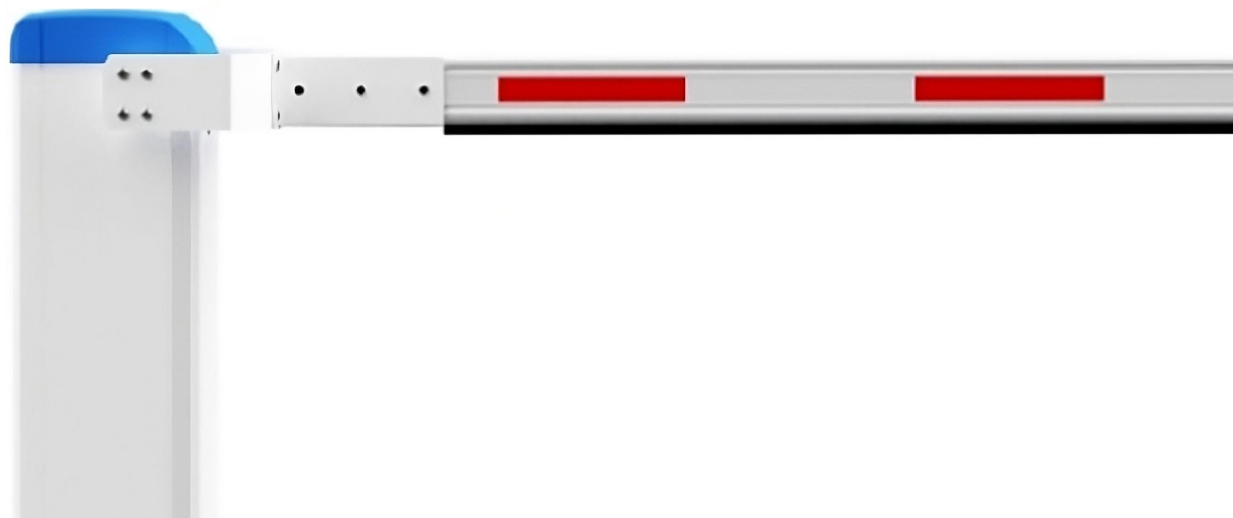


Environmental Product Declaration (EPD)  
According to ISO 14025 and EN 15804

# Barriers series Industrial - series S

Registration number:	EPD-Kiwa-EE-148792-EN
Issue date:	21-03-2024
Valid until:	21-03-2029
Declaration owner:	ELKA - Torantriebe GmbH u. Co. Betriebs KG
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified



# 1 General information

## 1.1 PRODUCT

Barriers series Industrial - series S

## 1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-148792-EN

## 1.3 VALIDITY

**Issue date:** 21-03-2024

**Valid until:** 21-03-2029

## 1.4 PROGRAM 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:** ELKA - Torantriebe GmbH u. Co. Betriebs KG

**Address:** Dithmarscher Str. 9 , 25832 Tönning, Germany

**E-mail:** info@elka.eu

**Website:** www.elka.eu

**Production location:** ELKA Factory

**Address production location:** Dithmarscher Straße 9, 25832 Tönning, 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



Elisabeth Amat Guasch, Greenize

## 1.7 STATEMENTS

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

## 1.8 PRODUCT CATEGORY RULES

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

Institut Bauen und Umwelt e.V (IBU) - Complementary Product Category Rule (c-PCR): Automatic doors, automatic gates, and revolving door systems (2014-07)

## 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

## 1 General information

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 R<THiNK:** Ecobility Experts | EN15804+A2

**LCA software\*:** Simapro 9.1

**Characterization method:** EN 15804 +A2 Method v1.0

**LCA database profiles:** EcolInvent version 3.6

**Version database:** v3.16 (2024-02-12)

*\* 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 'Barriers series Industrial - series S' with the calculation identifier ReTHiNK-48792.

## 2 Product

### 2.1 PRODUCT DESCRIPTION

ELKA barriers of the series "INDUSTRIAL" are designed for the protection of industrial entrances up to 8m width and can be operated with folding skirts and folding top and bottom skirts. Perfect running performance, achieved by electronic speed control, protect motor and gear. An efficient drive concept with a powerful 24V BLDC-motor and robust components ensure intensive operation with 100% duty cycle.

