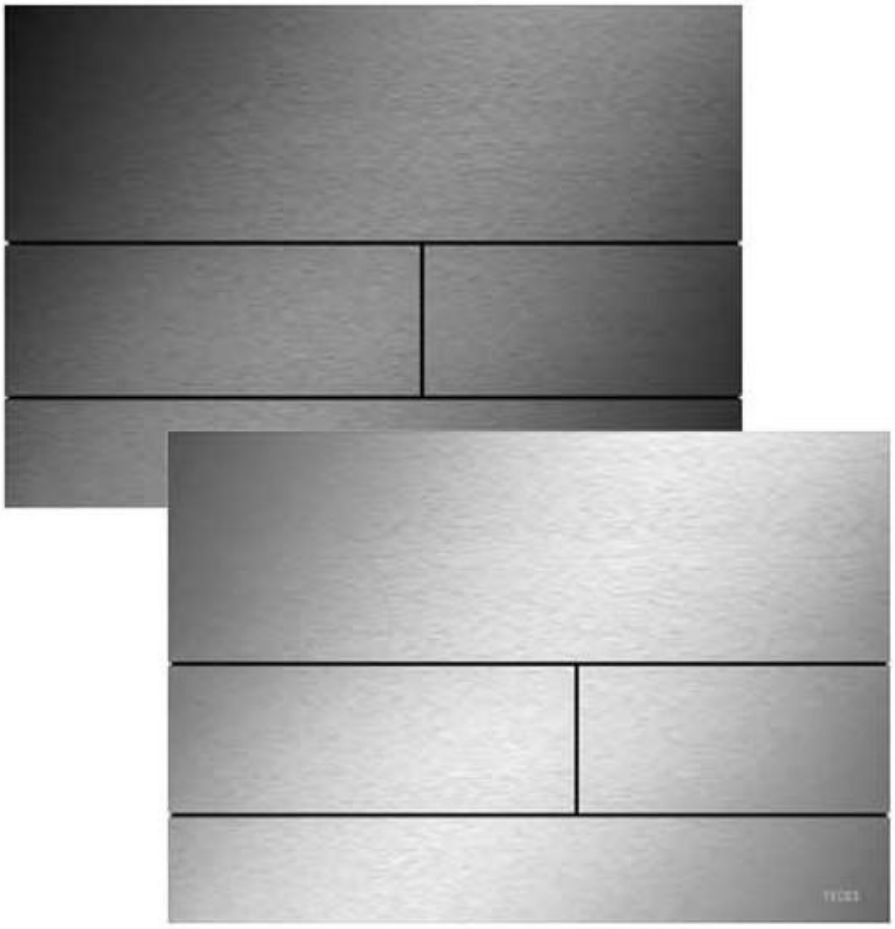
Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2

Flush plates TECEsquare I & TECEsquare II

Registration number:	EPD-Kiwa-EE-000518-EN
Issue date:	10.09.2026
Valid until:	10.09.2031
Declaration owner:	TECE SE
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified



1 General information

1.1 PRODUCT

Flush plates

Flush plates serve as visible and easily accessible controls for flushing toilets and urinals. They form the external interface with the flush cistern.

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-000518-EN

1.3 VALIDITY

Issue date: 10.09.2026

Valid until: 10.09.2031

1.4 PROGRAM OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
Germany



Raoul Mancke

(Head of program operations, Kiwa-Ecobility Experts)



Onur Üzüm

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Declaration owner: TECE SE

Address: Hollefelderstr. 57, 48292 Emsdetten, Germany

E-mail: info@tece.de

Website: www.tece.com

Production location: TECE Kunststofftechnik GmbH, Germany

Address production location: Hollefeldstr. 57, 48282 Emsdetten, Germany

Distribution via: TECE SE, Germany

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



Yixuan Mao

(Third party verifier)

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The program 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, General Program Instructions “Product Level”, Program EE 1201 R.4.0 (18.12.2025)

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

PCR B

IBU – PCR, Part B: Requirements on the EPD fittings and showers Version 8 (01.08.2024)

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. 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 EPDs programs 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:	EN15804+A2
LCA software:	LCA for Experts – Sphera
Characterization method:	EN 15804+A2 – EF3.1
LCA database profiles:	MLC Database
Version database:	2025.2 last change 01.03.2025

1.11 PROJECT REPORT

This EPD is generated on the basis of the following report: LCA report flush plates TECEsquare

2 Product

2.1 PRODUCT DESCRIPTION

This declaration refers to the product within the product group (as shown in the table) that has the highest environmental impact,. Therefore, this EPD represents the product (Article no. 9240824) with the highest environmental impacts within the product group as a worst-case EPD.

