, 801.21.403, 801.21B201, 801.21B202, 801.21B203, 801.21B300, 801.21B401, 801.21B402, 801.21B403	Toilet paper holders
	801.50...	801.50.010, 801.50.011, 801.50.060, 801.50B010, 801.50B011, 801.50B060, 801.50D010, 801.50D011, 801.50D060, 801.50US010	Accessories (SKG)
	801.90...	801.90.010, 801.90.020, 801.90.030, 801.90.031, 801.90.032, 801.90.033, 801.90.034, 801.90.035, 801.90.040, 801.90B010, 801.90B020, 801.90B030, 801.90B033, 801.90B040, 801.90D010	Hooks

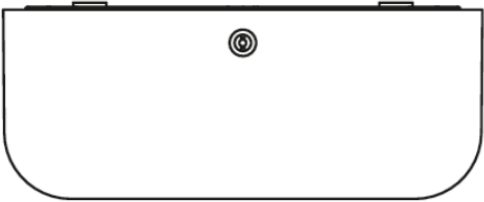
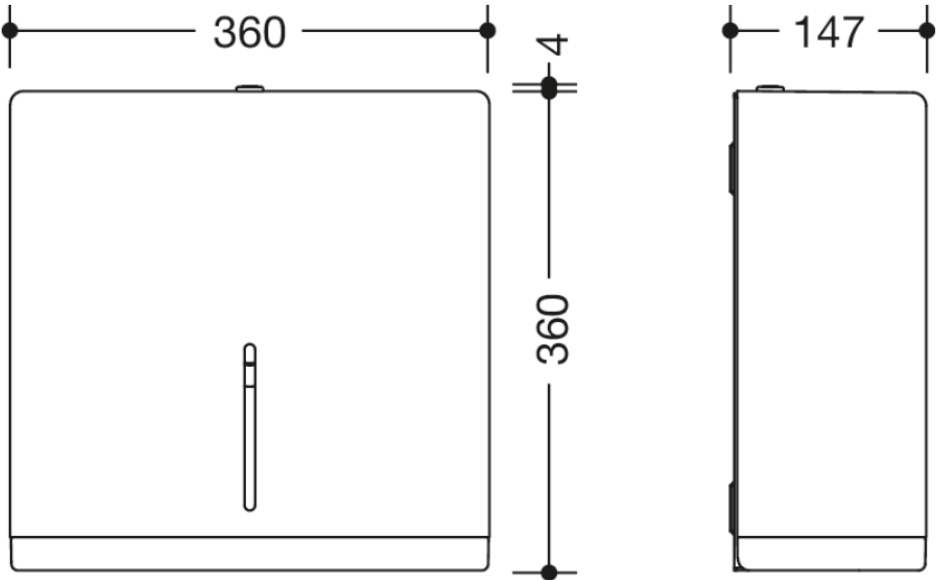
2 Product

Series	Article group	Article number	Product category
	801.91...	801.91.010, 801.91.020, 801.91.030, 801.91.040, 801.91B010, 801.91B020, 801.91B030, 801.91B040	Symbols
	801.99...	801.99.001, 801.99.002, 801.99B001, 801.99B002	Sets
802	802.03...	802.03B200, 802.03B210, 802.03B220, 802.03D200	Shelves
805	805.50...	805.50.015	Accessories (SKG)
900	900.03...	900.03B00500, 900.33B00400	Shelves
950	950.06...	950.06.750	Dispensers
	950.90...	950.90.01050, 950.90.02550, 950.90.60090, 950.90B60090	Hooks

Excluded from this EPD are products with other dominant material compositions, such as aluminium-dominated or glass-dominated products, as well as products with significantly different manufacturing processes.

The product is available in folding cartons. All available packaging was used for the LCA calculations based on packaging consumption in 2024. The composition of the product is listed in the following table:

Component	Share (M.-%)
Stainless steel	59.1
Polyamide	38.9
Masterbatch	2.0



Measures in mm

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The HEWI Large toilet roll holder is used to hold and dispense large toilet paper rolls in public or private restrooms.

2 Product

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

Since the scope of the study does not consider the entire life cycle of the product, the indication of the reference service life (RSL) is voluntary. According to the manufacturer, the RSL of HEWI Large toilet roll holder is 20 years.

