Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2:2019

TDRA40 tubular frame door element

Registration number:	EPD-Kiwa-EE-265095-EN
Issue date:	03-08-2026
Valid until:	03-08-2031
Declaration owner:	Goldbach Kirchner raumconcepte GmbH
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

TDRA40 tubular frame door element

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-265095-EN

1.3 VALIDITY

Issue date: 03-08-2026

Valid until: 03-08-2031

1.4 PROGRAMME OPERATOR

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1.5 OWNER OF THE DECLARATION

Declaration owner: Goldbach Kirchner raumconcepte GmbH

Address: Am Sportplatz 7 , 63826 Geiselbach, Germany

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Website: https://www.goldbachkirchner.de/

Production location: Goldbach Kirchner production

Address production location: Am Sportplatz 7, 63826 Geiselbach, 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+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Lucas Pedro Berman, Senda

1.7 STATEMENTS

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

1.8 PRODUCT CATEGORY RULES

Kiwa-EE GPI R.4.0
Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1203_R. 4.0 (27.02.2025)

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 (27.02.2025)

Specific PCR: NEN-EN 17213
Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets (03.2020)

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 'TDRA40 tubular frame door element' with the calculation identifier ReTHiNK-165095.

2 Product

2.1 PRODUCT DESCRIPTION

This is a representative EPD for 1 m² of TDRA40 tubular frame door element, produced by Goldbach Kirchner raumconcepte GmbH.
The weight per m² is 35.5 kg including the door frame. The frame size is based on the average door element.

The TDRA40 consists of a 40 mm aluminium tubular frame leaf set in an aluminum frame with a face width of 34 mm.

The aluminum frame is secured to the internal load-bearing steel profiles using screws. With a frame thickness of 100 mm, it is compatible with all Goldbach Kirchner partition wall systems. The design is characterized by high flexibility, reusability, and the ability to separate materials by type.

Material	m.-% of material
glass	50.1
aluminium frame	16.0
tube frame	16.4
steel profiles	10.5
door hardware	3.9
sealing	1.6
gypsum	<1
screws	<1
steel parts	<1
fleece	<1
glue	<1

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The flexible width and height of the TDRA40 tubular frame door element make it easy to create architectural designs for open building structures. The tubular frame door elements are quick to install and reconfigure. Replacing a tubular frame door leaf with a wooden or glass door leaf is also possible. A custom design can be achieved at any time using a variety of different glass leaves and special finishes. It is possible to completely reposition door elements without any material waste, or to replace them with other partition elements.
Due to its modular design, the tubular frame door element can be reassembled, dismantled and extended. Thus, it is suitable for circular construction.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT
According to the the Assessment System for Sustainable Building BBSR Table 2017, the reference service life of doors is over 50 years. Adding to this, the reference service life has not been taken into account in this EPD since the B module is not declared.

USED RSL (YR) IN THIS LCA CALCULATION:
50

2.4 TECHNICAL DATA

The most important, tested-for technical properties for the product have been laid out in the following table.

Property	Unit	Declared value	Standard
Frame thickness	mm	100	
Airborne sound insulation	Rw,p	33 - 37 dB	DIN EN ISO 140-3 / DIN EN ISO 717-1
Structural strength			DIN 4103-1:2015-06