#### The composition of the product

Steel - 62%

Aluminium - 21%

Plastic - 6%

Others - 11%

The technical data is described in the following table:

Name	Unit	Value
Housing dimensions (w/d/h)	mm	400 x 450 x 1,073
Boom lenght	mm	5,000 up to 8,000 (8,000 in this EPD)
Effective boom lenght approx.	mm	5,170 up to 8,170 (8,170 in this EPD)
Running time approx.	s	4.0 up to 10.0
Duty cycle	-	100%
Temperature range	°C	-20 up to +50
Degree of protection	-	IP54
Weight without boom approx.	kg	135 up to 156
Boom weight approx.	kg	9 up to 22

### 2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

Barrier systems for multi-storey car parks, car parks and commercial and industrial entrances.

### 2.3 REFERENCE SERVICE LIFE

#### RSL PRODUCT

Based on the experience of ELKA, a reference service life (RSL) of 10 years is assumed.

#### USED RSL (YR) IN THIS LCA CALCULATION:

10

### 2.4 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain any substances from the candidate list of substances of very high concern for authorisation (SVHC).

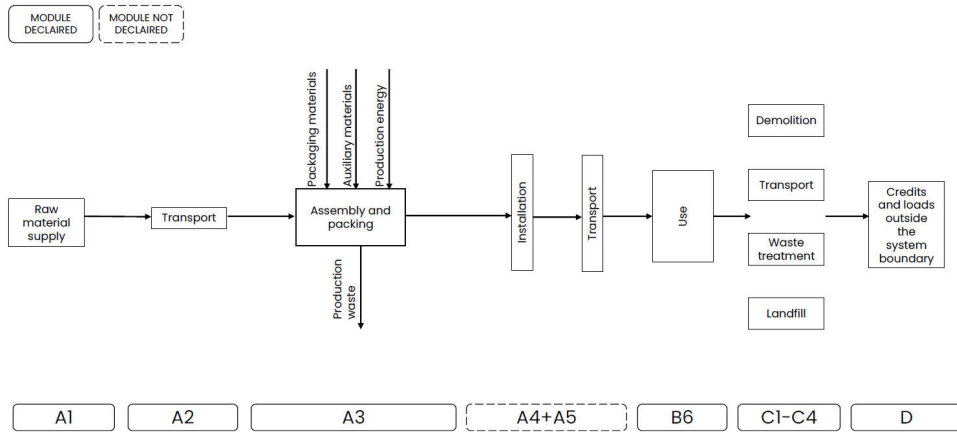
### 2.5 DESCRIPTION PRODUCTION PROCESS

The assembly, manufacturing and functional test of Parking barrier systems takes place at the production and development site in Tönning (Germany).

#### Assembly includes the the following steps

1. pre-assembly of the components
2. housing assembly
3. assembly
4. electrical safety test
5. mechanical function test/factory adjustment
6. documentation, final inspection and quality check
7. product packaging (not complete)

## 2 Product



### 3 Calculation rules

#### 3.1 FUNCTIONAL UNIT

##### Unit of product

1 piece of road barrier with housing dimensions 400mm x 450mm x 1,073mm and boom length 8,000mm

reference\_unit: piece (p)

#### 3.2 CONVERSION FACTORS

Description	Value	Unit
reference_unit	1	p
weight_per_reference_unit	179.226	kg
Conversion factor to 1 kg	0.005580	p

#### 3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options, modules C1-C4 and module D LCA. 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	X	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

The input data are representative for the road barrier with the longest possible boom length (8000mm) S 8000, a product of ELKA - Torantriebe GmbH u. Co. Betriebs KG. The data are representative for Europe.

#### 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

### Use phase (B6)

For the use phase, the input and output flows for Module B6 (operational energy use) are considered in this LCA. The total neglected input flows do not exceed the limit of 5% of energy use and mass.

### End of life stage (C1-C4)

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

### Benefits and Loads beyond the system boundary (Module D)

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

### 3.6 ALLOCATION

Allocations were avoided as far as possible. There are no coproducts or by-product in the manufacturing of the examined product. Based on energy consumption measurements, the energy requirements of the production were allocated to the individual products. Specific information about allocations within the background data is included in the documentation of the Ecoinvent datasets.

### 3.7 DATA COLLECTION & REFERENCE TIME PERIOD

All process-specific data was collected for the operating year 2022.

### 3.8 ESTIMATES AND ASSUMPTIONS

All datasets chosen for the LCA refer to Europe or Germany as the geographic reference.

A data set for a non-specific truck was used for phase A2.

This EPD covers the road barrier with the longest possible boom length (8000mm) and therefore covers all classifications of INDUSTRIAL barriers with shorter boom lengths.