USED RSL (YR) IN THIS LCA CALCULATION:

20

2.4 TECHNICAL DATA

Property	Specification
Product weight (including packagings)	3.1 kg
Product name	HEWI Large toilet roll holder, Series 477
Product type	Toilet paper holder for large rolls
Design	Rectangular housing with large radii and integrated front-level indicator
Function	Holds one standard large toilet paper roll (Ø 250–320 mm), lockable
Material	High-gloss polyamide, stainless steel
Color	Body: 98 (Signal White); Frame element and dispensing opening: available in HEWI color range
Dimensions (W × H × D)	360 mm × 364 mm × 147 mm
Mounting type	Wall-mounted
Extension option	Compatible with Carousel 900.21.E01
Fixing	Concealed mounting with corrosion-resistant HEWI fastening material
Intended use	For dispensing large toilet paper rolls in sanitary and public washroom areas
System affiliation	HEWI Series 477

2.5 SUBSTANCES OF VERY HIGH CONCERN

This product contains no substance listed in the candidate list exceeding 0.1 % by mass.

2.6 DESCRIPTION PRODUCTION PROCESS

The production of the HEWI Large Roll Holder (article no. 477.21.60098) comprises several standardized manufacturing steps, covering raw material supply, component production, assembly, and packaging.

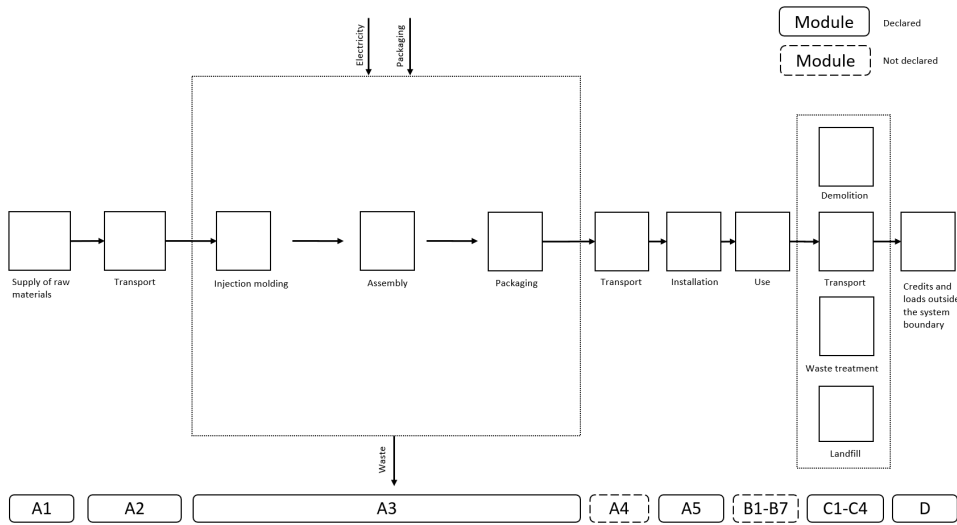
In the raw material supply stage (A1), polyamide granulates (e.g. PA6 Ultramid B3S HP and PA6 Akulon F223-D) as well as masterbatch are provided by upstream suppliers. These raw materials are transported to the manufacturing site by truck transport (A2).

The manufacturing stage (A3) begins with the plastic injection moulding process, in which the polyamide granulates and masterbatch are processed into the required plastic components using electrically powered injection moulding machines.

Following injection moulding, the individual components are transferred to the assembly stage, where the plastic parts are combined with the necessary stainless steel mounting and fixing components (e.g. wall brackets, screws, and locking elements). Electricity is consumed during assembly operations, and minor assembly waste may occur.

After assembly, the finished products are prepared for shipment in the packaging stage. Packaging materials, primarily folding cartons and trays, are used to protect the products during transport and handling.

2 Product



2.7 CONSTRUCTION DESCRIPTION

The product is installed by wall mounting using the supplied fixing components. Installation involves positioning the wall bracket on the wall surface, drilling the required holes, and securing the bracket with wall plugs and screws appropriate to the wall type. The product is then attached to the mounted bracket and fixed in place. No additional materials or consumables are required beyond the supplied fixing components.

3 Calculation rules

3.1 DECLARED UNIT

One piece

One piece of polyamide-based sanitary product is selected as the declared unit.

Reference unit: piece (p)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	p
Weight per reference unit	2.806	kg
Conversion factor to 1 kg	0.356365	p

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options 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	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN 15804 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 of HEWI polyamide accessories and dispenser systems, products of HEWI Heinrich Wilke GmbH. The results of this EPD are representative of the European Union.