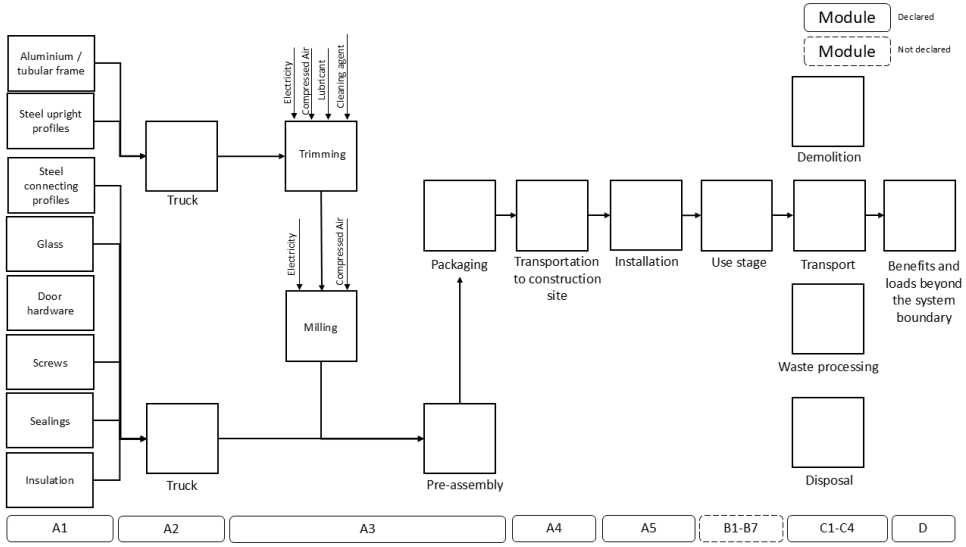
2.5 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain any substances from the “Candidate List of Substances of Very High Concern” (SVHC) in amounts greater than 0.1% (1,000 ppm).

2.6 DESCRIPTION PRODUCTION PROCESS

The main components of the Goldbach Kirchner TDRA40 tubular frame door element are the glass leaf, steel profiles, an aluminium tubular frame and an aluminium frame. The steel profiles, tubular frame and aluminium frame are cut to size. The aluminium and the tubular frame are then milled. The sealing is inserted into the aluminium frame and glued onto the steel profiles. The frame is finalized and the glass inserted and fixated with the sealing. The hinge sub-structure is fastened into the aluminium frame. The components are packaged in a secure manner and shipped to the client. The door element is finalized on-site.

2 Product



2.7 CONSTRUCTION DESCRIPTION

The door system is assembled with power tools at the construction site.

3 Calculation rules

3.1 DECLARED UNIT

m2

1 m² of tubular frame door element with a 40 mm glass leaf

Reference unit: square meter (m2)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m2
Weight per reference unit	35.540	kg
Conversion factor to 1 kg	0.028138	m2

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

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

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

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	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 for TDRA40 tubular frame door element, a product of Goldbach Kirchner raumconcepte GmbH . The results of this EPD are representative for European Union.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)
All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA. The total neglected input flows do

3 Calculation rules

therefore not exceed the limit of 5% of energy use and mass.
Excluded processes are:

- Long-term emissions
- The manufacture of equipment used in production, buildings or any other capital goods;
- The transport of personnel to the plant;
- The transportation of personnel within the plant;
- Research and development activities

Construction process stage (A4-A5)
All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use)of energy use for assembly , etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

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 co-products or by-products created in the manufacturing of the examined product. Based on energy consumption measurements, the energy requirements of the production were allocated to the individual products.
Double counting was avoided. Specific information about allocations within the background data is included in the documentation of the ecoinvent datasets.

3.7 DATA COLLECTION & REFERENCE PERIOD

All process-specific data was collected for the period between the 01.01.2024 and the 31.12.2024. The quantities of raw materials, consumables and supplies used and the energy consumption were recorded and averaged over the entire 2024 operating year. The reference area is Germany.

3.8 ESTIMATES AND ASSUMPTIONS

A payload factor of 50 percent was used for all truck transports, which in fact corresponds to a full delivery and empty return trip. A data set for a non-specific truck was used for the supplier transportation.

As the finalized product is delivered to the clients by internal logistics the transport in A4 is modelled using a >32t, EURO6 truck, which corresponds to the trucks used. Due to multiple locations being visited by the same truck daily, it never returns empty, picking up reusable packaging material. This has not been considered in the LCA, where a 50% load and an empty return have been assumed.

As the construction of the product at the construction site is carried out by handheld power tools, no input has been created for A5.

The demolition at end-of-life is assumed to be carried out manually, and therefore no energy consumption has been considered for C1.

For the end-of-life scenario, it is assumed that the different material fractions of the product can be separated and treated individually. Therefore, material-specific end-of-life scenarios based on the default assumptions of EN 17213 were applied:

- **Metal components:** 95% recycling and 5% landfill;
- **Plastic components:** 95% incineration with energy recovery and 5% landfill;
- **Glass components:** 70% recycling and 30% landfill.