For the use phase, only module B6 (Operational Energy Use) is declared. The values for this are calculated on the basis of the manufacturer's experience. The energy consumption has been calculated based on the assumption that the barrier performs 50,000 cycles per year for 10 years.

### 3.9 DATA QUALITY

All process-specific data was collected for the 2022 operating year and is therefore up-to-date. The data is based on the annual average. In order to ensure comparability of the results, only consistent background data of the Ecoinvent database V3.6 was used in the LCA (e.g., records on energy, transportation, supplies and supplies), which refers to reference year 2019. The database is regularly reviewed and thus complies with the requirements of EN 15804 (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. The primary data were provided by ELKA - Torantriebe GmbH u. Co. Betriebs KG. The life cycle was modelled with the R<THiNK EPD App.

### 3.10 GUARANTEES OF ORIGIN

In this EPD, the location based approach was considered for the LCA, therefore no guaranties of origin (GO) are needed.

## 4 Scenarios and additional technical information

### 4.1 USE STAGE (B6)

Emissions to air/soil/water are applicable, the scenario accounted in module B is as follows in the table below.:

Description	Cycle (yr)	Number of cycles	Amount per cycle	Total Amount	Unit
Use phase RSL 10 years	10	1	533	533	kWh

### 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]
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	Lorry (Truck), unspecified (default)   market group for (GLO)	0	100	150	50	0
Metals, others (i.a. fasteners, fittings) (NMD ID 50)	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
copper (i.a. sheets, pipes) (NMD ID 41)	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
wood 'clean', via residue (NMD ID 35)   (u=10%) corr. acc. EN16449	Lorry (Truck), unspecified (default)   market group for (GLO)	0	100	150	50	0
PVC, pipes (NMD ID 64)	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.



## 4 Scenarios and additional technical information

	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

### 4.4 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 [%]
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	NL	0	10	85	5	0
Metals, others (i.a. fasteners, fittings) (NMD ID 50)	NL	0	5	5	90	0
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	NL	0	10	85	5	0
copper (i.a. sheets, pipes) (NMD ID 41)	NL	0	5	0	95	0
plastics, via residue (NMD ID 43)	NL	0	20	80	0	0
wood 'clean', via residue (NMD ID 35)   (u=10%) corr. acc. EN16449	NL	0	10	85	5	0
PVC, pipes (NMD ID 64)	NL	0	10	20	70	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	0.000	0.256	2.174	0.128	0.000
Metals, others (i.a. fasteners, fittings) (NMD ID 50)	0.000	8.595	8.595	154.709	0.000
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	0.000	0.283	2.409	0.142	0.000
copper (i.a. sheets, pipes) (NMD ID 41)	0.000	0.077	0.000	1.473	0.000
plastics, via residue (NMD ID 43)	0.000	0.036	0.144	0.000	0.000
wood 'clean', via residue (NMD ID 35)   (u=10%) corr. acc. EN16449	0.000	0.019	0.162	0.009	0.000
PVC, pipes (NMD ID 64)	0.000	0.002	0.003	0.011	0.000
<b>Total</b>	<b>0.000</b>	<b>9.268</b>	<b>13.487</b>	<b>156.471</b>	<b>0.000</b>

## 4 Scenarios and additional technical information

### 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.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	0.128	15.385
Metals, others (i.a. fasteners, fittings) (NMD ID 50)	81.293	0.000
elastomeres (i.a. epdm) (i.a. roofing, foils) (NMD ID 20)	0.142	0.693
copper (i.a. sheets, pipes) (NMD ID 41)	1.205	0.000
plastics, via residue (NMD ID 43)	0.000	4.434
wood 'clean', via residue (NMD ID 35)   (u=10%) corr. acc. EN16449	0.009	0.000
PVC, pipes (NMD ID 64)	0.011	0.068
<b>Total</b>	<b>82.788</b>	<b>20.579</b>