3.5 CUT-OFF CRITERIA

For each unit process, the cut-off criteria of 1% of renewable and non-renewable primary energy usage and 1% of the total mass input of that unit process are complied with. The total neglected input flows do not exceed the limit of 5% of energy use and mass.

3 Calculation rules

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.

Construction process stage (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. Module A4 is not declared in the EPD.

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. Demolition of the product is accomplished using hand tools with no associated emissions and negligible impacts.

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
- Water and electricity consumption for the building
- 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 is calculated based on the total consumption at the production site in 2024 (for all products manufactured) and converted into the amount used solely for the production of the declared product. The amount of energy is given per kg of product manufactured.

No allocation is performed with regard to the use of secondary materials or fuels, co-products, plant-specific production processes or multi-input systems. The polluter pays principle applies to the use of waste as a substitute for primary fuels or materials.

3.7 DATA COLLECTION & REFERENCE PERIOD

All process-specific data are collected for the reference year 2024 (01.01.2024 - 31.12.2024).

3.8 ESTIMATES AND ASSUMPTIONS

For all raw materials used (raw materials, operating materials, packaging), the transportation distance is recorded. 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.

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 of 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 V3.9.1 are used for the secondary data, which refers to reference year 2022. 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 used for this EPD can be divided into three categories (time-related coverage, geographical coverage and technology coverage) according to the criteria of the UN Global Environmental Guideline on LCA database development (as described in EN 15804+A2).

Temporal representativeness

The primary foreground data are based on the annual average for the year 2024, reflecting the actual production conditions at HEWI Heinrich Wilke GmbH. Secondary background data are taken from ecoinvent v3.9.1, which has a reference year of 2022 and is updated regularly. All background datasets are younger than 10 years, meeting the requirements of

3 Calculation rules

EN 15804+A2 and EN 15941 (maximum age ≤ 10 years; newly collected data ≤ 3 years). Therefore, the temporal representativeness is considered “good”.

Geographical representativeness

The primary data represent the production processes at the manufacturer’s site in Germany. The ecoinvent background data reflect the geographical regions where the respective processes typically occur. Geographical representativeness is judged “good” for the studied system.

Technological representativeness

The primary data reflect the actual technologies used in the 2024 production processes, including machinery, energy systems, and material flows. Background datasets represent average or typical technologies in the relevant regions (consistent with EN 15941). Technological representativeness is considered “good”.

Aspect	Data quality assessment
Time-related coverage	Primary data represent 2024; secondary data <10 years old (ecoinvent 3.9.1, 2022)
Geographical coverage	Most of the datasets selected for the LCA refer to Europe as the geographical reference.
Technology coverage	The life cycle assessment represents data from processes and products with similar technology.
Completeness	

Aspect	Data quality assessment
	Specific data are compared with literature data. Simple plausibility checks (e.g. mass or energy balances) are performed.
Representativeness	The data fulfill the defined time-related, geographical, and technological scope.
Precision	As far as possible, representative data are used. The data originate from reliable sources, and references are provided.
Reproducibility	Information on the method and the data used (reference sources) is provided.
Sources of data	The data originate from reliable sources, and references are provided.

Therefore, the overall data quality for this EPD can be described as “good”.

3.10 POWER MIX

The use of green electricity is included in the calculation of the environmental impacts, which is based on the purchased electricity mix, referring to the market-based approach. The share of green electricity with guarantees of origin in total electricity consumption is 100% (hydropower from Norway). The GWP-total of the electricity is calculated at 0.04554 kg CO2 eqv./kWh.

4 Scenarios and additional technical information

4.1 ASSEMBLY (A5)

The following information describes the scenarios for flows entering the system and flows leaving the system at module A5.

FLOWS ENTERING THE SYSTEM

There are no significant environment impacts as a result of materials or energy used in the construction stage (A5).

FLOWS LEAVING THE SYSTEM

The following output flows leaving the system at module A5 are assumed.