3.9 DATA QUALITY

The quality level of geographical representativeness can be considered “good”.
The quality level of technical representativeness can be considered “good”.
The quality level of time representativeness can also be regarded as “good”.

The overall data quality for this EPD can, therefore, be described as “good”. All relevant process-specific data were collected during data collection.

In all possible cases, primary data from customers was used, which has very good data quality because it comes directly from the source. In addition, secondary data from the ecoinvent database (2022, version 3.9.1) was used when no primary data could be supplied. The database is checked regularly and, therefore, meets the requirements of DIN EN ISO 14040/44 (background data not older than 10 years). The background data meets the requirements of EN 15804+A2. The quantities of raw materials, consumables and supplies used and the energy consumption were recorded and averaged over the entire operating year.

3 Calculation rules

The general rule that specific data from certain production processes or average data derived from certain processes must take precedence when calculating an EPD or LCA was adhered to. Data for processes over which the manufacturer has no influence were assigned to generic data/scenarios. When selecting these, care was taken to always choose the data set/scenario that most realistically represents the processes.

3.10 POWER MIX

A "*market-based approach*" was used in this EPD. The company is covering 79% of its electricity with hydro power generated mainly in Italy (65%) and Norway (35%). GoOs have been provided. The GWP-total of the bought electricity is 0.0063 kg CO_2 eqv. per kWh.
The other 21% are self-produced through photovoltaic panels. The GWP-total of the self-generated electricity is 0.027 kg CO_2 eqv. per kWh.
The GWP-total of the applied electricity mix is 0.010647 kg CO_2 eqv. per kWh.

4 Scenarios and additional technical information

4.1 TRANSPORT TO CONSTRUCTION SITE (A4)

For the transport from production place to assembly/user, the following scenario is assumed for module A4 of this EPD.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck) >32t, EURO6 | market for (EU)
Fuel type and consumption of vehicle	not available
Distance	312 km
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.2 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	3	%
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	2.749	kg

4.3 DE-CONSTRUCTION, DEMOLITION (C1)

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

4.4 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.

4 Scenarios and additional technical information

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
(ei3.9.1) End-of-life scenario for the metal fraction (Aluminium) of the product, based on EN 17213 default assumptions	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) End-of-life scenario for the glass fraction of the product, based on EN 17213 default assumptions	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) End-of-life scenario for the metal fraction (Steel) of the product, based on EN 17213 default assumptions	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) End-of-life scenario for the plastic fraction of the product, based on EN 17213 default assumptions	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) gypsum (i.a. blocks, sheets) (NMD ID 27)	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	50

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

4.5 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 [%]
	DE	0	5	0	95	0

4 Scenarios and additional technical information

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
(ei3.9.1) End-of-life scenario for the metal fraction (Aluminium) of the product, based on EN 17213 default assumptions						
(ei3.9.1) End-of-life scenario for the glass fraction of the product, based on EN 17213 default assumptions	EU	0	30	0	70	0
(ei3.9.1) End-of-life scenario for the metal fraction (Steel) of the product, based on EN 17213 default assumptions	EU	0	5	0	95	0
(ei3.9.1) End-of-life scenario for the plastic fraction of the product, based on EN 17213 default assumptions	EU	0	5	95	0	0
(ei3.9.1) gypsum (i.a. blocks, sheets) (NMD ID 27)	NL	0	95	0	5	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
(ei3.9.1) End-of-life scenario for the metal fraction (Aluminium) of the product, based on EN 17213 default assumptions	0.000	0.575	0.000	10.929	0.000
(ei3.9.1) End-of-life scenario for the glass fraction of the product, based on EN 17213 default assumptions	0.000	5.345	0.000	12.471	0.000
(ei3.9.1) End-of-life scenario for the metal fraction (Steel) of the product, based on EN 17213 default assumptions	0.000	0.274	0.000	5.197	0.000
(ei3.9.1) End-of-life scenario for the plastic fraction of the product, based on EN 17213 default assumptions	0.000	0.030	0.563	0.000	0.000
(ei3.9.1) gypsum (i.a. blocks, sheets) (NMD ID 27)	0.000	0.148	0.000	0.008	0.000
Total	**0.000**	**6.371**	**0.563**	**28.605**	**0.000**