TECEsquare toilet flush plate for dual-flush system

Flush plate for TECE cisterns, for front or top actuation. Extra-flat actuation with colored coating and two spring-loaded actuation rockers. Incl. actuation rods, mounting material and disassembly tool. Compatible with insert chute for cleaning tablets.

The TECEsquare is supplied in cardboard packaging.

This EPD covers the following products:

Article no.	Description
9240800	TECEsquare glass toilet flush plate for dual-flush system, Polished white glass, polished white buttons
9240801	TECEsquare glass toilet flush plate for dual-flush system, Polished white glass, brushed stainless steel-look buttons (with anti-fingerprint)
9240802	TECEsquare glass toilet flush plate for dual-flush system, Polished white glass, bright chrome buttons
9240803	TECEsquare glass toilet flush plate for dual-flush system, Polished mint green glass, polished white buttons
9240804	TECEsquare glass toilet flush plate for dual-flush system, Polished mint green glass, brushed stainless steel buttons (with anti-fingerprint)
9240805	TECEsquare glass toilet flush plate for dual-flush system, Polished mint green glass, bright chrome buttons
9240806	TECEsquare glass toilet flush plate for dual-flush system, Polished black glass, brushed stainless steel-look buttons (with anti-fingerprint)
9240807	TECEsquare glass toilet flush plate for dual-flush system, Polished black glass, bright chrome buttons
9240808	TECEsquare glass toilet flush plate for dual-flush system, Polished black glass, gold buttons
9240809	TECEsquare glass toilet flush plate for dual-flush system, Polished black glass, polished black buttons
9240824	TECEsquare II glass toilet flush plate for dual-flush system, Satined white glass
9240825	TECEsquare II glass toilet flush plate for dual-flush system, Satined black glass
9240826	TECEsquare II glass toilet flush plate for dual-flush system, Satined signal grey glass
9240827	TECEsquare II glass toilet flush plate for dual-flush system, Satined sand beige glass
9240830	TECEsquare II metal toilet flush plate for dual-flush system, Brushed stainless steel (with anti-fingerprint)
9240831	TECEsquare II metal toilet flush plate for dual-flush system, Bright chrome
9240832	TECEsquare II metal toilet flush plate for dual-flush system, Polished white
9240833	TECEsquare II metal toilet flush plate for dual-flush system, Matt black

9240834	TECEsquare II metal toilet flush plate for dual-flush system, Matt white
9240839	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Polished gold optic
9240843	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed warm nickel (with anti-fingerprint)
9240845	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Rusted steel
9240846	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed black chrome (with anti-fingerprint)
9240847	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed gold optic (with anti-fingerprint)
9240848	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed red gold (with anti-fingerprint)
9240850	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed cool nickel (with anti-fingerprint)
9240851	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed brass (with anti-fingerprint)
9240852	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed bronze (with anti-fingerprint)
9240853	TECEsquare II metal toilet flush plate for dual-flush system, with colored surface, Brushed black (with anti-fingerprint)

The composition of the product is described in the following table:

Materials	Weight [m-%]
Metals (Fe-metals)	38,5
Minerals (Glass)	44,1
Fossil materials (thermoplastic)	17,0
Fossil materials (rubber)	0,4

The composition of the packaging is described in the following table:

Materials	Weight [m-%]
Biobased materials (carton & paper)	90,8
Fossil materials (thermoplastic)	9,2

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The TECEsquare flush plate is used to operate TECE cisterns and is designed for dual flush technology. It features a particularly flat design and can be operated from both the front and the top. Thanks to the optional mounting frame, flush-mounted installation is also possible.

2.3 REFERENCE SERVICE LIFE (RSL)

RSL PRODUCT

The estimated service life was set at 200.000 cycles (approx. 30 years, based on the BNB useful life) and was applied, tested and thus confirmed in the design.