Description	Value	Unit
Output materials as result of loss during construction	0	%
Output materials as result of waste processing of materials used for installation/assembly at the building site	0.000	kg
Output materials as result of waste processing of used packaging	0.297	kg

4.2 DE-CONSTRUCTION, DEMOLITION (C1)

No inputs are needed for the product at the de-construction / demolition phase

4.3 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]
(ei3.9.1) Metals, others (i.a. fasteners, fittings) (NMD ID 50)	(ei3.9.1) Lorry (Truck), unspecified (default) market group for (GLO)	0	100	150	50	50
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	(ei3.9.1) Lorry (Truck), unspecified (default) market group for (GLO)	0	100	150	50	50
(ei3.9.1) plastics, via residue (NMD ID 43)	(ei3.9.1) Lorry (Truck), unspecified (default) market group for (GLO)	0	100	150	50	50
(ei3.9.1) polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	(ei3.9.1) Lorry (Truck), unspecified (default) market group for (GLO)	0	100	150	50	50

4 Scenarios and additional technical information

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	(ei3.9.1) 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

4.4 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 [%]
(ei3.9.1) Metals, others (i.a. fasteners, fittings) (NMD ID 50)	NL	0	5	5	90	0
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	NL	0	0	100	0	0
(ei3.9.1) plastics, via residue (NMD ID 43)	NL	0	20	80	0	0
(ei3.9.1) polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	NL	0	10	85	5	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
(ei3.9.1) Metals, others (i.a. fasteners, fittings) (NMD ID 50)	0.000	0.083	0.083	1.489	0.000
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	0.000	0.057	0.000	0.000
(ei3.9.1) plastics, via residue (NMD ID 43)	0.000	0.218	0.872	0.000	0.000
(ei3.9.1) polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	0.000	0.000	0.003	0.000	0.000
Total	0.000	0.301	1.015	1.490	0.000

4.5 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.

4 Scenarios and additional technical information

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
(ei3.9.1) Metals, others (i.a. fasteners, fittings) (NMD ID 50)	1.489	0.000
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	1.342
(ei3.9.1) plastics, via residue (NMD ID 43)	0.000	26.847
(ei3.9.1) polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	0.000	0.078
Total	1.490	28.268

5 Results

For the impact assessment long-term emissions (>100 years) are not considered. 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 EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	2.17E+1	6.21E-2	8.64E-2	2.19E+1	4.47E-1	0.00E+0	3.83E-2	2.46E+0	2.51E-2	-2.51E+0
GWP-f	kg CO ₂ eq.	2.16E+1	6.19E-2	5.04E-1	2.22E+1	1.93E-2	0.00E+0	3.81E-2	2.46E+0	2.50E-2	-2.52E+0
GWP-b	kg CO ₂ eq.	1.16E-1	2.02E-5	-4.19E-1	-3.03E-1	4.28E-1	0.00E+0	1.24E-5	3.09E-4	1.40E-5	2.91E-3
GWP-luluc	kg CO ₂ eq.	1.18E-2	2.21E-4	1.58E-3	1.36E-2	1.70E-5	0.00E+0	1.36E-4	2.15E-4	2.22E-6	2.92E-4
ODP	kg CFC11 eq.	2.17E-7	1.10E-9	7.77E-9	2.26E-7	6.55E-10	0.00E+0	6.79E-10	6.35E-8	8.61E-11	-1.14E-7
AP	mol H ⁺ eq.	1.01E-1	2.96E-4	2.82E-3	1.05E-1	1.00E-4	0.00E+0	1.83E-4	9.66E-4	2.47E-5	-4.57E-3
EP-fw	kg P eq.	6.40E-4	6.16E-7	2.64E-5	6.67E-4	2.44E-7	0.00E+0	3.79E-7	6.43E-6	4.77E-8	1.07E-4
EP-m	kg N eq.	1.96E-2	1.13E-4	6.82E-4	2.04E-2	4.01E-5	0.00E+0	6.94E-5	2.75E-4	1.91E-5	-9.92E-4
EP-T	mol N eq.	2.06E-1	1.20E-3	6.75E-3	2.14E-1	4.27E-4	0.00E+0	7.40E-4	3.07E-3	1.00E-4	-1.64E-2
POCP	kg NMVOC eq.	7.12E-2	4.10E-4	2.20E-3	7.38E-2	1.44E-4	0.00E+0	2.53E-4	8.70E-4	4.07E-5	-1.10E-2
ADP-mm	kg Sb-eq.	3.39E-4	1.94E-7	7.35E-6	3.46E-4	6.87E-8	0.00E+0	1.19E-7	1.04E-6	7.68E-9	3.48E-6
ADP-f	MJ	2.66E+2	8.86E-1	6.21E+0	2.73E+2	1.92E-1	0.00E+0	5.46E-1	1.61E+0	7.64E-2	-3.00E+1
WDP	m ³ world eq.	5.50E+0	4.84E-3	1.42E-1	5.64E+0	1.90E-3	0.00E+0	2.98E-3	1.04E-1	2.45E-3	-1.91E+0