4.6 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) End-of-life scenario for the metal fraction (Aluminium) of the product, based on EN 17213 default assumptions	1.185	0.000
(ei3.9.1) End-of-life scenario for the glass fraction of the product, based on EN 17213 default assumptions	8.552	0.000
(ei3.9.1) End-of-life scenario for the metal fraction (Steel) of the product, based on EN 17213 default assumptions	3.439	0.000
(ei3.9.1) End-of-life scenario for the plastic fraction of the product, based on EN 17213 default assumptions	0.000	5.042
(ei3.9.1) gypsum (i.a. blocks, sheets) (NMD ID 27)	-0.075	0.000
Total	**13.100**	**5.042**

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 SQUARE METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	1.05E+2	1.41E+0	-4.62E+0	1.02E+2	1.20E+0	8.40E+0	0.00E+0	3.21E-1	5.00E+0	6.00E-2	-1.12E+2
GWP-f	kg CO_2 eq.	1.06E+2	1.41E+0	-4.54E-2	1.07E+2	1.20E+0	3.86E+0	0.00E+0	3.19E-1	4.95E+0	5.99E-2	-1.09E+2
GWP-b	kg CO_2 eq.	-3.52E-1	4.59E-4	-4.42E+0	-4.77E+0	4.01E-4	4.54E+0	0.00E+0	1.04E-4	5.00E-2	8.51E-5	-4.19E-1
GWP-luluc	kg CO_2 eq.	6.62E-2	5.02E-3	-1.50E-1	-7.85E-2	5.84E-4	3.61E-3	0.00E+0	1.14E-3	3.33E-3	3.17E-5	-1.94E+0
ODP	kg CFC 11 eq.	5.44E-6	2.51E-8	1.20E-7	5.58E-6	2.72E-8	1.83E-7	0.00E+0	5.68E-9	8.16E-8	1.43E-9	-2.49E-6
AP	mol H+ eq.	6.94E-1	6.75E-3	-2.15E-2	6.80E-1	2.96E-3	2.40E-2	0.00E+0	1.53E-3	1.45E-2	3.68E-4	-7.19E-1
EP-fw	kg P eq.	1.31E-3	1.40E-5	-1.26E-4	1.20E-3	1.00E-5	5.14E-5	0.00E+0	3.18E-6	7.36E-5	9.45E-7	-3.84E-3
EP-m	kg N eq.	1.05E-1	2.56E-3	3.43E-3	1.11E-1	7.90E-4	4.17E-3	0.00E+0	5.81E-4	2.73E-3	1.34E-4	-9.49E-2
EP-T	mol N eq.	1.26E+0	2.73E-2	1.02E-2	1.30E+0	8.28E-3	4.81E-2	0.00E+0	6.20E-3	3.06E-2	1.44E-3	-1.08E+0
POCP	kg NMVOC eq.	3.33E-1	9.34E-3	-5.31E-3	3.37E-1	4.84E-3	1.33E-2	0.00E+0	2.12E-3	1.00E-2	5.40E-4	-4.15E-1
ADP-mm	kg Sb-eq.	3.45E-3	4.41E-6	1.49E-4	3.60E-3	3.35E-6	1.08E-4	0.00E+0	1.00E-6	7.40E-5	8.61E-8	1.04E-3
ADP-f	MJ	1.31E+3	2.02E+1	-3.60E+0	1.32E+3	1.82E+1	4.68E+1	0.00E+0	4.57E+0	2.66E+1	1.19E+0	-1.35E+3
WDP	m3 world eq.	1.41E+1	1.10E-1	2.14E+0	1.64E+1	8.67E-2	5.99E-1	0.00E+0	2.50E-2	3.98E-1	1.27E-2	-2.81E+1