## 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

Abbreviation	Unit	A1	A2	A3	B6	C1	C2	C3	C4	D
AP	mol H+ eqv.	5.25E+0	8.13E-1	1.10E-1	1.34E+0	0.00E+0	8.43E-3	4.66E-3	7.33E-4	-5.37E-1
GWP-total	kg CO2 eqv.	6.71E+2	3.05E+1	-1.88E+1	2.36E+2	0.00E+0	1.46E+0	1.43E+1	2.00E-1	-1.18E+2
GWP-b	kg CO2 eqv.	7.35E+0	-4.11E-3	-3.53E+1	6.87E+0	0.00E+0	6.71E-4	2.87E-1	3.68E-2	1.20E+0
GWP-f	kg CO2 eqv.	6.62E+2	3.05E+1	1.63E+1	2.29E+2	0.00E+0	1.45E+0	1.40E+1	1.63E-1	-1.19E+2
GWP-luluc	kg CO2 eqv.	1.67E+0	1.89E-2	2.40E-1	5.32E-1	0.00E+0	5.33E-4	6.00E-4	2.50E-5	8.32E-2
EP-m	kg N eqv.	7.37E-1	2.04E-1	2.79E-2	1.69E-1	0.00E+0	2.97E-3	1.42E-3	2.85E-4	-9.15E-2
EP-fw	kg P eqv.	5.61E-2	1.65E-4	1.59E-3	2.44E-2	0.00E+0	1.47E-5	2.31E-5	1.12E-6	-4.80E-3
EP-T	mol N eqv.	8.46E+0	2.27E+0	3.16E-1	2.09E+0	0.00E+0	3.28E-2	1.58E-2	2.98E-3	-1.10E+0
ODP	kg CFC 11 eqv.	4.40E-5	6.26E-6	2.15E-6	1.93E-5	0.00E+0	3.21E-7	2.31E-7	3.00E-8	-3.12E-6
POCP	kg NMVOC eqv.	2.84E+0	5.91E-1	8.13E-2	5.30E-1	0.00E+0	9.35E-3	4.26E-3	8.70E-4	-6.88E-1
ADP-f	MJ	7.82E+3	4.05E+2	2.67E+2	4.71E+3	0.00E+0	2.19E+1	7.98E+0	2.23E+0	-8.62E+2
ADP-mm	kg Sb-eqv.	2.11E-1	3.47E-4	7.68E-5	1.66E-3	0.00E+0	3.68E-5	1.15E-5	7.49E-7	-1.55E-3
WDP	m3 world eqv.	2.09E+2	8.07E-1	7.09E+0	5.27E+1	0.00E+0	7.85E-2	3.08E-1	1.62E-2	-2.42E+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 EN15084+A2

Abbreviation	Unit	A1	A2	A3	B6	C1	C2	C3	C4	D
ETP-fw	CTUe	4.08E+4	2.86E+2	7.70E+2	3.22E+3	0.00E+0	1.96E+1	9.60E+1	1.02E+1	-5.46E+3
PM	disease incidence	4.69E-5	1.34E-6	1.48E-6	3.50E-6	0.00E+0	1.31E-7	5.28E-8	1.50E-8	-7.03E-6
HTP-c	CTUh	2.16E-6	1.64E-8	1.96E-8	8.32E-8	0.00E+0	6.34E-10	1.64E-9	1.00E-10	-4.96E-8
HTP-nc	CTUh	5.91E-5	2.55E-7	2.45E-7	2.84E-6	0.00E+0	2.14E-8	3.39E-8	7.99E-9	2.03E-5
IR	kBq U235 eqv.	2.56E+1	1.73E+0	1.26E+0	4.07E+1	0.00E+0	9.19E-2	3.00E-2	1.10E-2	1.84E+0
SQP	Pt	2.83E+3	1.29E+2	3.30E+3	1.15E+3	0.00E+0	1.90E+1	4.75E+0	5.46E+0	-2.07E+2

**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
	AAcidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
ILCD type / level 2	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

## 5 Results

ILCD classification	Indicator	Disclaimer
	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

Abbreviation	Unit	A1	A2	A3	B6	C1	C2	C3	C4	D
PERE	MJ	8.34E+2	3.32E+0	3.06E+2	8.92E+2	0.00E+0	2.75E-1	6.00E-1	1.20E-1	1.47E+1
PERM	MJ	0.00E+0	0.00E+0	3.37E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	8.34E+2	3.32E+0	6.43E+2	8.92E+2	0.00E+0	2.75E-1	6.00E-1	1.20E-1	1.47E+1
PENRE	MJ	8.28E+3	4.31E+2	2.78E+2	4.94E+3	0.00E+0	2.33E+1	8.50E+0	2.37E+0	-8.89E+2
PENRM	MJ	2.48E+1	0.00E+0	6.88E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-7.82E+0
PENRT	MJ	8.31E+3	4.31E+2	2.85E+2	4.94E+3	0.00E+0	2.33E+1	8.50E+0	2.37E+0	-8.97E+2
SM	Kg	7.37E+1	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	6.98E+0	2.82E-2	2.36E-1	3.94E+0	0.00E+0	2.67E-3	1.70E-2	2.76E-3	-4.69E-1