GWP-total=Global Warming Potential total (GWP-total) | **GWP-f**=Global Warming Potential fossil fuels (GWP-fossil) | **GWP-b**=Global Warming Potential biogenic (GWP-biogenic) | **GWP-luluc**=Global Warming Potential land use and land use change (GWP-luluc) | **ODP**=Depletion potential of the stratospheric ozone layer (ODP) | **AP**=Acidification potential, Accumulated Exceedance (AP) | **EP-fw**=Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater) | **EP-m**=Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine) | **EP-T**=Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | **POCP**=Formation potential of tropospheric ozone (POCP) | **ADP-mm**=Abiotic depletion potential for non fossil resources (ADP mm) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) depreciation potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A5	C1	C2	C3	C4	D
PM	disease incidence	1.27E-6	6.11E-9	4.45E-8	1.32E-6	1.75E-9	0.00E+0	3.77E-9	8.37E-9	5.36E-10	-1.30E-7
IR	kBq U235 eq.	4.53E-1	3.46E-4	1.67E-2	4.70E-1	2.33E-4	0.00E+0	2.13E-4	5.57E-3	6.06E-5	2.11E-2
ETP-fw	CTUe	5.50E+1	6.54E-1	2.43E+0	5.81E+1	2.91E-1	0.00E+0	4.03E-1	2.70E+1	8.97E-1	1.23E+1
HTP-c	CTUh	6.70E-8	3.28E-11	1.54E-9	6.85E-8	3.32E-11	0.00E+0	2.02E-11	5.88E-10	2.51E-12	1.51E-8
HTP-nc	CTUh	2.61E-7	7.12E-10	7.51E-9	2.69E-7	2.39E-10	0.00E+0	4.39E-10	4.84E-9	1.26E-10	1.26E-7
SQP	Pt	6.69E+1	6.99E-1	3.46E+1	1.02E+2	7.63E-2	0.00E+0	4.31E-1	4.66E-1	1.75E-1	-1.78E+1

PM=Potential incidence of disease due to PM emissions (PM) | **IR**=Potential Human exposure efficiency relative to U235 (IRP) | **ETP-fw**=Potential Comparative Toxic Unit for ecosystems (ETP-fw) | **HTP-c**=Potential Comparative Toxic Unit for humans (HTP-c) | **HTP-nc**=Potential Comparative Toxic Unit for humans (HTP-nc) | **SQP**=Potential soil quality index (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
	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
ILCD type / level 3	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
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2

5 Results

ILCD classification	Indicator	Disclaimer
	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	A5	C1	C2	C3	C4	D
PERE	MJ	3.17E+1	1.25E-2	3.02E+0	3.48E+1	7.05E-3	0.00E+0	7.72E-3	1.88E-1	2.41E-3	-2.42E+0
PERM	MJ	0.00E+0	0.00E+0	4.07E+0	4.07E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	3.17E+1	1.25E-2	7.08E+0	3.88E+1	7.05E-3	0.00E+0	7.72E-3	1.88E-1	2.41E-3	-2.42E+0
PENRE	MJ	2.31E+2	8.88E-1	5.74E+0	2.38E+2	1.92E-1	0.00E+0	5.47E-1	1.61E+0	7.65E-2	-3.00E+1
PENRM	MJ	3.50E+1	0.00E+0	4.72E-1	3.55E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-7.04E-3
PENRT	MJ	2.66E+2	8.88E-1	6.22E+0	2.73E+2	1.92E-1	0.00E+0	5.47E-1	1.61E+0	7.65E-2	-3.00E+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	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	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	0.00E+0
FW	m³	1.73E-1	2.14E-4	7.16E-3	1.81E-1	9.37E-5	0.00E+0	1.32E-4	3.12E-3	8.29E-5	-3.76E-2

PERE=Use of renewable primary energy excluding renewable primary energy resources used as raw materials | **PERM**=Use of renewable primary energy resources used as raw materials | **PERT**=Total use of renewable primary energy resources | **PENRE**=Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | **PENRM**=Use of non-renewable primary energy resources used as raw materials | **PENRT**=Total use of non-renewable primary energy resources | **SM**=Use of secondary material | **RSF**=Use of renewable secondary fuels | **NRSF**=Use of non-renewable secondary fuels | **FW**=Net use of fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A5	C1	C2	C3	C4	D
HWD	Kg	3.51E-4	5.65E-6	1.46E-5	3.72E-4	1.17E-6	0.00E+0	3.48E-6	5.88E-6	3.71E-7	-3.20E-4
NHWD	Kg	1.09E+1	5.86E-2	2.91E-1	1.12E+1	7.65E-2	0.00E+0	3.61E-2	1.05E+0	3.02E-1	2.74E-1
RWD	Kg	3.28E-4	2.03E-7	1.25E-5	3.41E-4	1.71E-7	0.00E+0	1.25E-7	3.91E-6	3.52E-8	1.40E-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	A5	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	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.28E-1	0.00E+0	0.00E+0	1.49E+0	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	0.00E+0
EET	MJ	0.00E+0	0.00E+0	8.74E-2	8.74E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.10E+0
EEE	MJ	0.00E+0	0.00E+0	5.07E-2	5.07E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.28E+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:

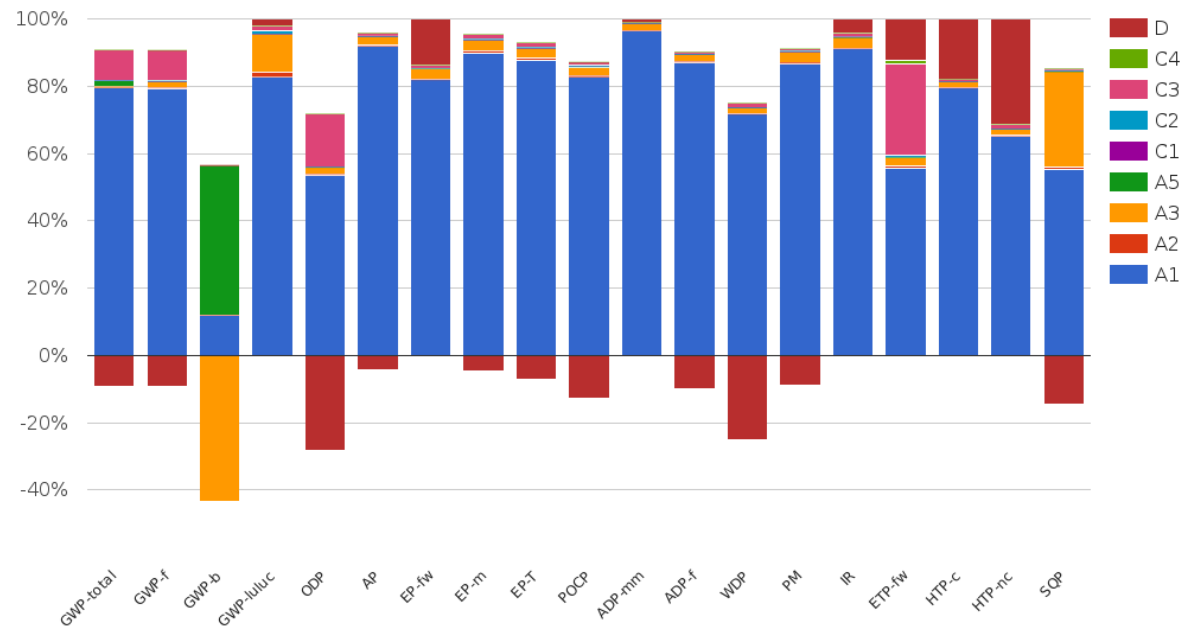
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.1161	kg C

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	0.4258	kg CO2 (biogenic)

6 Interpretation of results



In most impact categories, the environmental impacts of the product are predominantly determined by the extraction and processing of raw materials (Module A1). For the global warming potential (GWP-total), Module A1 contributes to approximately 87.5% of the total impacts within Modules A1–C4.

Within Module A1, the production of stainless steel components represents the largest contribution to GWP, as stainless steel is associated with energy-intensive upstream production processes. The remaining impacts within A1 originate from the production of plastic materials and other minor material inputs.

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 14044:2006

ISO 14025

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

EN 15804+A2

EN 15804:2012+A2:2019/AC:2021, Sustainability of Buildings - Environmental Product Declarations - Framework Development Rules by Product Category

Kiwa-EE GPI R.4.0

Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1203_R. 4.0 (18.12.2025)

Kiwa-EE GPI R.4.0 Annex B1

Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, SOP EE 1203_R. 4.0 (18.12.2025)

PCR B

DAPHabitat, PCR – Sanitary Ware [Sanitary facilities and kitchens] – V.1.3 (June 2022)

Ecoinvent

ecoinvent Version 3.9.1 (December 2022)

R<THINK characterization method

ecoinvent 3.9.1: EN 15804+A2 indicators (EF 3.1)

8 Contact information

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