USED RSL (YR) IN THIS CALCULATION

200.000 cycles (approx. 30 years)

2.4 TECHNICAL DATA

The exact technical data can be found in the data sheets for the respective products on the website www.tece.com.

Description	Unit	Value
Width	mm	220
Height	mm	150
Depth	mm	7
Weight	kg	1,1329

2.5 SUBSTANCES OF VERY HIGH CONCERN

The products and packaging do not contains substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency in a concentration more than 0.1 % (by unit weight).

2.6 DESCRIPTION PRODUCTION PROCESS

Individual components and assemblies are manufactured at production facilities in Strzelin (Poland), Emsdetten (Germany), and Taicang (China) and transported to the factory in Emsdetten (Germany) as the final production location. Transport from China to Germany is by container ship, and transport from Poland to Germany is by truck. The respective locations procure the raw materials independently and process them further. Final assembly takes place at the plant in Emsdetten (Germany).

2.7 CONSTRUCTION DESCRIPTION

Installation is done manually on construction site.

The installation instruction can be found on the website www.tece.com.

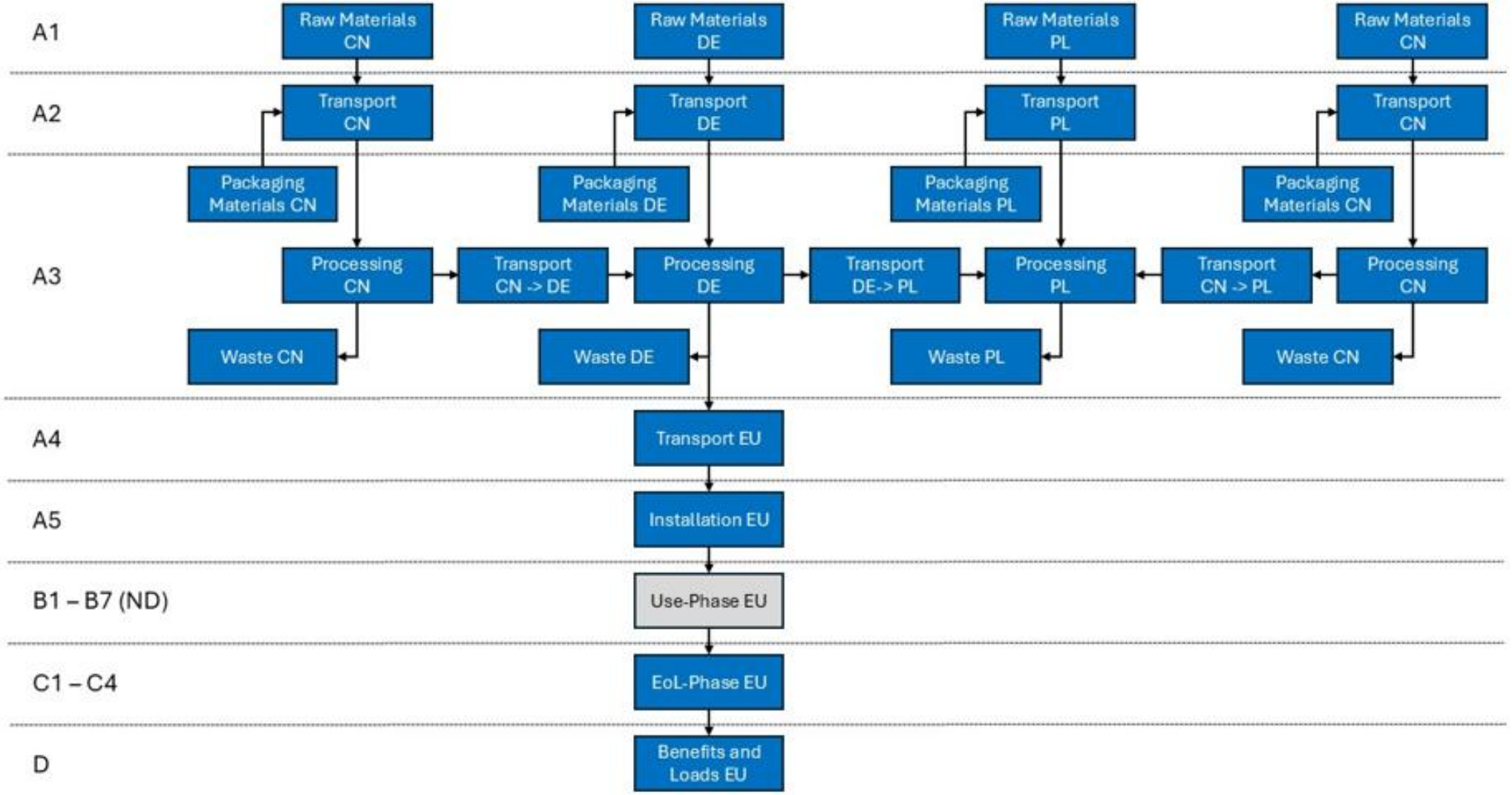


Figure 1: Graphic schematic process flow diagram for life cycle

In the figure, the declared modules are marked in blue and the not declared modules in gray. (ND = Not declared)

3 Calculation rules

3.1 DECLARED UNIT

The declared unit is one piece of worst-case product of flush plate TECEsquare.

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	piece
Weight per reference unit	1.1329	kg/piece
Conversion factor to 1 kg	0.8827	piece/kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

EPD type: Cradle to gate with options, modules C1-C4 and module D.

The life cycle stages included are shown below:

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

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

The modules of the EN15804+A2 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 the TECEsquare from TECE SE. The results of this EPD are representative for Europe.

3.5 CUT-OFF CRITERIA

The cut-off criteria are met: For each unit process, neglected input data is less than 1% of the primary energy input and mass. Across all modules, the total of all omitted flows does not exceed 5%.

The manufacture of machinery and buildings, transport vehicles, transport of personnel to and within the production plant and infrastructure, as well as the maintenance and operation of facilities, company administration, research and development, other long-term emissions and water consumption are not relevant to the production included.

The following process was not taken into account based on the cut-off criteria of this study:

Printing ink: approx. 0.01 % w/w of the total raw material input in Modul A1

Additives: approx. 0.01 % w/w of the total raw material input in Modul A1

3.6 ALLOCATION

Similar goods are produced at the production sites, with data being recorded on a product-specific basis without using a production-wide mass balance. The energy requirement is determined via electricity meters at the production site and calculated for the production volume per period. Waste flows are also recorded and converted on a product-specific basis.

System extensions and allocations include the substitution of fossil fuels through energy generation with thermal utilization of waste, are accounted for in module D. The energy generated is credited to the system, whereby it is assumed that electricity from the respective electricity mix is substituted. In addition, material substitution of primary material through recycling in the end-of-life phase is assumed.

The LCA modelling follows general methodological principles such as the polluter pays principle, meaning that environmental burdens are attributed to the process generating the emissions. In addition, double counting of environmental impacts is

avoided by assigning all flows and credits consistently within the defined system boundaries.

The production process does not generate co-products, therefore no allocation between co-products was required.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

Primary data including all raw materials, packaging materials, energy consumption and ancillary materials was comprehensively collected for the reference year 2024 from 2024-01-01 to 2024-12-31.

3.8 ESTIMATES AND ASSUMPTIONS

The quantities of raw materials and the transport routes from the suppliers and the internal transport routes were determined. The standard values from (payload 22t of a 32t Truck with a utilization of 61 %) the LCA calculation program were used for the means of transport and the processing of plastics. For transport to the construction site (A4), a distance of 500 km was assumed for scaling and 50 km for disposal (C2).

The standard values for the waste treatments from the LCA calculation program were also used:

Type of material	recycling	Thermal utilization	Landfill
Wood	0 %	100 %	0 %
Paper and Cardboard	99 %	1 %	0 %
Plastics	80 %	14 %	6 %
Metals	100 %	0 %	0 %
Inert Materials	0 %	0 %	100 %

A loss rate of 3 % is assumed for plastic parts during the manufacturing process (A3). Non-plastic parts are sourced from the supplier as required.

The Assembly (A5) is carried out by hand. The packaging and any special materials required for assembly are disposed of.

Data records for China that were not available were replaced with others and subject to an additional surcharge.