**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

Abbreviation	Unit	A1	A2	A3	B6	C1	C2	C3	C4	D
HWD	Kg	1.40E-1	5.34E-4	4.88E-4	3.14E-3	0.00E+0	5.56E-5	1.99E-5	2.78E-6	-1.40E-2
NHWD	Kg	1.25E+2	7.13E+0	3.10E+0	1.59E+1	0.00E+0	1.39E+0	4.02E-1	9.29E+0	-1.29E+1
RWD	Kg	2.36E-2	2.78E-3	1.36E-3	3.34E-2	0.00E+0	1.44E-4	3.16E-5	1.47E-5	5.54E-4

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

### ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	B6	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	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.56E+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	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.38E+0
EEE	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	3.70E+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:

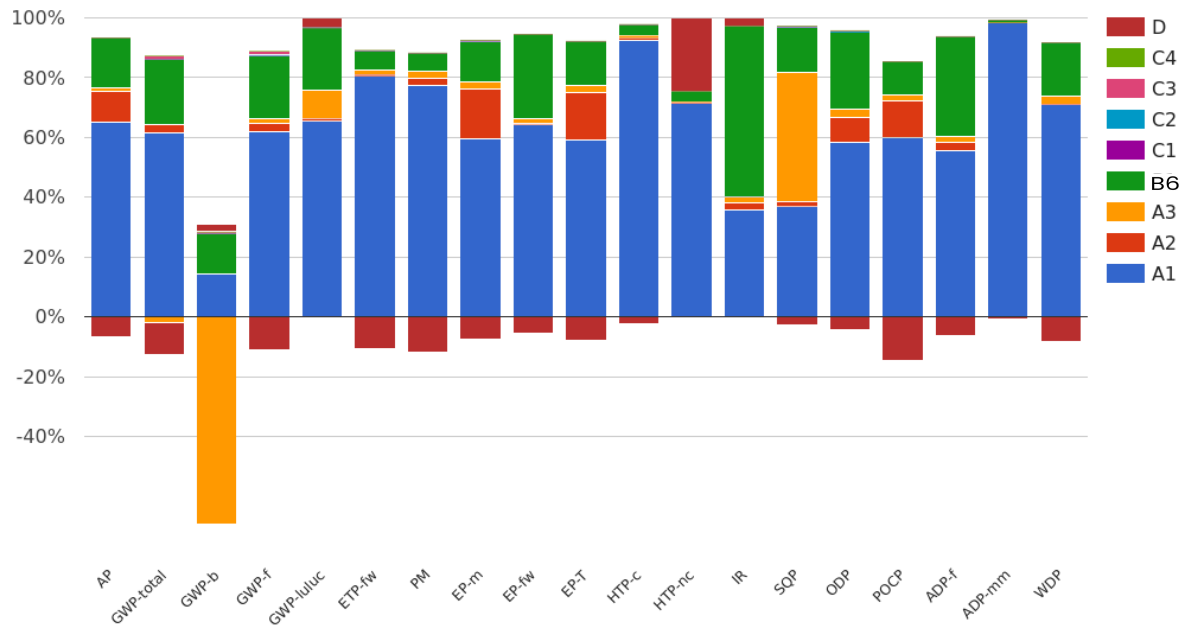
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	9.631	kg C

#### UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of uptake of carbon dioxide is account in module A1 by the main parts of the product. 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.

Uptake Biogenic Carbon dioxide	Amount	Unit
Packaging	35.32	kg CO2 (biogenic)

## 6 Interpretation of results



For easier understanding, the results are presented graphically in order to be able to see correlations and connections between the data more clearly.

As can be seen in the graph, raw material provision (module A1) dominates in almost all environmental impacts. The highest influence on the Global Warming Potential have raw material provision (module A1).

Note: The majority of the CO2 emissions within the impact category GWP-biogenic originate from the packaging. Since the module A5, which includes the waste processing of packaging, is not declared there seems to be a disbalance of biogenic CO2 emissions. Therefore, the alleged disbalance can be explained by the fact that module A5 is not included in the EPD declaration.



## 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

### **General PCR Ecobility Experts**

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

### **Institut Bauen und Umwelt e.V (IBU)**

Complementary Product Category Rule (c-PCR): Automatic doors, automatic gates, and revolving door systems (2014-07)

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