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 stratosperic ozon 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) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	disease incidence	3.75E-6	1.39E-7	-5.09E-7	3.38E-6	1.18E-7	1.53E-7	0.00E+0	3.15E-8	2.31E-7	7.80E-9	-8.48E-6
IR	kBq U235 eq.	1.84E+0	7.87E-3	-2.51E-1	1.60E+0	8.73E-3	6.49E-2	0.00E+0	1.78E-3	7.28E-2	9.47E-4	-4.41E+0
ETP-fw	CTUe	2.31E+3	1.49E+1	2.66E+1	2.35E+3	8.73E+0	7.49E+1	0.00E+0	3.38E+0	3.56E+1	7.46E+0	-2.54E+2
HTP-c	CTUh	2.79E-6	7.46E-10	-6.09E-9	2.79E-6	5.32E-10	8.49E-8	0.00E+0	1.69E-10	2.53E-9	3.41E-11	-2.06E-7
HTP-nc	CTUh	3.19E-4	1.62E-8	-5.75E-8	3.19E-4	1.30E-8	9.57E-6	0.00E+0	3.67E-9	8.92E-8	6.34E-10	-1.25E-6
SQP	Pt	1.92E+2	1.59E+1	2.31E+2	4.39E+2	1.84E+1	1.55E+1	0.00E+0	3.61E+0	2.33E+1	2.20E+0	-2.01E+2

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
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

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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	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.75E+2	2.85E-1	5.83E+0	2.82E+2	2.66E-1	9.97E+0	0.00E+0	6.47E-2	2.96E+0	4.17E-2	-5.01E+2
PERM	MJ	7.86E+0	0.00E+0	3.66E+1	4.44E+1	0.00E+0	1.33E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	2.86E+2	2.85E-1	4.28E+1	3.29E+2	2.66E-1	1.14E+1	0.00E+0	6.47E-2	2.96E+0	4.17E-2	-5.01E+2
PENRE	MJ	1.29E+3	2.02E+1	-5.68E+0	1.30E+3	1.82E+1	4.61E+1	0.00E+0	4.58E+0	2.67E+1	1.19E+0	-1.35E+3
PENRM	MJ	1.88E+1	0.00E+0	2.10E+0	2.09E+1	0.00E+0	6.28E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	1.29E+3	2.02E+1	-6.56E+0	1.30E+3	1.82E+1	4.61E+1	0.00E+0	4.58E+0	2.67E+1	1.19E+0	-1.35E+3
SM	Kg	1.55E+1	0.00E+0	2.27E+0	1.78E+1	0.00E+0	5.00E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.13E+1
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	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	0.00E+0
FW	m^3	8.46E-1	4.88E-3	-6.48E-2	7.87E-1	2.85E-3	3.31E-2	0.00E+0	1.11E-3	1.74E-2	1.25E-3	-2.73E+0

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

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OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	6.54E-3	1.29E-4	1.87E-2	2.54E-2	1.13E-4	2.65E-3	0.00E+0	2.92E-5	7.22E-2	5.28E-6	1.01E-1
NHWD	Kg	2.25E+1	1.33E+0	1.85E-1	2.40E+1	1.59E+0	2.56E+0	0.00E+0	3.02E-1	1.91E+0	6.38E+0	-2.81E+1
RWD	Kg	2.87E-2	4.62E-6	2.03E-3	3.08E-2	5.53E-6	9.36E-4	0.00E+0	1.05E-6	5.52E-5	5.68E-7	-3.29E-3

HWD=Hazardous waste disposed | **NHWD**=Non-hazardous waste disposed | **RWD**=Radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	A4	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	0.00E+0
MFR	Kg	2.55E-1	0.00E+0	1.55E+0	1.80E+0	0.00E+0	2.36E+0	0.00E+0	0.00E+0	2.86E+1	0.00E+0	0.00E+0
MER	Kg	5.86E-3	0.00E+0	8.80E-4	6.74E-3	0.00E+0	2.02E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	2.81E-1	0.00E+0	1.22E-2	2.94E-1	0.00E+0	8.55E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.12E+0
EEE	MJ	1.47E-1	0.00E+0	6.54E-3	1.54E-1	0.00E+0	4.46E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.13E+0

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

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5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER SQUARE METER