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

3.9 DATA QUALITY

The data used for balancing the products originate from verified (partly reweighted) master data and are representative for the reference year 2024. An LCA calculation program with the associated background database was used to prepare the life cycle inventory and the impact assessment. Corresponding data sets for the respective raw materials, transport, energy and processing, taking into account the temporal and geographical aspects, were selected accordingly and are used. Overall, the dataset quality is high, with very good temporal coverage and technical representativeness, and good geographical representativeness for upstream, core and downstream processes.

Quality requirement	Specific requirement	Data quality level
Time-related coverage	Age of data and minimum time period for data collection.	Very Good
Geographical coverage	Upstream: Unit process for raw material should be collected for respective geographic region	Good
	Core: Unit process for production should represent the real site.	Good
	Downstream: End-of-life disposal should represent the region of disposal.	Good
Technical representativeness	Qualitative assessment of the degree to which the data set reflects the true population of interest (technology)	Very Good

3.10 POWER MIX

The residual electricity mix according to the market-based approach is used at the production sites in Germany and Poland. Consumer mix is applied for the electricity consumption at the Chinese production sites as the residual mix is not available. The electricity consumption for assembly in China is reduced through the use of on-site solar power.

Description	Value	Unit
Residual grid mix Germany	0.8791	kg CO_2 / kWh
Residual grid mix Poland	0.8729	kg CO_2 / kWh
Consumer grid mix China	0.7323	kg CO_2 / kWh

4 Scenarios and additional technical information

4.1 RAW MATERIAL SUPPLY (A1)

The raw materials for the respective countries (Germany, Poland and China) are purchased in the respective countries. These are, for example, metal parts (screws) and plastic granulate for the respective plastic parts.

4.2 TRANSPORT (A2)

The raw materials purchased in each country are delivered by truck from the supplier to the respective plants.

4.3 MANUFACTURING (A3)

The injection molding process for manufacturing plastic parts is used at the sites in Germany, China and Poland. The resulting components are further processed or pre-assembled, depending on the location.

In China, certain components are manufactured using the injection molding process and assembled into the flush plate. These assemblies are transported to Germany by ship. Trucks are used for transportation to and from the port. Disposable packaging is used for this.

After assembly in Emsdetten (Germany), the end product is packed in its final sales packaging.

4.4 TRANSPORT TO CONSTRUCTION SITE (A4)

The flush plate is delivered to the customer by truck. The distance was set to 500 km for easier scaling.

4.5 ASSEMBLY (A5)

The flush plate delivered to the construction site is installed in the building by hand. The packaging is disposed of at disposal centers close to the construction site.

4.6 USE-PHASE (B1-B7)

Not declared.

4.7 DE-CONSTRUCTION, DEMOLITION (C1)

Dismantling from the building is carried out by hand, as is installation in the building.

4.8 TRANSPORT END-OF-LIFE (C2)

The waste produced during dismantling is transported by bulk truck (50 km) to waste treatment.

4.9 END OF LIFE (C3, C4)

The waste is treated according to its materials, recycling, waste incineration and landfilling.

4.10 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

Credits resulting from recycling and waste treatment.

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 endpoints 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

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
AP	mol H^+ eqv.	8.14E-03	2.69E-06	6.89E-04	8.83E-03	1.12E-04	2.96E-04	0.00E+00	8.73E-05	5.70E-05	5.60E-05	-3.24E-03
GWP-total	kg CO_2 eqv.	1.91E+00	1.39E-03	5.19E-01	2.43E+00	5.76E-02	1.56E-01	0.00E+00	1.51E-02	1.07E-01	7.83E-03	-9.42E-01
GWP-b	kg CO_2 eqv.	-1.99E-03	-2.28E-05	7.31E-04	-1.28E-03	-9.48E-04	2.28E-02	0.00E+00	-2.49E-04	2.11E-04	-1.09E-05	3.10E-01
GWP-f	kg CO_2 eqv.	1.91E+00	1.40E-03	5.18E-01	2.43E+00	5.83E-02	1.33E-01	0.00E+00	1.53E-02	1.07E-01	7.83E-03	-1.25E+00
GWP-luluc	kg CO_2 eqv.	1.28E-03	5.91E-06	1.04E-04	1.39E-03	2.46E-04	3.78E-04	0.00E+00	6.44E-05	6.11E-05	1.41E-05	-9.88E-04
EP-m	kg N eqv.	2.10E-03	1.15E-06	2.22E-04	2.32E-03	4.77E-05	1.51E-04	0.00E+00	4.30E-05	1.37E-05	1.45E-05	-7.97E-04
EP-fw	kg P eqv.	2.42E-06	3.50E-09	4.00E-07	2.82E-06	1.46E-07	2.60E-06	0.00E+00	3.82E-08	2.17E-08	2.08E-07	-5.01E-06
EP-t	mol N eqv.	2.34E-02	1.24E-05	2.38E-03	2.58E-02	5.16E-04	1.29E-03	0.00E+00	4.69E-04	1.81E-04	1.59E-04	-7.77E-03
ODP	kg CFC 11 eqv.	1.15E-11	6.53E-16	4.22E-13	1.19E-11	2.71E-14	7.34E-13	0.00E+00	7.12E-15	8.95E-13	3.94E-14	-3.25E-12
POCP	kg NMVOC eqv	5.08E-03	2.48E-06	6.42E-04	5.72E-03	1.03E-04	2.24E-04	0.00E+00	8.05E-05	3.33E-05	4.34E-05	-2.87E-03
ADP-f	MJ	3.24E+01	1.80E-02	6.29E+00	3.87E+01	7.50E-01	1.67E+00	0.00E+00	1.97E-01	3.91E-01	1.01E-01	-2.20E+01
ADP-mm	kg Sb-eqv.	3.29E-07	1.00E-10	8.74E-09	3.38E-07	4.16E-09	9.74E-08	0.00E+00	1.09E-09	5.14E-09	5.49E-10	-4.40E-06
WDP	m^3 world eqv.	1.72E-01	5.61E-06	4.40E-02	2.16E-01	2.33E-04	1.33E-02	0.00E+00	6.12E-05	1.19E-02	8.66E-04	-1.38E-01

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 (GW**P-lul**uc) **| 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)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	2.18E+01	1.55E-02	1.68E+00	2.35E+01	6.45E-01	4.71E-01	0.00E+00	1.69E-01	9.31E-02	7.23E-02	-9.16E+00
PM	Disease incidence	5.76E-08	2.36E-11	7.46E-09	6.51E-08	9.83E-10	2.16E-09	0.00E+00	4.84E-10	4.47E-10	6.97E-10	-3.53E-08
HTP-c	CTUh	5.92E-10	3.08E-13	3.58E-11	6.28E-10	1.28E-11	2.35E-11	0.00E+00	3.36E-12	6.57E-12	1.45E-12	1.29E-10
HTP-nc	CTUh	1.60E-08	1.60E-11	1.21E-09	1.72E-08	6.64E-10	1.99E-09	0.00E+00	1.74E-10	1.91E-10	5.27E-11	-2.25E-09
IR	kBq U-235 eqv.	4.69E-02	3.70E-06	8.13E-03	5.50E-02	1.54E-04	6.42E-03	0.00E+00	4.04E-05	8.09E-03	7.98E-05	-2.66E-02
SQP	Pt	3.00E+00	4.84E-03	1.05E-01	3.11E+00	2.01E-01	1.87E+00	0.00E+00	5.28E-02	1.62E-01	3.22E-02	-4.54E+01

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**= Ionizing 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
	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) PER PIECE

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3.45E+00	1.28E-03	1.29E-01	3.58E+00	5.34E-02	5.35E-01	0.00E+00	1.40E-02	2.94E-01	2.10E-02	-7.35E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.45E+00	1.28E-03	1.29E-01	3.58E+00	5.34E-02	5.35E-01	0.00E+00	1.40E-02	2.94E-01	2.10E-02	-7.35E+00
PENRE	MJ	3.24E+01	1.80E-02	6.29E+00	3.87E+01	7.50E-01	1.67E+00	0.00E+00	1.97E-01	3.91E-01	1.01E-01	-2.20E+01
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.24E+01	1.80E-02	6.29E+00	3.87E+01	7.50E-01	1.67E+00	0.00E+00	1.97E-01	3.91E-01	1.01E-01	-2.20E+01
SM	kg	3.14E-01	0.00E+00	2.06E-01	5.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	6.06E-03	4.01E-07	1.66E-03	7.72E-03	1.67E-05	1.04E-03	0.00E+00	4.37E-06	3.70E-04	2.47E-05	-7.92E-02