BIOGENIC CARBON CONTENT

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

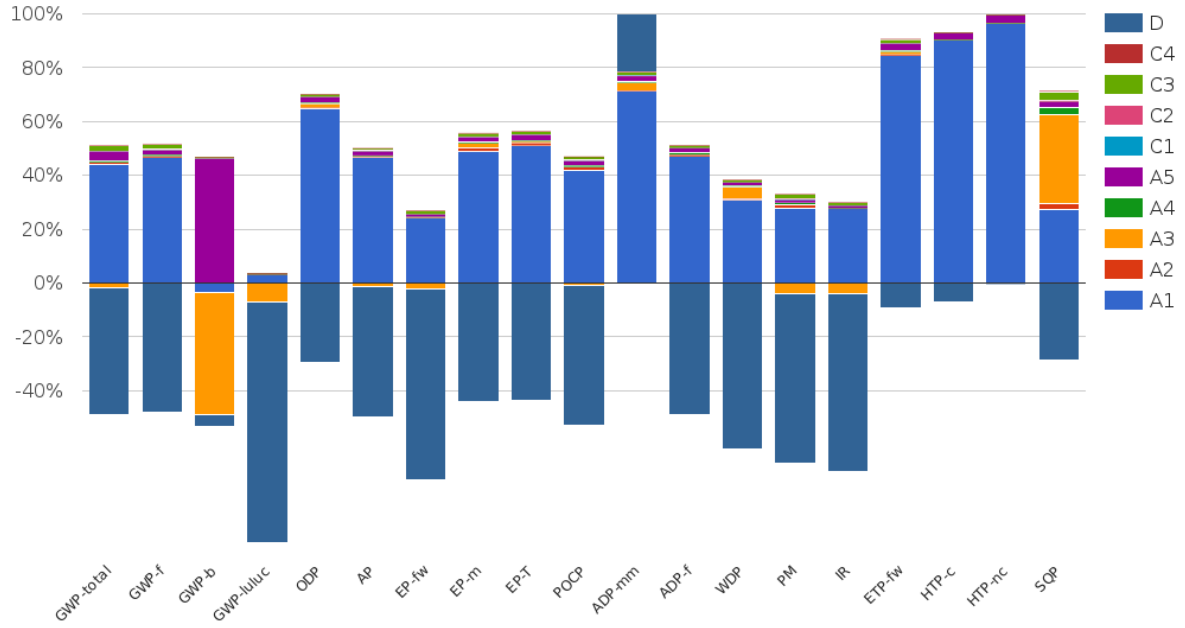
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0.0982	kg C
Biogenic carbon content in accompanying packaging	1.244	kg C

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	4.563	kg CO2 (biogenic)

6 Interpretation of results



The main impact of the TDRA40 tubular frame door element stems from the raw materials in A1.
In most categories, A1 is responsible for between 50% and 95% of environmental impacts.
Due to the packaging materials being produced mainly out of wood and paper, A3 has a negative impact in GWP-b, which is balanced by its waste processing in A5.
Also prevalent is the D indicator, indicating recycling potentials of the product's components. This is mostly due to the environmental profile assigned to the aluminium input and the recycling assumptions used in module D. The D value for aluminium is higher than the A1 value due to a supplier EPD being compared to a primary equivalent of 100% primary aluminium in the standard waste scenario. This also has an impact on A3, in which the high amounts of production waste are processed.

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 (27.02.2025)

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 (27.02.2025)

Specific PCR: NEN-EN 17213
Windows and doors - Enfironmental Product Declarations - Product category rules for windows and pedestrian doorsets (03.2020)

ecoinvent
ecoinvent Version 3.9.1 (December 2022)

R<THINK characterization method
ecoinvent 3.9.1: EN 15804+A1 indicators (CML-IA Baseline v3.09), EN 15804+A2 indicators (EF 3.1)

DIN EN ISO 717-1:2021-05
Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

DIN 4103-1:2015-06
Internal non-loadbearing partitions - Part 1: Requirements and verification

DIN EN ISO 140-3:2005-03
Acoustics - Measurement of sound insulation in buildings and of building elements - Part 3: Laboratory measurements of airborne sound insulation of building elements

7 References

NMD
NATIONAL ENVIRONMENTAL DATABASE, Calculation method to determine the environmental performance of construction works throughout their service life, based on EN 15804+A2., v 1.2 (Januar 2025)

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