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 | F=use of renewable secondary fuels | **NRSF**= use of non-renewable secondary fuels | **FW**= use of net fresh water

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	3.42E-08	8.34E-13	3.11E-10	3.45E-08	3.47E-11	2.77E-08	0.00E+00	9.10E-12	5.78E-10	2.53E-11	-1.07E-07
NHWD	kg	8.50E-02	3.47E-06	1.88E-03	8.69E-02	1.44E-04	6.02E-03	0.00E+00	3.79E-05	6.73E-04	5.12E-01	7.77E-02
RWD	kg	3.65E-04	2.84E-08	8.74E-05	4.52E-04	1.18E-06	4.22E-05	0.00E+00	3.10E-07	5.30E-05	7.33E-07	-2.82E-04

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

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.21E-01	0.00E+00	0.00E+00	5.94E-01	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.00E-03	0.00E+00	0.00E+00	2.76E-02	0.00E+00	0.00E+00
EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.66E-01
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E-01

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

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER PIECE

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	0.0000	kg C
Biogenic carbon content in accompanying packaging	0.1030	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount 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
Product	0.0000	kg CO_2 (biogenic)
Packaging	0.3777	kg CO_2 (biogenic)

6 Interpretation of results

6.1 CONTRIBUTION ANALYSIS

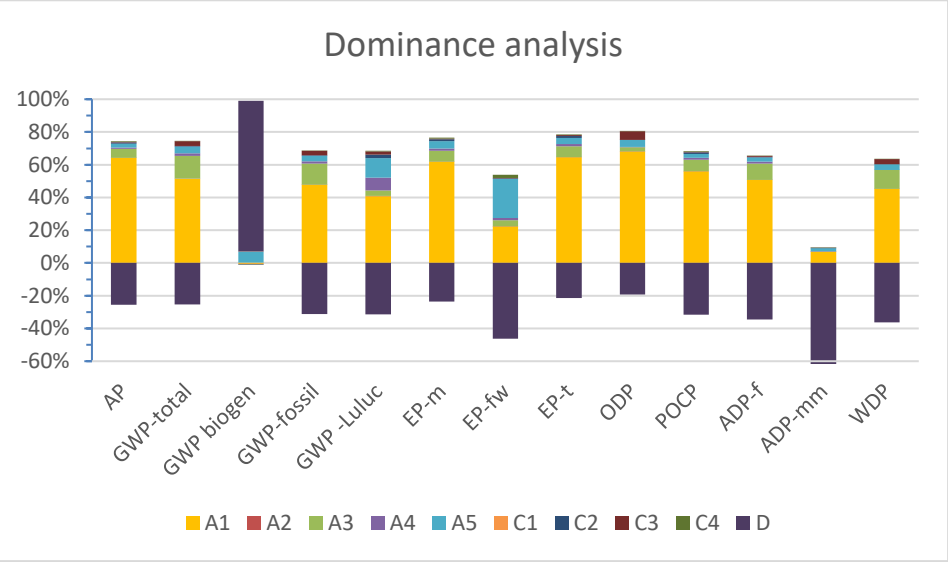


Figure 2: Dominance analysis diagram

It can be shown that the impact of the raw materials supply (Module A1) and the production (Module A3) are the largest in most impact categories, which is due to the petroleum-based plastics and the energy consumption.

The biogenic CO_2 value shown in modules A4, and C2 is negative because it takes into account the biogenic carbon content in the diesel fuel purchased at the gas station. In accordance with the DIN EN 590 standard, diesel fuel contains a defined proportion of biogenic components.

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

PCR

Kiwa-EE GPI R.4.0

Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, Program EE 1201 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, Program EE 1203 R.4.0 (18.12.2025)

PCR Part B

IBU – PCR Part B: Requirements on the EPD for fittings and showers Version 8 published 01.08.2024

DIN EN ISO 9001

DIN EN ISO 9001:2015-11, Quality management systems - Requirements.

DIN EN ISO 14001

DIN EN ISO 14001:2015-11, Environmental management requirements with guidance for Application.

DIN EN ISO 45001

DIN EN ISO 45001:2023-12, Management systems for safety and health at work - Requirements with guidance for application.

BNB - Bewertungssystem nachhaltiges Bauen

https://www.nachhaltigesbauen.de

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